

Issue N°1 - Winter 2025

HUMANWARE

THE FUTURE
OF LONGEVITY
INVESTMENT

*The Luxury
Blueprint for
Longevity*

THE WORLD'S
LEADING
LONGEVITY
CLINICS

THE TINY
ROBOT
REVOLUTION

Peter H.
Diamandis
*From launching
rockets to hacking
longevity*

LONGEVITY | LUXURY LIFESTYLE | INVESTMENT

A woman with dark hair and red lipstick is sitting on a wooden bench outdoors. She is wearing a maroon long-sleeved shirt and green pants. She is looking off to the side with a thoughtful expression, resting her chin on her hand. The background is filled with green foliage and a metal fence. The word "Humanity's" is written in large white letters across the center of the image.

Humanity's



Next Chapter.

The HumanWare Project

The series where human potential
meets tomorrow's technology, today



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The Team Behind The HumanWare Project

At the helm of **The Humanware Project**, CEO Méline Liu brings a transformative vision for democratising longevity science and making cutting-edge health optimisation accessible to all. Her pioneering approach is brought to life through an exceptional core team: COO Jo Caruana, Series Director Bertie Fenton, Social Media Executive Isabel Seden-Fowler, and EA & PA Paris Decaro. Together, this dynamic team is redefining how we share information around human optimisation and longevity, as well as how we bring people together in the space. As The HumanWare Project enters an exciting growth phase, with ambitious plans for investment funds, longevity trips, and expanded content offerings, the team stands ready to reveal transformative developments in the months ahead.

Left-right: Paris, Jo, Méline, Isabel, Bertie (Photo by Samuel Ferguson)



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A Note on Our Editorial Process

At HUMANWARE, we embrace cutting-edge technology in service of editorial excellence. Artificial Intelligence assists our editorial team in several capacities: researching complex longevity topics, fact-checking scientific claims, transcribing interviews and helping compile initial drafts from our extensive content archives.

However, every word you read has been carefully reviewed, refined and approved by our human editorial team. Our editors shape every narrative, and our fact-checkers verify all claims independently. AI serves as a sophisticated research assistant and productivity tool, allowing our team to focus on what matters most: bringing you authoritative insights and compelling stories from the frontiers of longevity science.

We believe transparency about our processes reflects the same commitment to innovation and

integrity that defines The HumanWare Project itself. Just as the longevity field combines ancient wisdom with modern technology, our editorial approach harnesses the best of both human expertise and technological capability.

All content remains the intellectual property of The HumanWare Project and our contributors, with human judgement guiding every editorial decision from conception to publication. HUMANWARE is produced creatively and editorially by The Finesse Group (byfinessegroup.com).

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insideTHISissue

3 Meet the Team

6 FOREWORD: Welcome to HUMANWARE

8 Letter from the Editor

FEMALE HEALTH

76 The Brain Hacker
Dr Emilė Radytė *on revolutionising women's health through brain stimulation*

121 The Ovarian Paradox
Dr Jennifer Garrison *on why medicine got women wrong*

NEUROSCIENCE AND BRAIN HEALTH

52 The Mind Traders
Joao Barbosa Da Silva *on why psilocybin could be the next big thing*

144 The Neural Engineer
Ben Woodington *explores the future of brain-computer interfaces*

148 The Memory Keeper
Dr Ashley Webb *on detecting Alzheimer's through blood tests*

NEURO STIMULATION

13 Rewiring Reality
Dr Nicholas Dogris *on tuning the brain like an instrument*

56 From Silicon Valley to Brain Training
James Croall *on optimising cognitive function*

79 The Frequency Healer
Dr Tiff Thompson *on the science of treating the brain*



CONSCIOUSNESS AND MIND-BODY CONNECTION

34 The Space Between
Dr Peng Zhang *on the ancient art of balance that helps the body heal itself*

38 The Voltage of Vitality
Professor Pierre-Marc Bouloux *decodes the brain-body connection*

42 Between Worlds: Sedona's Journey Through Mind and Cosmos
Where to go in Sedona to rewrite your brain

INVESTMENT

68 The Future of Longevity Investment

70 The Longevity Investment Landscape
Mapping the investment landscape

71 The Neurohealth Revolution
Inside the brain health investment boom

73 Female Health's £83 Billion Opportunity
Why women's health is attracting serious capital

74 The Psychedelic Renaissance

75 Navigating Longevity Investment in 2025 and Beyond

156 From Maps to Minds
Patrick Aisher's *journey with Kinled*

LIFESTYLE

82 The World's Leading Longevity Clinics
Your guide to premier health optimisation destinations

100 The Premium Longevity Products
Transforming Wellness
From tongue scrapers to cutting-edge supplements



DATA AND DNA

- 10** The Genome Revolutionary
Dr Lee Hood on revolutionising healthcare through scientific wellness

- 110** The Data-Driven Life
Dr Michael Snyder's method for adding 10 healthy years

- 128** The Universe Within
Dr Maria Chatzou Dunford on how your data could add decades to your life

ROBOTICS AND TECHNOLOGY

- 30** The Tiny Robot Revolution
Torrey Smith and the tiny robot that swam inside his stomach

- 114** From Virtual Worlds to Living Cells
Michael Antonov's journey from Oculus pioneer to longevity innovator

BIOHACKING AND OPTIMISATION

- 48** The Precision Principle
Aaron Deere on the science of personalised fitness and nutrition

- 88** The Optimisation Investigation
Hooke London's approach to preventing ageing

- 124** The Water Cure
David Perez asks: could water really reverse ageing?

REGENERATIVE MEDICINE AND CELLULAR SCIENCE

- 26** Beyond Young Blood
Dr Irina Conboy on reversing ageing through blood plasma

- 96** The Youth Alchemist
Alina Su asks: can we really turn back our biological clock?

- 136** Where Cells Tell Time
Generation Lab doubles down on longevity science

NUTRITION AND METABOLIC HEALTH

- 64** The Hunger Advantage
Dr Pankaj Kapahi shares the age-reversing secrets of fasting

- 118** The Body's Secret Clock
Dr Clare Nieland redefines ageing through preventive health

SENSORY SCIENCE AND ENHANCEMENT

- 60** The Scent of Tomorrow
Marianna Obrist explains why your nose might be your most underrated superpower

- 92** The Mouth Detective
Dr Sameer Patel reveals the hidden link between oral health and longevity

- 132** The Voice Whisperer
Ed Blake's revolutionary approach to voice health

LONGEVITY ENTREPRENEURSHIP

- 22** The Infinity Entrepreneur
Peter H. Diamandis on finding your Massive Transformative Purpose

ARCHITECTURE AND ENVIRONMENT

- 152** The Architecture of Longevity
Théo Deschamps-Peugeot on how architecture is the first intervention against ageing

BIO HACKING AND ULTIMATE PERFORMANCE

- 107** The Doctor Redefining Age
Dr E on why industrialised healthcare is not the answer

- 140** The Resilience Blueprint
Bulëza Koci on preventing burnout through data-driven health

TRAVEL

- 16** The Luxury Blueprint for Longevity
Sardinia's Blue Zone secrets



welcome TO HUMANWARE

I have always been fascinated by the boundaries of human potential – what’s possible when we apply the best science to the art of living well. The HumanWare Project exists to explore exactly that.

Every week on our podcast and YouTube channel, I sit down with the people redefining what it means to age. They are top scientists breaking down their latest research, pioneering clinicians sharing protocols that actually work and investment leaders revealing where the smart money is flowing in healthtech. These aren’t press snippets or abstracts – they’re real conversations about breakthroughs you can act on today.

This magazine represents the next chapter of that journey. Drawing from our most compelling conversations, we’ve curated the groundbreaking insights that define this moment in longevity science and reconnected with select guests to bring you exclusive updates on their latest work. Inside, you’ll find deep dives into neurohealth and women’s longevity, reviews of the world’s most innovative clinics, and stories from those working at the absolute forefront of science and health. We’ve also analysed investment opportunities with some of the sharpest minds in the sector. And we’ve even explored Sardinia’s Blue Zone to understand how traditional wisdom aligns with cutting-edge science.

This isn’t just a media project for me. My own journey into longevity science began when I watched my grandmother’s health decline a few years ago. It struck me how much incredible research simply isn’t reaching the people who need it most. That disconnect – between laboratories making breakthroughs and families seeking answers – became my mission to bridge.

What started as that personal quest has grown into something much bigger: a community of people who refuse to accept decline as inevitable. People who want evidence, not hype. Science, not snake oil. Real solutions, not false promises.

We’re hand-delivering copies of this inaugural issue to leading minds in the longevity sector. If you’d like your own copy, or know someone whose work deserves to be featured in future issues or on our podcast, please reach out to magazine@tela.space

The future of human health and longevity is being written right now. We’re already so used to optimising the hardware and software in our lives, and I believe we’re now at the start of our journey to optimise our humanware. Most people will hear about the breakthroughs you’ll read about on these pages in years or decades. You’re getting them today.

Welcome to the conversation.



Méline Liu

Founder & Editor-in-Chief



Letter from the Editor

When Méline and I first discussed her vision for HUMANWARE, I knew immediately this was something special. After more than two decades building media brands, I've learned to recognise the rare moments when timing, topic and purpose align perfectly. This is one of those moments.

We're witnessing something remarkable in media right now. As algorithms flood our feeds with questionable content and AI makes it increasingly difficult to discern fact from fiction, people are craving something real. Something they can hold. Something they can trust. The resurgence of print isn't nostalgia – it's a hunger for authority, for curation, for the confidence that comes from knowing expert minds have carefully selected and verified every word you're reading.

HUMANWARE exists at the intersection of this media renaissance and humanity's most ambitious frontier: the optimisation of human potential. Together with Méline, we're building more than a magazine – we're creating the definitive media platform for the longevity revolution. Our ambition is to become the leading voice in health innovation and tech investment, bridging the chasm between breakthrough science and the people whose lives it will transform.

Méline has an extraordinary ability to connect with the brilliant minds pushing the boundaries of what's possible. My role – and that of our editorial team – is to ensure their insights reach you in the most compelling, accessible and actionable way possible. Together, we're democratising knowledge that has for too long remained locked in laboratories and boardrooms.

This inaugural issue is just the beginning. We're giving a platform to the incredible innovators at the forefront of longevity science, neurohealth, and women's health. These aren't just interviews – they're windows into the future of human potential, carefully curated for those who refuse to wait decades for mainstream medicine to catch up.

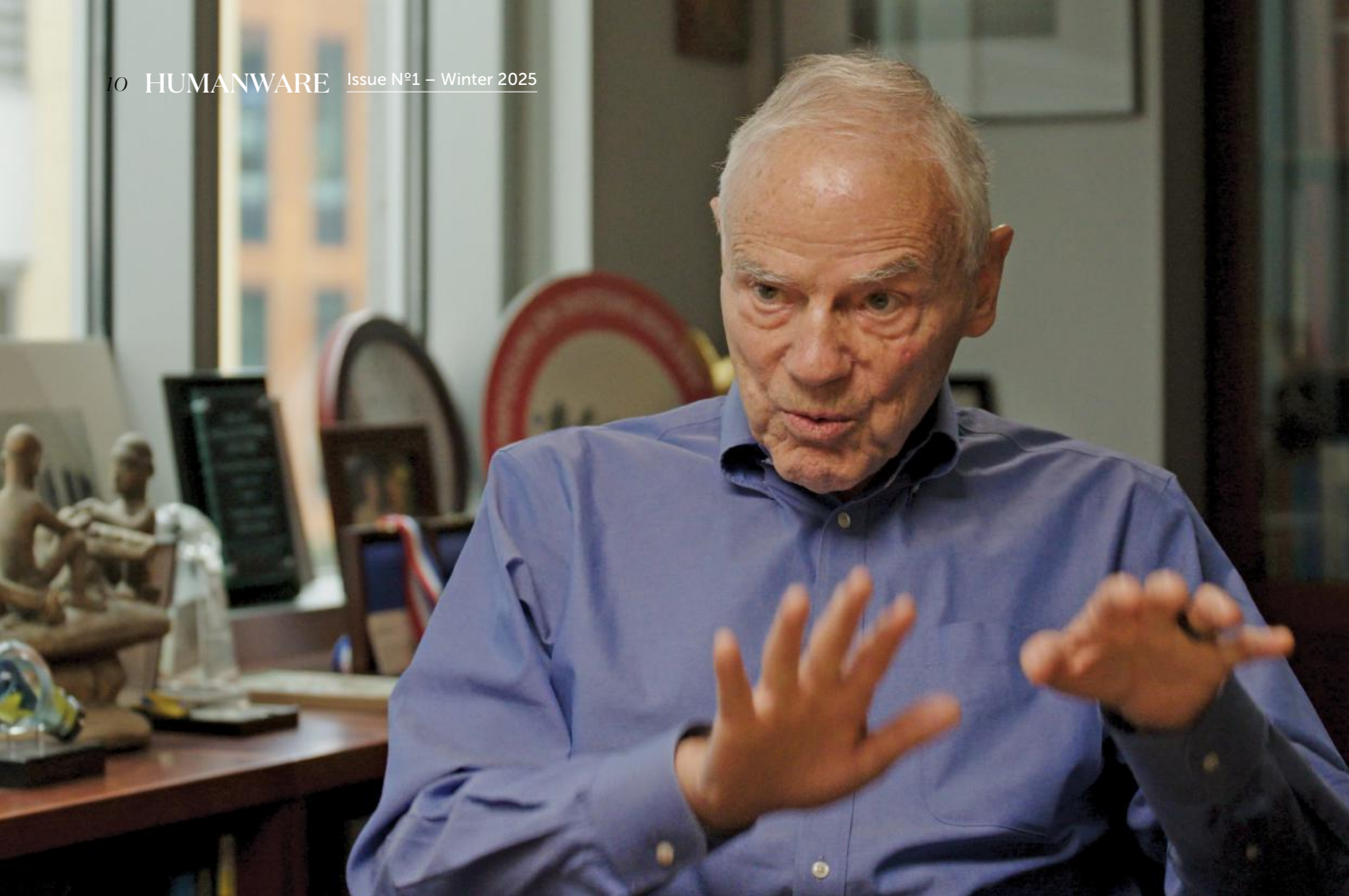
And we want more of them. If you know someone whose work deserves to be featured in these pages or on the HumanWare video/podcast series, please reach out to us at magazine@tela.space

This magazine hopes to create something tangible from the intangible promise of tomorrow. Something you can pore over, mark up, share and return to. Something that gives you insight into how we could well be living tomorrow – hopefully longer, healthier and happier.

Thank you for joining us at the start.



Jo Caruana
Editor



The Genome Revolutionary

*The scientist who gave us the tools to read human DNA
now wants to rewrite the entire healthcare system*

In May 1985, 12 scientists gathered at the University of California, Santa Cruz, for what would become one of the most consequential meetings in human history. Among them was Lee Hood, a Caltech professor whose automated DNA sequencer would make the impossible possible. The question on the table: should humanity attempt to read its own genetic blueprint?

The room split evenly – six for, six against. Those opposed feared that “big science” would devour research funding and destroy individual inquiry. It

would take five years of persuasion, but Lee and his allies prevailed. The Human Genome Project that emerged from that meeting didn’t just transform biology, it launched a technological revolution that decreased DNA sequencing costs by nearly six orders of magnitude, from £74.8 million (\$95 million) per genome to just £157 (\$200) today.

Now 86, Lee stands at another inflection point. After revolutionising how we read DNA as one of the creators of the Human Genome Project, he wants to transform how we use that knowledge. His vision:

“Within the next 15 years, we’ll have the evidence to convince all the sceptics that we should replace a disease-oriented healthcare system with one that focuses on wellness”

replace our disease-focused healthcare system with one centred on wellness and prevention. “Within the next 15 years, we’ll have the evidence to convince all the sceptics,” he declares from his office at the Institute for Systems Biology in Seattle, which he founded in 2000.

Lee’s journey to this moment began when he was six years old in 1944, watching his brother struggle with Down syndrome. “I remember asking the doctor about my brother’s condition,” he recalls. “The doctor couldn’t explain it, and that planted a seed – I wanted to understand human complexity and be able to unravel it.”

That childhood curiosity evolved into a career that reads like a highlight reel of modern biotechnology. Lee developed four instruments that became fundamental to genetic research: the automated DNA sequencer (1986), protein sequencer (1982), DNA synthesiser (1983), and peptide synthesiser (1984). Without his DNA sequencer, which replaced radioactive labels with fluorescent dyes, the Human Genome Project would have remained a pipe dream.

But Lee has never been content with past achievements. He has co-founded between 15 to 17 biotechnology companies, served as an early advisor to Amgen (now employing approximately 28,000 people globally), and earned election to all three US National Academies – a distinction shared by only 20 people.

An advocate for P4 healthcare, Lee coined the concept in 2003 to illustrate an important shift in the way we think about health, emphasising a predictive, preventive, personalised and participatory approach. “Your genome is essentially the source code that gives you potential health trajectories,” Lee explains. “But what really affects which trajectory you take is your behaviour and environment.”

This isn’t just theoretical. Through Arivale, a company Lee founded that operated from 2015 to 2019, his team tracked 5,000 individuals using genomic and blood data. They documented 167 people transitioning from wellness to chronic disease, including 35 who developed cancer. In 10 out of 10 cancer cases studied, they found proteins elevated in the blood years before clinical diagnosis – proteins that could enable therapeutic prevention before disease becomes manifest.

The implications are staggering. According to Lee, chronic diseases consume 86 per cent of America’s £3.54 trillion (\$4.5 trillion) annual healthcare budget.

He believes his approach could generate trillions of dollars in savings by preventing these diseases rather than treating them after onset.

His vision extends beyond individual health to democratising medicine globally. He imagines wearable technologies replacing complex blood analyses, enabling data-driven healthcare delivered through smartphones to underdeveloped countries. “Once we do that, we’ll be able to think about taking it to countries where everyone has cell phones,” he says.

The third paradigm shift Lee envisions involves artificial intelligence creating an “impedance match” between physicians and health data. AI systems would analyse genomic and phenomic data, identify actionable health improvements, explain them clearly to doctors with supporting evidence, and create chatbots to educate families about their health options.

Lee’s ambitions crystallise in his proposed Human Phenome Initiative – a 10-year study of one million participants that would track both genomes and longitudinal health data. This vision recently received major backing, with the Advanced Research Projects Agency for Health (ARPA-H) awarding up to \$52 million to a project led by the Buck Institute. Hood was named Principal Investigator, with his non-profit Phenome Health as a key partner, to build the data and analytical tools for this new era of proactive healthcare. He is actively lobbying Congress and even presented to the new NIH director, who responded enthusiastically: “This is terrific. This is just what we ought to do.”

At 86, Lee maintains the routine of someone decades younger. Rising at 5.30am, he exercises for 40 minutes – claiming he can still do 150 pushups every morning and maintains the weight he carried as a high school football player. His biological age, he says, tests at 70.

His days are packed with Zoom calls to biotech companies, presentations to cancer organisations and strategy sessions about international collaborations. He is in discussions with Luxembourg about launching parallel million-person studies in Europe and the US, recreating the international cooperation that made the original Human Genome Project successful.

“I have a vision of what I want to do before I die,” Lee says. “It’s going to take another 10 or 15 or 20 years to realise that vision. So I have lots to do!” **HW**



Since we spoke...

We went back to Lee for an update on his work since our podcast interview.

Key Things to Know

The Revolutionary Tools

- Developed the automated DNA sequencer that made the Human Genome Project feasible
- Created 4 fundamental instruments for reading and writing genes and proteins
- His technologies decreased genome sequencing costs by nearly 6 orders of magnitude
- Inkjet printer technology he developed is still used by Agilent for DNA synthesis

The Paradigm Shifts

- Transforming healthcare from disease-oriented to wellness and prevention focused
- Democratising data-driven health through wearable tech and smartphones globally
- Using AI to bridge the gap between complex health data and clinical practice
- The Human Phenome Initiative: proposed one-million participant, 10-year study

The Scientific Legacy

- Co-founded between 15–17 biotechnology companies, including early involvement with Amgen
- One of only 20 people elected to all 3 US National Academies
- Founded the Institute for Systems Biology in 2000 to apply systems thinking to disease
- Co-authored *The Age of Scientific Wellness* (Harvard University Press, 2023)

The Personal Practice

- Advocates optimising brain, body and microbiome health as three pillars
- Emphasises exercise diversity: strength, stretching and balance
- Promotes continuous learning as key to brain health
- At 86, claims biological age of 70 through disciplined wellness practices

Q: What has been the most exciting development at Phenome Health since we last spoke?

LH: We are in the process of exploring major partnerships with the Luxembourg Institute for Health (for among other things a major multi-omic study of pregnancy and early childhood development) and a second partnership with the Turkish company, SZA Longevity, for a global million person project focused on Asia initially.

Q: Any breakthroughs with your AI chatbot system?

LH: We are in the process of creating a company that will push, with appropriate resources, the use of AI for delivering actionable possibilities to individuals, and will further advance the data-health chatbot for the education of physicians, patients and individuals.

Q: Any changes to your exercise routine to maintain the 15-year gap between your biological and chronological age?

LH: None. I have had a series of two major operations that took me out of my routine. I am just working back into it.

Q: What's next on the horizon?

LH: We see a major partnership with the Luxembourg Institute of Health for phonemics in the EU.



Dr Hood's complete interview explores his journey from the first Human Genome Project meeting to his vision for transforming global healthcare. Watch the full conversation on [The HumanWare Project](#) on YouTube or your preferred podcast platform. Learn more about the Institute for Systems Biology at isbscience.org



Rewiring REALITY



*A neuroscientist's midnight experiment
with electromagnetic fields is quietly
revolutionising how we repair the brain*

At midnight in a cluttered California workshop, Dr Nicholas Dogris placed an experimental device on his head and told his engineer, “Just call 911 if something goes wrong.” The neuroscientist had spent months building this electromagnetic field generator – not for fame or funding, but because his newborn son’s brain injury had left traditional medicine with no answers. What happened next would reshape our understanding of how the brain heals itself.

“I didn’t feel anything at first,” Nicholas recalls of that pivotal moment in 2005. “Then suddenly the lights seemed brighter. We both felt incredibly alert.” He and his engineer worked until dawn, energised by frequencies gentler than Earth’s natural pulse. Neither had expected the electromagnetic field to affect anyone beyond the person wearing the NeuroField device. They were wrong.

Today, from his Santa Barbara clinic, Nicholas treats conditions ranging from autism to cognitive decline using principles that sound almost mystical: the Earth vibrates at 7.83 cycles per second, our hearts create electromagnetic fields that others can feel, and the brain – that 85-billion-neuron symphony conducting seven quadrillion events per second – can be retuned like an instrument.

The science is remarkably solid. Phase amplitude coupling, the synchronisation between brain regions that Nicholas manipulates, features extensively in *Nature* and the *Journal of Neuroscience*. His board certifications and four advanced degrees establish impeccable credentials. Yet his journey began not in laboratories but in desperation – standing over an incubator, looking at his premature son’s charts, knowing that the neurofeedback techniques he’d practised for 12 years wouldn’t be enough.



“Have you ever sat with somebody where you create the feeling of love? That can emanate from a person. Hearts can synchronise.”

“We’re essentially physical therapy for the brain,” explains Nicholas, whose 35-year career bridges the gap between cutting-edge neuroscience and practical application. Unlike medications that mask symptoms, his electromagnetic treatments aim to restore the brain’s natural frequencies. The approach challenges pharmaceutical orthodoxy as he notes that antidepressants perform no better than placebo for mild to moderate depression – a claim supported by landmark studies in *BMJ* and *JAMA*.

His son, that fragile infant with the hypoxic brain injury? Now finishing university. “He has his challenges,” Nicholas admits. “But he’s functional, self-sufficient and intelligent – a really sweet and great guy.” It’s an outcome that traditional medicine could never have promised.

The implications extend far beyond individual healing. Nicholas warns of an “anxiety generation” born between 1995 and 2005, so dependent on devices that losing their phone triggers genuine fear. His prescription is deceptively simple: no social media before age 15, limited screen time, real books, live music, meditation. “Experience the world,” he urges. “Travel, hike, love, lose. Do it all.”

Perhaps most compelling about Nicholas’ work isn’t the technology itself, but the philosophy behind it. Where modern medicine often dulls experience to

manage symptoms, his treatments enhance awareness. “You’re going to feel more,” he tells patients. “Things may hurt more. Things may be funnier. Your experience is going to change.” Refreshingly, in an age of numbing ourselves through screens and substances, he offers the opposite: fuller engagement with being human.

The workshop where that midnight experiment took place has evolved into NeuroField Neurotherapy, where two board-certified practitioners apply these principles daily. They measure brains with the precision of computational neuroscience, identify imbalances, then apply electromagnetic frequencies calibrated to each individual’s needs. No dramatic shocks or powerful magnets – just gentle pulses that remind the brain how to harmonise with itself.

As the conversation concludes, Nicholas recommends the journal *Brain Stimulation* for those seeking deeper understanding. But perhaps the most profound insight comes from his description of electromagnetic connection itself: “Have you ever sat with somebody where you create the feeling of love? That can emanate from a person. Hearts can synchronise.”

In Santa Barbara, they’re not merely treating brains. They’re exploring what happens when science finally catches up to what mystics have always known – that we’re all frequencies, resonating together. **HM**

Key Things to Know

The Earth's Frequency Is Medicine

- The planet vibrates at 7.83Hz (the Schumann frequency)
- Traditional healing cultures have used electromagnetic fields throughout history
- Modern devices can replicate and enhance these natural healing frequencies
- Effects can fill an entire room, not just affect the person wearing the device

Your Brain Is Remarkably Plastic

- Contains 85 billion neurons creating 7 quadrillion events per second
- Can be 'retuned' even decades after injury
- Responds to electromagnetic stimulation without conscious awareness
- Always attempts to repair itself – it just needs the right frequency

The Anxiety Generation Crisis

- Those born between 1995 and 2005 show unprecedented device dependence
- Instant gratification culture is creating 'ADHD society'
- Screen exposure before age 15 is particularly damaging
- Fear response is triggered when separated from phones

Beyond Traditional Treatment

- Antidepressants are no better than placebo for mild to moderate depression
- Medications mask rather than heal underlying issues
- Electromagnetic therapy addresses root neurological imbalances
- No significant side effects compared to pharmaceutical interventions

The Future of Brain Health

- "Physical therapy for the brain" is becoming a legitimate medical discipline
- FDA has approved limited applications, wider adoption coming
- Combines ancient wisdom (meditation, breathwork) with cutting-edge tech
- Enhances rather than dulls human experience and awareness

Since we spoke...

We went back to Nicholas for an update on his work since our podcast interview.

Q: What has been the most exciting development at NeuroField Inc. since we last spoke?

ND: The most exciting development in the last two months has been the release of our new Neurofeedback programme. This programme utilises state-of-the-art computational neuroscience methods to generate the most accurate data possible for the purposes of running seamless neurofeedback training. We have developed a real-time 'cleaning engine' that can remove artefacts from the record with a 50-millisecond delay. It is truly amazing.

Q: Any new insights from your low-intensity electromagnetic research?

ND: We are looking at the body-mind as a whole. The phase relationships of the heart and the brain are integrated, in my opinion, which is why I am generating hypotheses about how to 'synchronise' them more effectively.

Q: Has your son continued to make progress?

ND: He's doing great. He's going to graduate from university this December.

Q: What's next on the horizon?

ND: Everyone asks me that... All I can say right now is: "Light." I am very interested in looking at our energy field and how we can learn to use it for health and wellness.



Dr Nicholas Dogris' complete conversation on electromagnetic healing and the future of neuroscience is available at [The](#)

HumanWare Project. Learn more about NeuroField Neurotherapy at neurofieldneurotherapy.com





THE Luxury Blueprint FOR LONGEVITY

Sardinia, the world's first identified Blue Zone, is a living laboratory where longevity isn't just studied, it's lived, breathed, and now, for the discerning few, experienced in unprecedented luxury

by VERONICA STIVALA

A shepherd emerges from the morning mist, his weathered hands steady on his walking stick, his eyes bright with the clarity of someone who has seen 93 summers. Behind him, a flock of sheep moves across terrain that would challenge hikers half his age. This is Sardinia – where growing old is not surrender, but mastery.

In the rolling hills of this Mediterranean island, something extraordinary happens. Men live as long as women, centenarians outnumber their global counterparts by tenfold, and the very air seems infused with the secret of extended life. This is the world's first identified Blue Zone, a living laboratory where longevity isn't just studied – it's lived, breathed and now, for the discerning few, experienced in unprecedented luxury.

The Science of Sardinian Immortality

What makes Sardinia unique isn't merely its stunning coastline or rustic charm, it's a demographic miracle that has captivated scientists worldwide. Here, the male-to-female centenarian ratio approaches an almost impossible 1:1, defying global patterns where women vastly outlive men. In the province of Nuoro, this phenomenon becomes even more pronounced, suggesting that something in the Sardinian way of life fundamentally rewrites the rules of ageing.

The answer lies in a complex symphony of genetics, lifestyle and environment. Sardinians carry unique variants in the FOXO3 gene, linked to enhanced resilience against age-related diseases, while the APOE gene offers protection against cognitive decline and cardiovascular conditions. Centuries of geographic isolation and intermarriage have concentrated these beneficial traits across generations, creating a genetic foundation for longevity that modern science is only beginning to understand.

But genetics alone don't explain the shepherd's vitality. His daily trek across steep, uneven terrain – a routine followed by generations before him – provides low-intensity cardiovascular exercise that surpasses

any fitness centre. This natural movement, combined with a diet that reads like a nutritionist's fantasy, creates the perfect storm for extended healthspan.

“Today's most sophisticated travellers are discovering Sardinia offers something no amount of wealth can typically buy”

The traditional Sardinian table tells its own story of longevity. Ninety-five per cent plant-based, rich in legumes and whole grains, punctuated by fermented sheep's cheese and the

occasional celebratory feast of pork or lamb. Even the bread carries history: *pane carasau* and *pane civraxiu* made with mother yeast preserved for three centuries, connecting each meal to an unbroken chain of tradition.

Perhaps most intriguingly, moderate consumption of Cannonau wine – one to two glasses daily – contributes not just to cardiovascular health but to the island's remarkable social fabric. This isn't about restriction; it's about balance, community and the understanding that longevity without joy is merely existence.



Where Ancient Wisdom Meets Modern Luxury

Today's most sophisticated travellers are discovering that Sardinia offers something no amount of wealth can typically buy: access to the authentic lifestyle principles that create centenarians. But this isn't about roughing it in shepherd's huts. It's about experiencing these time-tested traditions through the lens of uncompromising luxury.

At **Forte Village Resort's Acquaforte Thalasso & Spa**, the island's healing traditions merge with cutting-edge medical science. Their revolutionary thalassotherapy circuit features six pools of pure Sardinian seawater at varying temperatures and saline densities, rich in magnesium and sodium. The 'Heavenly Legs' treatment – a sea walk in high-density salt water – revitalises circulation in ways that landlocked spas simply cannot replicate.

The resort's Forte Lab Diagnostic Centre represents the pinnacle of personalised medicine, offering rapid, comprehensive health assessments that would make Harley Street envious. From cardiovascular evaluations to metabolic analysis, guests receive a complete biological blueprint, enabling precision interventions that optimise their unique genetic potential.

Dr Claudio Tavera has perhaps perfected the art of discreet luxury wellness, offering bespoke IV therapy that comes to you, whether aboard your yacht in Porto Cervo or in your villa overlooking the Costa Smeralda. His regenerative medicine protocols, including cutting-edge NAD+ therapy for cellular rejuvenation, transform recovery and optimisation into an utterly seamless experience.

But perhaps the most intriguing development is **Nuraxi**, Sardinia's AI longevity company, which is creating digital twins based on data from over 10,000 super-agers. Their SABA project analyses the biomarkers, behaviours and environmental factors that contribute to exceptional ageing, offering clients a predictive blueprint for their optimal healthspan. It's not just about adding years to life, it's about ensuring those years are lived at peak vitality.



"The most intriguing development is Nuraxi, which is creating digital twins based on data from over 10,000 super-agers"





“While others collect art or classic cars, the most sophisticated individuals are collecting experiences that enhance their biological age and quality of life”

The Epicurean Path to Immortality

The Blue Zone diet isn't a restriction, it's a revelation. In Sardinia, this translates to experiences that would grace the pages of any epicurean's journal. Private chefs trained in traditional techniques create bespoke menus that honour centuries-old recipes while accommodating the most refined palates.

At **Cascioni Eco-Retreat**, guests pick medicinal herbs and aromatic plants with botanists, watching as these are transformed into treatments using estate-produced olive oil and honey. The property's *Ulia* restaurant invites guests to harvest directly from kitchen gardens, experiencing the profound connection between earth and table that characterises authentic Sardinian dining.

The Longevity Tours offered by local specialists provide perhaps the most authentic immersion into centenarian lifestyles. Picture learning bread-making with ancient mother yeast in the home of a 95-year-old baker, or gathering almonds with women in their nineties who still remember songs their grandmothers sang. These aren't tourist experiences, they're initiations into a way of life that has sustained human vitality for millennia.

The island's Cannonau wine culture offers its own sophisticated pleasures. These are educational journeys into understanding how moderate consumption of this flavonoid-rich wine contributes to cardiovascular health and stress reduction. Local vineyards open their cellars for private sessions, where the conversation flows as freely as the wine, embodying the social connections that are fundamental to Sardinian longevity.

Adventures in Active Ageing

The Sardinian landscape itself becomes a gymnasium for those wise enough to embrace natural movement. The **Selvaggio Blu trek** – six to eight days traversing sea cliffs, deep gorges and natural arches along the eastern coast – represents perhaps the most challenging and beautiful mountaineering experience in Italy. Led by certified IFMGA guides, these expeditions can be combined with luxury yacht support, creating an adventure that pushes boundaries while maintaining comfort.

For those seeking less extreme but equally transformative experiences, Sardinia's outdoor fitness culture embraces the natural terrain as the ultimate training ground. Technogym equipment positioned to take advantage of stunning vistas turns routine exercise into meditation in motion. Private trainers specialising in Blue Zone movement principles design programmes that mirror the natural activity patterns of Sardinian centenarians.

The island's coastline, with its Caribbean-blue waters and secluded coves, offers its own form of active meditation. Luxury yacht charters provide access to pristine diving sites, hidden beaches accessible only by sea and the profound tranquillity that comes from floating in crystalline waters while surrounded by dramatic limestone cliffs. This truly is a direct engagement with the 'blue mind' state that research shows reduces stress hormones and promotes cellular repair.



The Alchemy of Community and Purpose

What truly sets Sardinia apart isn't just what its centenarians eat or how they move, it's how they connect. The island's social fabric, woven from multi-generational households, daily gatherings and shared laughter, provides a template for the kind of community bonds that research shows are as crucial to longevity as diet and exercise.

Luxury wellness retreats like those offered by **Healiday** create intimate experiences for small groups, fostering genuine connections while maintaining exclusivity. Their 'Blue Zone Bliss' programmes explicitly embrace the balance of pleasure and health that characterises authentic Sardinian living – "no imposed diets, wine is a big part of it" – recognising that sustainable longevity isn't about deprivation but about joyful, intentional living.

The island's artisan workshops offer profound experiences in purpose and mastery. Learning traditional textile weaving from women who carry forward techniques unchanged for centuries, or crafting jewellery inspired by Nuragic designs with master artisans, provides the kind of meaningful engagement that contributes to psychological longevity. These aren't mere activities – they're investments in the sense of purpose that Blue Zone research identifies as crucial to extended healthspan.

"The Longevity Tours provide perhaps the most authentic immersion into centenarian lifestyles"

A Living Investment

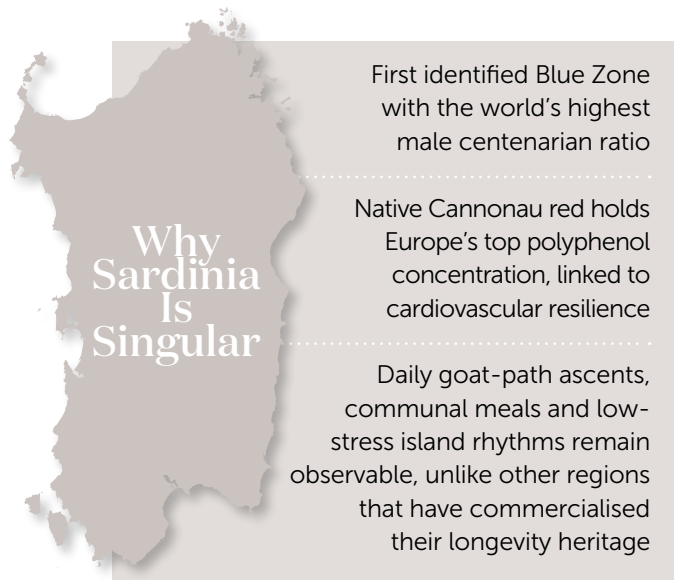
Sardinia represents more than a destination. It's a paradigm shift in how we think about luxury travel and personal investment. While others collect art or classic cars, the most sophisticated individuals are now collecting experiences that fundamentally enhance their biological age and quality of life.

The island's offerings range from AI-powered health optimisation to hands-on cultural immersion, from challenging physical adventures to profound spiritual experiences. Each component works synergistically, much like the lifestyle factors that create Sardinian centenarians themselves.

While some may be tempted to think this is medical tourism disguised as leisure travel, it is something quite different and is indeed the emergence of a new category entirely: experiential longevity. So Sardinia does not just offer the chance to visit a Blue Zone, but provides the opportunity to temporarily adopt the lifestyle that creates centenarians, supported by every luxury and convenience that modern wealth can provide.

For those who have achieved everything material success can offer, Sardinia presents the ultimate acquisition: time itself. Not just more years, but more vital, engaged, joyful years. In a world obsessed with anti-ageing, Sardinia offers something far more valuable: the secret to ageing well.

The shepherd continues his morning walk, his sheep following paths worn smooth by countless generations. He embodies a different relationship with time, one where each day accumulates not just experience but vitality. For those wise enough to listen, he offers the most valuable investment advice of all: the best portfolio isn't financial but biological. **HW**



THE INFINITY



From space exploration to decoding human biology, Peter H. Diamandis is approaching ageing as a solvable challenge

There's a moment in every conversation with or about Peter H. Diamandis when the future suddenly feels inevitable. Not distant or theoretical, but imminent and malleable. "We're living during a period of miracles," he states, matter-of-factly. At 63, the serial entrepreneur who once convinced the world that private citizens could build spaceships is now equally certain about something far more audacious: that ageing is optional. "This is the most exciting time ever to be alive," he insists, and means it.

This isn't Silicon Valley's usual techno-optimism. Peter brings receipts. Through Fountain Life, his preventive health company co-founded with Tony Robbins, he is building what amounts to a Formula One pit crew for the human body. Members undergo four-hour "uploads" – comprehensive scans generating 200 GB of data about everything from their genome to their gut microbiome. According to Peter, 14.4 per cent of people have either cardiovascular disease, metabolic disease or neurodegenerative disease, while 3.5 per cent of people have a cancer they don't know about



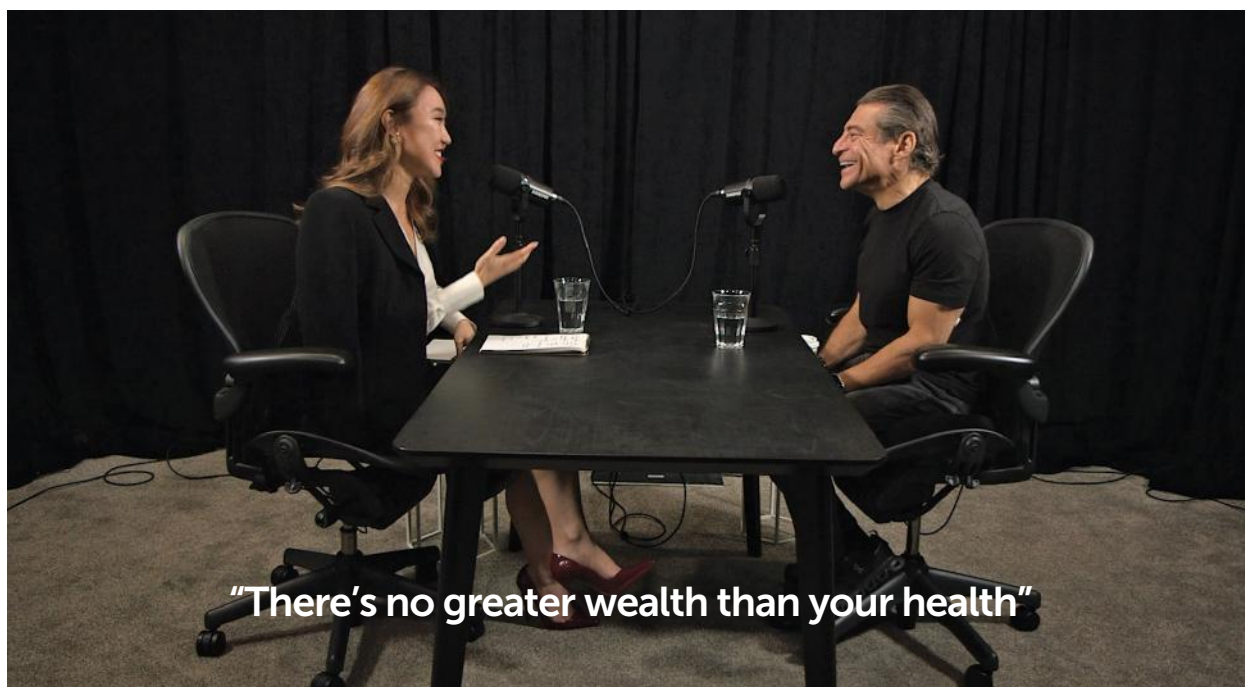
ENTREPRENEUR

and 2.5 per cent have an aneurysm they don't know about. These discoveries emerge not from traditional medicine but from technology that completely sidesteps a system he views as fundamentally outdated.

"The medical industry is a very old industry. It hasn't changed much," he observes, having watched the system from inside during his Harvard medical training. "It's much easier to do what you did last year or 10 years ago, or what you learned in medical school 20 or 30 years ago," he adds. His solution? Bypass the system entirely. Create new infrastructure where AI

analyses what no human physician could comprehend: 40 trillion cells, each running billions of chemical reactions per second.

The path from space entrepreneur to longevity evangelist seems improbable until you understand Peter's operating system. Born to Greek immigrants – his mother moved to the US when she was 10 while his father left the island of Lesbos for the first time to attend medical school – he grew up torn between two futures. His parents assumed medicine; he dreamed of rockets. "Star Trek and Apollo shaped my life," he



recalls fondly. The compromise was characteristic: he attended medical school to honour his parents – while simultaneously running space companies on nights and weekends.

That pattern of pursuing the impossible while keeping one foot in credibility defines his entire approach. When he pitched Elon Musk on funding the XPRIZE instead of starting SpaceX, Musk politely declined and built rockets anyway. “He reminds me that I tried to talk him out of building SpaceX,” Peter laughs. “And I say, thank God I didn’t succeed because what he’s done is amazing.”

But it’s the concept of Massive Transformative Purpose (MTP) that drives his serial entrepreneurship. “I truly believe everybody was born to do one special thing only they are born for – but it takes a lot of courage, trial and failure to find it.” Not content with a single mission, Peter has evolved through multiple MTPs: opening space commercially, helping entrepreneurs impact a billion people, and now “helping scientists and entrepreneurs create the breakthroughs that will give us longevity escape velocity.” Each phase builds on the last, creating what he calls a “future bigger than your past.” The current focus on longevity stems from a simple conviction: “There’s no greater wealth than your health.”

His personal regimen would alarm most doctors. Peter ingests upwards of 80 pills daily, constantly adjusting based on quarterly blood work. He tracks every conceivable biomarker through continuous glucose monitors, Oura rings and regular full-body scans. Critics might call it extreme (he jokes that his mother calls him crazy); but he calls it data collection. “I’m the chief guinea pig,” he admits, testing so others won’t have to.

The numbers tell a sobering story. Peter cites studies saying that Americans live to 78 on average but enjoy good health only until 63 – a 15-year “disability gap” that Peter finds unacceptable. Yet he’s equally insistent that genetics play a surprisingly small role. He references research suggesting that heredity accounts for, at most, 30 per cent of longevity, possibly as little as 7 per cent. The rest? “Sleep, diet, exercise, mindset and the supplements and medications you take.”

Mindset, particularly, obsesses him. He cites research claiming that optimists live 15 per cent longer than pessimists, controlling for all other factors. “If you believe that over the next 10 years we’re going to have these incredible breakthroughs that give you vitality and energy for additional decades, you need to stay in good health to intercept those breakthroughs,” he explains. Without that belief, why resist the chocolate cake?

Thinking beyond individual optimisation, Peter imagines AI health coaches that know your biology better than you do, suggesting meals and activities in real time. Medical AI that’s free and universally accessible. A world where “the best AI doctors” democratise what Fountain Life offers to elite members. According to Peter, the gap between today’s ‘reactive sick-care’ and tomorrow’s ‘predictive health-care’ will close rapidly as exponential technologies converge.

“The world’s biggest problems are the world’s biggest business opportunities,” he likes to say. “Want to become a billionaire? Help a billion people.” It is the kind of aphorism that sounds glib until you realise he’s done it repeatedly. Now, with longevity as his focus, he is attempting his most ambitious transformation yet: turning death from inevitability into engineering challenge. **HW**

Key Things to Know

The Fountain Life Approach

- Four-hour comprehensive health “uploads” generating 200 GB of data per person
- Full genome sequencing, MRI scans, coronary CT and microbiome analysis
- AI-powered analysis to catch conditions before symptoms appear
- APEX membership at £15,748 (\$20,000) annually includes year-round medical team support
- According to Peter, significant percentages of members discover unknown cancers, aneurysms or cardiovascular conditions

The Genetics Myth

- Your DNA accounts for only 7–30% of your longevity potential
- The remaining 70–93% comes from lifestyle choices
- Key factors: sleep quality, anti-inflammatory diet, consistent exercise, positive mindset
- Optimists live up to 15% longer than pessimists, according to research he cites
- Building muscle mass is one of the most powerful pro-longevity interventions

The MTP Framework

- Massive Transformative Purpose (MTP): an emotionally driven mission that sustains you through challenges
- Peter has evolved through four MTPs over his career
- Most people don’t know their purpose – even top university students
- His AI tool purposefinder.ai helps discover your MTP through targeted questions
- Commitment to a decade-long journey is essential for significant impact

The Convergence Prediction

- Peter suggests the next decade could see unprecedented technological progress
- AI will democratise advanced medical diagnostics
- Wearables, implantables and ‘insideables’ will continuously monitor our biology
- The fusion of physics-based modelling and AI will accelerate drug discovery
- Peter envisions that free AI doctors will eventually provide world-class medical guidance to everyone

The Daily Protocol

- Peter takes 80+ supplements daily, constantly adjusted based on blood work
- Minimum seven hours sleep, goal of eight
- One gram of protein per pound of body weight
- Gym workouts at least five days weekly
- Quarterly blood tests to measure and adjust all interventions

Since we spoke...

We went back to Peter for an update on his work since our podcast interview.

Q: What has been the most exciting development at Fountain Life since we last spoke?

PD: The first development is that we’ve doubled down on the development of our AI system Zori, which is able to provide incredible insights because of the access it has to every member’s wearables and diagnostic data. The second development is our focus on longevity-related therapeutics, such as access to stem cells, exosomes, stem cell immune system re-education and other impactful therapies.

Q: Any new patterns or significant changes in the diagnostics data (e.g. prevalence of previously unknown diseases)?

PD: I’ve been able to increase my deep sleep by around 30% so that I’m routinely getting 1.25 to 1.5 hours of deep sleep, which is a game changer for me. I’ve also been able to rebalance my microbiome, an effort I’ve been working on for the past year.

Q: Any further adjustments to your supplementation or general health routine based on recent blood work?

PD: I’ve added a morning vibration plate exercise for 10 minutes to stimulate and support bone growth in my hips and pelvis. For supplements/meds I’ve added Kyzatrex (an oral form of testosterone to support muscle and bone growth), GHK-Cu peptide to support hair growth, 1.2 gm of NMN (Wizard Sciences with Apigenin and Ginsenosides), an evening injection of sermorelin peptide to stimulate IGF-1 (Insulin-like growth factor 1), and increased intake of B vitamins and glutathione.

Q: What’s next on the horizon?

PD: Our Abundance Longevity Trip at the end of September sold out early and will no doubt be our best ever. I am also getting ready for the Abundance Summit 2026 and making sure we have the top faculty there. Meanwhile, I have doubled down on my Moonshots Summit and am working on growing it into a leading global podcast on AI, Crypto and Exponential Tech. And I am also focusing on the growth of Fountain Life, specifically expanding the ability of our Zori AI and adding three new centres over the next six months in Houston, Miami and Los Angeles.



Peter H. Diamandis was interviewed for The HumanWare Project. To watch the full conversation and explore more pioneers reshaping human potential, visit The HumanWare Project online. Learn more about Fountain Life at fountainlife.com





Beyond

The mice are sleeping side by side, their bodies surgically joined at the flanks. In a few weeks something extraordinary will happen: the old mouse will grow younger while its youthful partner ages prematurely. This is heterochronic parabiosis – the scientific term for what may sound outlandish but has become Dr Irina Conboy's gateway to understanding how we might reverse human ageing.

"People are pretty much forced into dogma," Irina says from her Berkeley laboratory, where she has spent two decades challenging everything we thought we knew about growing old. The UC Berkeley Professor of Bioengineering doesn't just study ageing – she is fundamentally reimagining what it means to age at all.

Irina's fascination with ageing began early. Growing up in what was then the Soviet Union, she picked up on small but telling changes: "I could fit under the table before. Now I cannot fit under a table anymore." She observed her grandmother's wrinkled skin and projected forward to her own future. From that point, her motivation crystallised: to understand how biological systems work and apply that knowledge to ageing research.

The Discovery That Changed Everything

In 2005, Irina and her husband Michael published findings that sent shockwaves through the scientific community. By surgically connecting young and old mice – "like unzipping two sleeping bags and zipping them together," as she describes it – they demonstrated that ageing could be reversed. Within weeks, the old mice showed signs of rejuvenation: improved muscle regeneration, enhanced liver function, better brain health.

But here is what most people missed: the young mice aged just as dramatically. "Almost nobody paid attention to the more interesting point," Irina notes. This was not just about young blood making old mice younger but about understanding ageing as a dynamic, reversible process.

The procedure itself is surprisingly crude. Researchers manually staple the mice together, and within a week, capillaries grow between their skin, allowing blood to flow between the animals. Yet this simple technique revealed an important truth: our blood holds the keys to both ageing and rejuvenation.



Young Blood

Inside the Berkeley laboratory where Dr Irina Conboy's experiments are revealing how ageing can be reversed

"Our blood holds the keys to both ageing and rejuvenation"

Beyond Young Blood

The popular narrative quickly became about "young blood" – a vampire-like fantasy that captured public imagination. But Irina's research pointed in a different direction. "Scientific logic is very often different from common sense logic," she explains. The issue is not that we lose beneficial factors as we age but that we accumulate too many harmful ones.

"Imagine you have a cluster of rotten bananas and you try to make it better by throwing good bananas in this cluster," Irina illustrates. "Bananas are still rotten, right?" The same principle applies to our blood. Adding young factors to an aged system will not solve the underlying problem of accumulated molecular damage.

This insight led to a breakthrough: therapeutic plasma exchange (TPE). By removing and replacing blood plasma – the liquid component of blood – researchers could "dilute" the harmful factors that accumulate with age. The procedure, already FDA-approved for treating autoimmune diseases, showed remarkable rejuvenating effects in both mice and humans.

The Noise of Ageing

Perhaps Irina's most revolutionary concept is viewing ageing through the lens of 'biological noise'. Traditional ageing clocks try to create linear models of how we age, but Irina discovered something different: ageing is characterised by increasing dysregulation – a growing cacophony of molecular signals that disrupts normal function.

"When we are young, there is no pain, no gain," she observes. "When we are old, there is lots of pain and still no gain." This is not because of one faulty gene or protein, but hundreds of changes creating systemic chaos. The body's ability to maintain precise regulation breaks down, leading to what Irina calls "entropy" – disorder that manifests as ageing.

Working with Generation Lab, the company she co-founded, Irina has identified specific transition points where this noise dramatically increases: around ages 25-27, 40 and 58. These are not gradual shifts but sudden escalations in biological dysregulation that coincide with observable changes in human performance and health.

The Promise and the Peril

Several clinics now offer plasma dilution treatments, charging “many thousands of dollars” for procedures that Irina herself approaches with caution. “If you do it round after round after round, then there are side effects that become cumulative,” she warns, citing potential liver and kidney damage from repeated procedures and blood thinners.

Her analogy explains this perfectly: “If you have a fish tank then you need to change the water for fish and plants to stay alive. But if you start changing it very frequently, the fish will die.” Our bodies, like that delicate ecosystem, can benefit from periodic ‘cleaning’ but suffer from too-frequent intervention.

This presents a paradox: we understand the mechanism of rejuvenation through plasma dilution, but the practical application remains limited by safety concerns. Generation Lab is working on molecular solutions that could provide benefits without the risks of repeated procedures, though these remain in development.

The Science of Cellular Communication

Before parabiosis captured headlines, Irina’s 2003 *Science* paper revealed another crucial insight: ageing disrupts how cells communicate. In young muscle, cells effectively signal when they are injured, triggering repair. In aged muscle, this communication breaks down. “This is just one cell. This is another cell. They do not talk to each other,” Irina explains.

By restoring this cellular dialogue through manipulation of the Notch signalling pathway, her team rejuvenated aged muscle without any blood exchange. This earlier discovery hinted at what parabiosis would later confirm: ageing is not inevitable degradation but a loss of biological coordination that can potentially be restored.

“Perhaps Irina’s most revolutionary concept is viewing ageing through the lens of ‘biological noise’”



The Future of Human Longevity

When asked about humanity’s potential lifespan, Irina is optimistic but measured. She envisions people living to 120, not just surviving but thriving – playing tennis, maintaining independence. “Simple sanitation and nutrition, for those who can afford them, extended our life from 40 to 80,” she notes. The next leap could be equally dramatic.

But for all the sophisticated science, Irina’s ultimate prescription is surprisingly simple: “There is nothing better than healthy diet and exercise.” She points out

“Simple sanitation and nutrition, extended our life from 40 to 80. The next leap could be equally dramatic.”

that famous longevity scientists follow this advice themselves. “If there was anything else, they would do it.”

The real revolution is not in exotic treatments but in understanding ageing as a controllable process. “Progression of ageing is not only not linear but also dynamic,” Irina explains. “We can move it back. We can move it

forward. All depending on many, many interventions.”

In her Berkeley laboratory, where young and old mice share their lifeblood in the name of science, Irina continues to push the boundaries of what is possible. Indeed, she is not just studying ageing but is systematically dismantling our assumptions about its inevitability. **HW**



Since we spoke...

We reached out to Irina for an update on her research since recording the interview.



Key Things to Know

The Parabiosis Breakthrough

- Surgically connecting young and old mice reverses ageing in the old mouse
- The young mouse ages prematurely – proving ageing is a two-way process
- The procedure takes one to two weeks for blood vessels to connect
- Results appear across all major organ systems

Blood's Hidden Truth

- Ageing is not about losing good factors – it is about accumulating harmful ones
- Plasma dilution (removing 50 per cent in mice, 70 per cent in humans) shows rejuvenating effects
- The procedure is already FDA-approved for other conditions
- Commercial clinics charge thousands but long-term safety for anti-ageing is unknown

The Noise Theory

- Ageing is characterised by increasing molecular 'noise' or dysregulation
- Major transition points occur around ages 25-27, 40 and 58
- The pattern is consistent across different organ systems
- This challenges linear models of ageing

Future Implications

- Potential human lifespan could extend to 120 years with good health
- Simple interventions (diet, exercise) remain foundational
- Understanding ageing as reversible opens new therapeutic possibilities
- Cellular communication restoration offers another avenue for intervention

Q: What has been the most exciting development at Generation Lab since we last spoke?

IC: The first meaningful therapeutic to reverse human ageing.

Q: Do you have any early feedback from your biological age testing customers?

IC: Yes, and the feedback demonstrates causation between the GL SystemAge test on blood samples and the propensity for disease in specific organs. This represents a long-sought advance over the correlative models used in all other tests and approaches.

Q: Have you noticed any personal insights from monitoring your own biological noise levels?

IC: I have not taken the test myself yet, but my husband, Dr Mike Conboy, has – and it proved very insightful. The results showed clinically confirmed causality, which helps to avert progression from a trend to a full-blown disease.

Q: What's next on the horizon?

IC: Reversing biological age in people with injectable shots, safely and effectively (we hope to start doing this in 2025 or early 2026).



Dr Irina Conboy's complete interview on The HumanWare Project offers deeper insights into the science of ageing reversal and the future of human longevity. Learn more about Generation Lab's biological age testing at generationlab.com





THE Tiny Robot REVOLUTION

Inside the California lab where swallowable robots are redefining the future of medical diagnosis

The robot disappears down Torrey Smith's throat with barely a pause. On the monitor beside him, a grainy image flickers to life – the pink, glistening interior of his stomach, transmitted live from a device no larger than a vitamin capsule. “We’re flying a little robot around inside my stomach,” Torrey announces, holding a games console controller. “But we’re not in a hospital. I’m not sedated.”

This is PillBot, and if Torrey and his team at Endiatx have their way, it represents nothing less than the democratisation of internal medicine. In their Hayward laboratory, they are developing robots that can swim through the human body, controlled remotely by doctors anywhere in the world. It is a vision that could overhaul healthcare from Mayfair to Mali – though the path from prototype to patient remains complex.

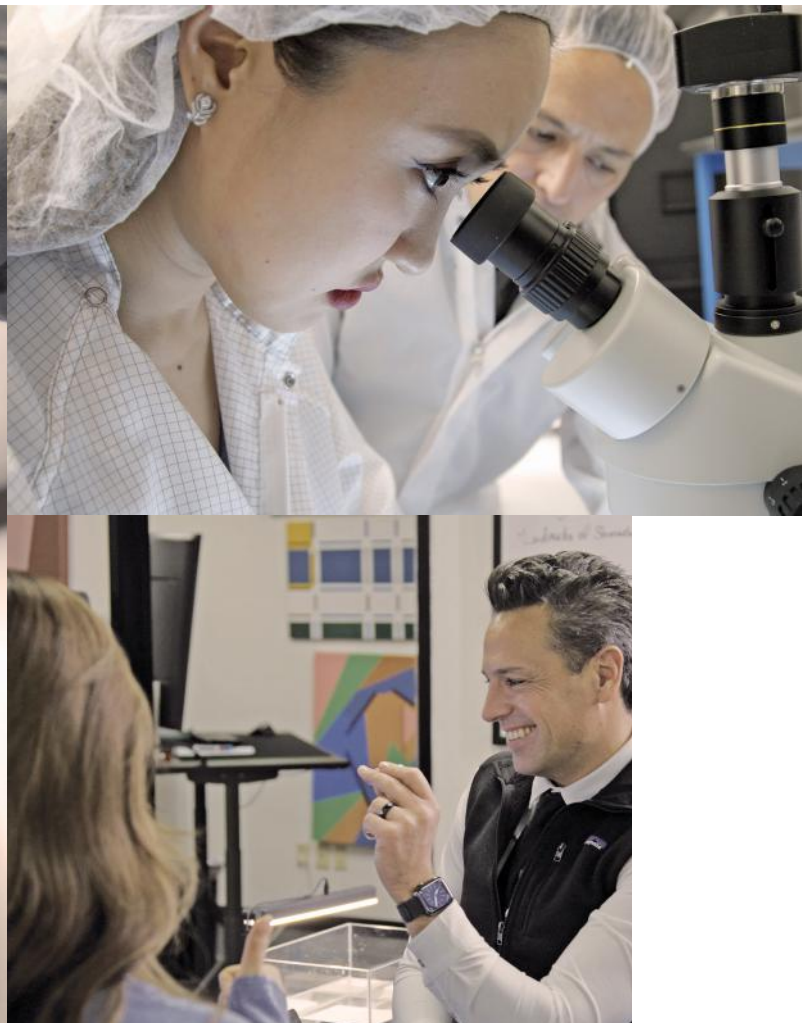
The Physics of the Very Small

Developing a robot that can navigate the stomach presents unique challenges. “When you get very, very small with a little submarine, the water feels thicker and thicker,” Torrey notes. “It’s almost like we’re swimming through honey.” The solution came from an unexpected source – the tiny motors that make mobile phones vibrate, repurposed with custom propellers to create what the team calls “pumpjet thrusters”.

The current investigational PillBot measures 13mm by 30mm, comparable to a large vitamin supplement. Inside this tiny shell, Torrey’s team has packed a 2.3-megapixel camera, LED lights, wireless transmitters and those crucial propulsion systems. The device currently transmits 480x480 resolution video at 10 frames per second – not quite Hollywood quality, but sufficient for medical diagnosis.



“Let’s be just as ambitious with health tech as we are with SpaceX and aerospace”



During the live demonstration conducted for our episode of The HumanWare Project, Torrey swallows two robots in succession. The first acts as a stationary camera; the second swims past it, creating an unprecedented view of one robot filming another inside a human stomach. It is a moment that feels simultaneously futuristic and surprisingly casual – Torrey continues talking throughout, occasionally sipping water to maintain the “fish tank” environment the robots need to navigate.

The Reality Check

Yet for all its promise, the Endiatrix team is still working hard towards obtaining FDA clearance and launching its first product. The device remains in investigational status with FDA clearance still pending, despite Torrey’s optimistic timeline of market entry within “a year or two”. The company’s own documentation emphasises that PillBot is “not FDA cleared or approved” – a crucial distinction in the medical device world.

Nevertheless, medical devices are FDA-regulated and Torrey is keen to underline how the “long R&D process to develop the underlying technology is almost complete after more than six years.”

Reflecting on the occasional early scepticism towards his invention, Torrey remains resolute and optimistic: “The simple truth,” he confides, “is that when I was describing my dream of PillBot to my medical device peers at previous companies, the universal consensus was that PillBot was impossible. I felt differently. I felt that PillBot would be very, very hard, but not impossible. Like landing an orbital rocket.”

The technical challenges that the team has successfully overcome have been equally real. For example, Torrey comments how for buoyancy requirements, the lithium cell occupies close to 10 per cent of the volume of the device – less than the typical volume allocated in such systems. “There’s a lot we have to do inside PillBot, and the battery must make concessions like any other subsystem.



**“We’re flying a little robot around inside my stomach.
But we’re not in a hospital. I’m not sedated.”**

Endiatx’s investigational device is being designed to operate long enough to conduct an upper endoscopy while delivering high quality live video wirelessly.” Interestingly, he notes how the market for endoscopes is currently approximately one hundred times the size of the market for passive pill cameras.

Furthermore, the component costs of the device challenges one of the company’s goals of eventually making the technology accessible in developing nations. To this, Torrey responds by explaining how along the way they have leveraged existing chips and electric motors from the world of consumer electronics, and their cost of goods has fluctuated with the markets and trade-offs associated with “playing Tetris” with other people’s silicon. “The lowest unit cost will come,” he anticipates, “when we have the capital to deploy our own ASIC; but for now we are confident we have a solid gross margin for the short and medium term when we look at the bill of materials.”

Beyond the Stomach

Despite these challenges, Endiatx has ambitions to take PillBot beyond diagnostic gastroenterology. For example, the company recently received a patent for what they term a “pill surgeon” – a future iteration equipped with tools for cutting, cauterising and tissue sampling.

This mindblowing vision resonates with the broader longevity movement’s push towards preventive, personalised medicine. If internal inspection becomes as simple as swallowing a pill at home, with world-class specialists able to examine results remotely, it could fundamentally alter how we monitor and maintain health. Torrey envisions a world where these devices work “in sub-Saharan Africa” as easily as in Silicon Valley, though such democratisation remains years away.

The real revolution may lie not in the technology itself but in what it has the potential to represent – a shift from invasive, hospital-based procedures to accessible, at-home diagnostics. “Let’s be just as ambitious with health tech as we are with SpaceX and aerospace,” Torrey urges, drawing parallels between space exploration and internal medicine. Both frontiers, he suggests, deserve equal innovation and investment.

As our demonstration concludes, the two robots continue their aquatic ballet inside Torrey’s stomach, their lights creating an otherworldly glow on the monitor. “I’m just waiting for the day when a doctor calls us up and says we saved a life today,” he reflects. Until the FDA clears the device and that day comes, PillBot remains a tantalising glimpse of medicine’s possible future – one where the journey into the human body begins with a simple swallow. **HW**



Since we spoke...

We went back to Torrey for an update on his work since our podcast interview.



Key Things to Know

The Technology

- PillBot uses repurposed mobile phone vibrator motors as “pumpjet thrusters”
- Current size: 13mm x 30mm (vitamin capsule)
- Transmits real-time video at 480x480 resolution
- Wireless communication through body tissue

The Procedure Being Developed

- Patients drink water
- No sedation required, unlike traditional endoscopy
- Controlled remotely via hand-held controller
- Robots exit naturally through excretion

The Challenges

- Not yet FDA cleared or approved (investigational status only)
- Component costs may currently be too high for developing world use

The Vision

- “Pill surgeon” patent includes cutting and sampling tools
- If cleared by FDA, remote diagnosis could connect specialists with patients globally
- Goal to eventually make technology accessible in developing nations

Q: What has been the most exciting development at EndiaTx since we last spoke?

TS: It has to be our amazing summer interns. The atmosphere around the office feels more like SpaceX than traditional med tech!

Q: Any updates from your ongoing clinical trials?

TS: We are getting ready for the big FDA trial phase, which is a huge undertaking. The team is working long hours as we approach design freeze on our first product in preparation for our planned submission to FDA.

Q: What's next on the horizon?

TS: While we have made plenty of prototypes over the years, this has all been the lead-up to achieving a platform that does the job reliably and outside of our carefully controlled laboratory conditions. The dream is finally close to becoming a reality.



The full PillBot demonstration premiered on **The HumanWare Project**, offering viewers unprecedented footage of robots navigating inside the human body. Watch the episode there and, for more information about Torrey Smith's work, visit endiatx.com





The Space Between

In a central London clinic, Traditional Chinese Medicine meets modern science through the gentle art of creating room for the body to heal itself

The first thing Dr Peng Zhang does is ask about your birthday, before checking your pulse. Not out of politeness or small talk, but because in his world, the moment you arrived on Earth reveals fundamental truths about your constitution, your vulnerabilities and your path to optimal health. “People are born in different years, on different days, at different times, and through these factors everything is already set up,” he explains. “It’s like a system.”

In his central London practice, Peng bridges 5,000 years of Chinese medical wisdom with the demands of modern metropolitan life. After 25 years treating everyone from chronic pain sufferers to late-stage

cancer patients, he has become that rare practitioner who speaks fluently in both ancient philosophy and contemporary science. His message? The body knows how to heal itself – if we can just create the space for it to remember how.

Peng’s journey into Traditional Chinese Medicine (TCM) began with helplessness. As a boy watching his mother struggle with illness that conventional medicine could not cure, he asked himself a question that would shape his life: “What’s the alternative way?” That search led him from China, where he trained with masters in their 90s who still saw patients daily, to London, where he now treats the particular ailments of the digital age.



**“This is one of
The HumanWare Project’s
most-watched
episodes to date”**

Reading the Body’s Map

Step into Peng’s consultation room and prepare to be read like an ancient text. Your tongue reveals inflammation patterns through its coating and cracks. Your pulse tells stories through six different positions, each connected to specific organ systems. Even your complexion and body language speak volumes to his trained eye.

“The tongue is part of the fascia system,” Peng explains, introducing a concept that bridges Eastern wisdom with Western anatomy. This network of connective tissue, he argues, creates “a large net with various sizes of compartments” throughout the body. When he examines your tongue, he’s not just looking at a muscle – he is assessing the health of a system that connects directly to your internal organs.

During our filmed session with Méline Liu, The HumanWare Project’s founder, Peng demonstrates this diagnostic artistry in real time. His fusion of ancient Chinese wisdom and cutting-edge understanding of the body’s fascial system has made this one of The HumanWare Project’s most-watched episodes to date.

After checking her pulse and examining her tongue, his assessment is precise: “You have a lot of

tension built up on the side of your liver. The crack in the middle of your tongue shows you’re not getting enough sleep. And the white, greasy coating means there’s inflammation in your digestive system.”

The Philosophy of Space

What distinguishes Peng’s approach is his fundamental interpretation of healing as creating space. “The first important step is to enlarge the available space,” he says. “When you create space, the body really can find the right path going back.” He compares it to showing people the way home – once you remove the obstacles, the body naturally returns to balance.

This is not metaphorical. Using gentle manipulation, acupuncture and what he calls “fascia work,” Peng physically creates room in tissues that have become compressed by stress, poor posture and what he identifies as the great malady of our time: the disconnection between mind and body.

“People working in big cities like London or New York have massive information, massive workloads, family commitments,” he observes. “It’s too much. We’re going into overdrive in our minds and separating them from our bodies.” His treatments aim to restore



this lost connection, allowing patients to quite literally come back to themselves.

The science behind this is more sophisticated than it might initially appear. Peng works with the understanding that fascia – the connective tissue modern medicine is only beginning to appreciate – can influence internal organ function. By releasing restrictions in superficial tissues, he claims to affect deeper systems. It is an approach that makes Western medical professionals sceptical, yet his patient roster tells its own story of integration.

Beyond the Needle

While acupuncture remains central to his practice, Peng has developed techniques that challenge preconceptions about TCM. He describes using everything from gentle finger pressure to specialised instruments, always with the goal of creating movement where stagnation has set in.

“About 90 per cent of people can have acupuncture without strong pain sensations,” he notes, addressing the most common fear. What matters more than the sensation is the result: “Most of my patients should notice a difference from the first treatment. People feel taller. It’s not that they’re actually taller – they just have more space for their energy to flow.”

Peng is careful to position his work within the broader healthcare landscape. “If you have a real health issue, I still recommend that you go for proper

health checks,” he emphasises. “Chinese medicine is complementary medicine.” This measured approach reflects both wisdom and pragmatism – he is not selling miracles, but rather a different lens through which to view health and healing.

His treatment room becomes a classroom where patients learn to read their own bodies. That recurring headache? It might stem from liver energy stagnation. Digestive issues? Look to the earth element and the spleen-stomach system. Emotional volatility? Consider the wood element and its connection to the liver. Each symptom becomes part of a larger pattern, a map that reveals not just what’s wrong, but why.

The Longevity Code

When pressed for his single most important piece of longevity advice, Peng’s answer cuts through the complexity with surprising simplicity: “Peace of mind is the key to longevity in Chinese medicine. Whatever you do, you need to find a way to make space, to make you more balanced.”

“Peace of mind is the key to longevity in Chinese medicine.

Whatever you do, you need to find a way to make space, to make you more balanced.”

His prescription also includes meditation. “Take 10 to 15 minutes to yourself, just for emptiness.” He also advocates for tai chi or qi gong – practices that “get your natural energy flowing, soothing your mind, soothing your body.” The bottom line, he says, is simply to slow down, breathe, move gently and create space.

Beneath this simplicity lies deep wisdom. Peng speaks of qi not as mystical energy but as functional vitality. He describes yin and yang not as abstract concepts but as practical frameworks for understanding balance. The five elements of nature become a diagnostic tool for identifying where systems have fallen out of harmony.

As the session concludes, Méline describes feeling “warmed” and deeply relaxed. But perhaps more significantly, she reports a sense of reconnection – that elusive feeling of mind and body operating as one system rather than two. It’s a state Peng believes we all possessed naturally before modern life taught us to fragment ourselves.

“After every session I have with him, I not only feel better, I gain some wisdom as well,” Méline reflects. Which makes complete sense as, in Peng’s practice, healing and understanding are inseparable. **HW**

Key Things to Know

The Diagnostic Art

TCM uses four methods: observation, listening, questioning and pulse-taking

- Six pulse positions correspond to different organ systems
- Tongue examination reveals internal health through coating, colour and texture
- Birth timing provides constitutional insights that guide individualised treatment

The Fascia Connection

Peng views fascia as a communication network linking surface to organs

- Creating “space” in tissues allows natural healing processes to unfold
- Gentle techniques often prove more effective than forceful manipulation
- The tongue serves as a window into this whole-body fascial system

Modern Maladies

- Urban life creates specific patterns of imbalance and disconnection
- Mental overdrive separates mind from body awareness
- Stress manifests as physical compression and energy stagnation
- Treatment aims to restore the mind-body connection

The Simplicity Principle

- Meditation for 10-15 minutes daily creates essential mental space
- Tai chi and qi gong encourage natural energy flow
- Peace of mind emerges as the ultimate longevity factor
- This complementary approach works alongside conventional medicine

Since we spoke...

We reached out to Dr Peng Zhang for an update on his practice since filming the documentary.

Q: What's the most significant change in your practice since the documentary?

PZ: We've expanded our clinical focus to include complex chronic conditions, particularly long COVID-19 syndrome and post-surgical rehabilitation. This has involved developing integrative treatment protocols that combine classical acupuncture, abdominal diagnosis, herbal medicine and targeted rehabilitation techniques, with measurable outcomes in fatigue, inflammation and autonomic dysfunction.

Q: Any surprising developments with your patients?

PZ: We've observed that a number of patients undergoing treatment for physical complaints – such as joint pain or gastrointestinal issues – have experienced measurable improvements in neurovegetative symptoms, including sleep disturbances, palpitations and mood instability. These patterns suggest that acupuncture may exert broader regulatory effects on the autonomic nervous system and hypothalamic-pituitary-adrenal (HPA) axis.

Q: What new techniques are you exploring?

PZ: We're currently integrating modern micro-needling techniques within the framework of traditional meridian theory to support tissue regeneration and facial neuromuscular balance. In parallel, we are using pulse- and tongue-based data to refine herbal prescriptions aimed at modulating systemic inflammation and improving endothelial function – particularly relevant in post-viral and inflammatory syndromes.

Q: Any advice for viewers inspired to try TCM?

PZ: TCM is most effective when approached as a structured, diagnostic-based medical system rather than a general wellness modality. I recommend seeking treatment from qualified practitioners who use syndrome differentiation and integrate objective assessments where possible. With proper guidance, TCM can offer targeted support for chronic inflammation, hormonal regulation and autonomic balance – especially when integrated into a multidisciplinary care plan.



Dr Zhang's documentary episodes premiered on **The HumanWare Project**, also available on YouTube, becoming the channel's most-watched features to date. Learn more about his work at holistic-wellness-7.com





THE VOLTAGE OF VITAL

Professor Pierre-Marc Bouloux reveals how the brain's electrical signals and the body's chemical whispers are the keys to decoding – and optimising – the ageing process

THE ageing process, according to Professor Pierre-Marc Bouloux, is best understood as an inflammatory syndrome. “So much cutting-edge research is trying to minimise the impact of that inflammatory change,” Pierre-Marc explains. This concept, known in scientific circles as ‘inflammaging,’ refers to the chronic, low-grade inflammation that drives many age-related diseases. It is a quiet fire within our cells, and understanding how to manage it may be the secret to extending not just our lifespan, but our healthspan.

This is the frontier where Pierre-Marc operates. As a senior physician at London’s high-end longevity clinic Hooke and a preeminent Professor of Endocrinology with decades of experience at University College London (UCL), he is a world-class authority on the body’s intricate communication networks. He explains that our brain communicates with the body through two fundamental pathways: rapid electrical signals via the nervous system and slower chemical messengers – hormones – travelling through the bloodstream.

ITY

“Lead a really healthy lifestyle, sleep well, be happy, have good nutrition, exercise... and be able to cope with stress”

The distinction between these two systems is crucial. While the hormonal system mediates its influence through chemical diffusion in the bloodstream, the nervous system provides a form of instantaneous, targeted control. It is a network of direct electrical wiring from the brain to the organs. “The brain has a direct influence on these through the nervous system, which innervates and supplies the different organs,” Pierre-Marc notes, clarifying that this supply refers to signals, not substances. This electrical activity, flowing from the brain and down the spinal cord through the nerves, can alter the function of the heart, the gut or the liver almost instantly – a stark contrast to the more gradual influence of hormones. This constant, bidirectional dialogue influences everything from our mood to the way we age. The pituitary gland, a small structure at the base of the brain, acts as the “leader of the orchestra,” directing the function of the body’s other glands.

Nowhere is this dialogue more nuanced than in women’s health. It is a common belief that women who experience severe premenstrual symptoms must have a hormonal ‘imbalance.’ Pierre-Marc clarifies that this is a misconception. He states that for women who suffer from severe symptoms, there is no evidence they produce different quantities of hormones. Rather, the issue is one of individual susceptibility. “It’s their response to those hormones that’s different,” he says, reframing the condition as one of heightened neuro-hormonal sensitivity rather than a simple chemical imbalance.

This sensitivity is particularly relevant given the fundamental difference between male and female hormonal rhythms. While men experience a fairly constant, day-by-day production of hormones, the female system operates on a cyclical, four-week calendar. Regulated by the pituitary gland, the brain orchestrates a complex sequence involving follicle development, ovulation and the preparation of the womb for a potential pregnancy. This monthly cycle creates physiological and behavioural shifts. For instance, some women experience pain during ovulation, while others suffer from dysmenorrhea – painful uterine contractions in the build-up to menstruation, a condition Pierre-Marc suggests may be amplified by underlying inflammatory changes.

This insight helps explain why universal health approaches often fall short and why personalised, data-driven strategies are essential. To build such strategies, clinics like Hooke are using pioneering diagnostic tools to establish a health baseline for their clients. One such tool discussed is the WAVi electroencephalogram (EEG) headset, which measures the electrical activity of the brain to provide metrics on cognitive function. Pierre-Marc uses a client’s brain scan to demonstrate how measuring the amplitude of brainwaves (which he terms “brain voltage”) can offer a snapshot of cognitive processing efficiency. However, he is careful to position its utility correctly. While research suggests EEG patterns might show changes in conditions like ADHD or early cognitive decline, Pierre-Marc emphasises that a WAVi scan is not a standalone diagnostic test. Its real power lies in establishing a personal baseline. It should complement other assessments – allowing doctors to track an individual’s brain health over many years and measure the impact of interventions.

Beyond diagnostics, the conversation touches on the experimental edge of longevity medicine: gerotherapeutic drugs. Pierre-Marc mentions medications like metformin, rapalogs and SGLT2 inhibitors, which are being studied for their potential to target the underlying mechanisms of ageing. These drugs show promise in modulating the metabolic pathways linked to inflammaging. Yet, Pierre-Marc cautions that proving the benefit of any anti-ageing intervention may take decades of follow-up to ensure it is safe and effective. This is not a field for bio-hacking without expert guidance.

Ultimately, Pierre-Marc returns to the fundamentals that remain the bedrock of a long and healthy life. When asked for the most important secret to longevity, his answer is simple: “Lead a really healthy lifestyle, sleep well, be happy, have good nutrition, exercise... and be able to cope with stress,” he advises. These elements, combined with a deep understanding of one’s unique biology, are the true ingredients for extending both healthspan and lifespan. The cutting-edge technology and experimental treatments are not magic bullets; they are powerful tools to guide and enhance a life well-lived. **HW**

Key Things to Know

The Two-Way System

- The body has two main communication pathways controlled by the brain
- The nervous system uses fast, direct electrical signals to control organs
- The endocrine system uses slower chemical messengers called hormones, which travel through the bloodstream
- The pituitary gland is the “leader of the orchestra” and directs other hormone-producing glands

Ageing as Inflammation

- The concept of ‘inflammaging’ posits that ageing is driven by a chronic, low-grade inflammatory state
- This persistent inflammation is a risk factor for many age-related diseases, including cardiovascular disease and neurodegeneration
- Cutting-edge research aims to develop interventions that minimise this underlying inflammatory process

Decoding Brainwaves

- An electroencephalogram (EEG) is a non-invasive test that measures the electrical activity of the brain
- The WAVi scan is a specific type of EEG technology used to establish a baseline for brain health and track it over time
- In this context, ‘brain voltage’ refers to the amplitude of brainwaves, a marker of neural processing efficiency, not simple power

The Hormone Myth

- Severe premenstrual symptoms are not caused by an ‘imbalance’ or abnormal quantity of hormones
- The issue is a heightened neurobiological sensitivity to normal, cyclical hormonal fluctuations
- This explains why universal health approaches often fall short and why individual biology is key



THE TALE OF Two Rhythms

Male Hormonal Pattern

A fairly constant, day-by-day production of hormones creates steady physiological conditions.



Female Hormonal Pattern

A complex four-week cycle orchestrated by the pituitary gland:

- **Week 1-2: Follicle Development** The brain directs the development of egg follicles in the ovaries
- **Mid-cycle: Ovulation** Some women experience pain during egg release
- **Week 3-4: Womb Preparation** The body prepares for potential pregnancy
- **Pre-menstruation: Dysmenorrhea** Painful uterine contractions that may be amplified by underlying inflammatory changes



To hear more from Professor Pierre-Marc Bouloux on the frontier of where human capability meets technological innovation, search for **The HumanWare Project** on YouTube or your podcast platform of choice. Discover more about the pioneering diagnostic work being done at hooke.london





BETWEEN WORLDS

Sedona's Journey Through
Mind and Cosmos

*Where ancient vortexes meet neurofeedback
machines in America's unlikely capital
of consciousness exploration*

"Somebody comes in angry or sad or fearful, and then they learn to increase their alpha waves and all that is replaced by friendliness, vigour and clear thinking"

Dawn breaks over Bell Rock, painting the sandstone formation in shades of copper and vermillion. On its ancient flanks, Méline Liu moves through yoga postures while instructor Yolanda Curtis speaks of energy that shoots from the earth. Below, in a high-tech brain training institute, electrodes will soon monitor her brainwaves as she enters what practitioners call an 'angel pattern' state. Welcome to Sedona – where the promise of rewiring your consciousness draws seekers willing to pay £15,748 (\$20,000) for a week of brain training, or nothing at all to breathe deeply beneath desert stars.

This is the paradox of Arizona's red rock country: a place where a yoga instructor speaks of rocks being alive with energy that makes ideas "pop into your mind", where a college science teacher turned meditation guide cites peer-reviewed neuroscience at mystical water crossings, and where a state-of-the-art neurofeedback machine promises to condense decades of Zen practice into seven days.

In two special documentaries produced for The HumanWare Project about Founder Méline Liu's adventures in Sedona, Méline tests all of these radically different approaches (and more) to consciousness alteration, taking viewers along for the ride.



The Science of Sacred Ground

"These rocks are alive," Yolanda tells Méline as they begin their session on Bell Rock, one of Sedona's four major so-called vortex sites. "All of these different vortexes here have a very special energy that's like a personality," she muses. The red sandstone beneath them formed 320 million years ago, its iron oxide coating creating the distinctive crimson hue. But Yolanda speaks of something beyond geology – an energy that allegedly makes ailments disappear and leaves practitioners "glowing" with vitality.

While no peer-reviewed studies have documented unusual electromagnetic emissions from Sedona's rock formations, thousands arrive annually seeking transformation at these sites, and many report profound experiences that conventional physics cannot explain.



Michele Mattix, who holds credentials from the McLean Meditation Institute and taught college-level sciences for two decades, offers a bridge between worlds. At Red Rock Crossing, where pioneer wagons once forded Oak Creek, she guides Méline through meditation practices rooted in neuroscience. “Meditation has been proven to help relax the nervous system,” Michele notes, citing research that shows measurable changes in cortical thickness and amygdala reactivity. The setting may be mystical, but the effects on the brain are increasingly understood.

Breath as Technology

In Valerie Sanjali Irons’ studio, ancient shamanic practices meet modern understanding of respiratory physiology. “Breathwork is a form of breathing that can take a person into a very transformational experience,” Valerie explains. The scientific understanding is that by changing their breathing patterns, participants change their brain chemistry, which can lead to altered states of consciousness that feel transcendent, whether interpreted through spiritual or scientific lenses.

“The breathwork goes very deep into the cellular structure,” Valerie says, combining breathing techniques with sound therapy. Méline describes entering “a very, very deep relaxation state” where she feels like she has become “just an instrument”, allowing creation to flow through her, “rather than being in control of everything.”



"We pick up brainwaves, passing through the electronic equivalent of a prism"

The £15,748 (\$20,000) Question

Perhaps the documentary's most extraordinary claims emerge at the BioCybernaut Institute, where Dr James V. Hardt has spent four decades developing neurofeedback protocols. The seven-day Alpha One training costs upwards of £15,748 (\$20,000), promising to compress "20 to 40 years of Zen practice" into a week of intensive brain training.

"We pick up brainwaves, passing through the electronic equivalent of a prism," James explains. The technology translates specific brainwave frequencies into musical tones – flutes for certain patterns, oboes for others, and so on. By learning to control these sounds, participants gain conscious influence over their brain states. "Somebody comes in angry or sad or fearful, and then they learn to increase their alpha waves," James elaborates. "All that is replaced by friendliness, vigour and clear thinking."

James claims that one participant's IQ jumped from a 75 to a significantly

EXPERIENCING SEDONA: A VISITOR'S GUIDE

Best Times for Each Practice

Vortex yoga:

Sunrise (6-7am) for cooler temperatures and fewer crowds

Meditation:

Red Rock Crossing quietest before 10am or after 4pm

Stargazing:

New moon phases offer darkest skies (check lunar calendar)

BioCybernaut:

Year-round indoor facility, book 3-6 months ahead

above-average 120 after training. Just as intriguing is Méline's own experience: entering what James calls an "angel pattern" of brainwaves, which he associates with the ability to perceive "astral plane beings."

"There was a time when you were doing something and I called in and you were in a transcendent state," he tells Méline, suggesting she experienced a transcendent state that bypassed ordinary consciousness.

Under Desert Stars

In a companion episode to her consciousness exploration, Méline meets local astronomy guide Curt Schneider for a very different kind of mind expansion – one that requires only darkness and a telescope.

As darkness falls, Sedona transforms into what Curt rightly calls "a different planet entirely." The city's strict lighting ordinances have earned it International Dark-Sky Community status, preserving something increasingly rare: a view of the universe as our ancestors saw it. Through his telescope, Saturn rises in the east.

SEDONA IN NUMBERS

Bell Rock formed
320
million years ago
from iron oxide-
coated sandstone

4
major vortex sites
within five miles
draw thousands
of transformation
seekers annually

The Milky Way
contains
400
billion stars visible
from Sedona's
dark skies

Eighth
International Dark-
Sky Community;
a status that
preserves ancient
astronomical views

"Most people have never seen the Milky Way before," Curt observes as he guides Méline through the constellation. "They don't recognise it in the sky." Above them, 400 billion stars create a river of light across the darkness – each point a sun, many with their own planetary systems, including blue supergiant Deneb, he points out to Méline. "Blue stars are very hot and red stars are very cool," he explains.

"I've always had a fascination with the stars," Curt reflects, positioning the telescope to capture Alpha Pegasi. His passion transforms what could be an astronomy lecture into something more profound: a reminder that while Sedona's visitors seek transformation through breathwork and brainwaves, the most consciousness-expanding experience might simply be recognising our position in the cosmos.

Here, beneath a canopy of ancient light, the search for meaning that drives people to energy vortexes and neurofeedback machines finds its ultimate context. We are, all of us, made from the remnants of dead stars – a scientific fact that in itself almost feels mystical. **HW**

Key Things to Know

Sedona's Consciousness Expanding Experiences

- Meditation at Red Rock Crossing combines mystical settings with neuroscience-backed benefits
- Shamanic breathwork uses controlled breathing to alter brain chemistry and induce transcendent states
- Stargazing under International Dark-Sky designation offers perspective on humanity's cosmic context

BioCybernaut Institute

- Seven-day neurofeedback training costs upwards of £15,748 (\$20,000)
- Promises to compress "20 to 40 years of Zen practice" into one week
- Technology translates brainwaves into musical feedback for conscious control



The complete Sedona documentary episodes, featuring Méline Liu's first-hand exploration of consciousness-altering practices, premiered on **The HumanWare Project**. From energy vortexes to EEG machines, her journey reveals how Sedona has become an unlikely laboratory for the future of human consciousness. Learn more about each of the offerings Méline sampled in Sedona at yolandacurtis.com, sedonameditationexperiences.com/meet-michele_valerieirons.com, biocybernaut.com and lauberge.com/blog/fourth-of-july-sedona-itinerary



THE precision PRINCIPLE



*Leading fitness and nutrition expert
Aaron Deere is using data to prove
that doing less, more intelligently,
is the secret to peak health*

The relentless mantra of the wellness industry – train harder, eat cleaner, push further – may be fundamentally flawed. The secret to a longer, healthier life is not found in brute force, but in biological precision. Aaron Deere, Health and Performance Director at the Mayfair-based longevity clinic Hooke London, suggests a more sophisticated path. “I’ve seen people who train twice a day because they believed that was the right thing to do,” he says. “Yet they were able to achieve better results by actually doing less.”

This single insight captures a pivotal shift in our understanding of human optimisation. In an age of information overload, where conflicting advice and generic plans cause more confusion than clarity, a new approach is emerging. It is an approach built not on generalised rules, but on personalised, data-driven interventions. Aaron, whose career has spanned professional basketball, elite strength and conditioning for actors and athletes, and now clinical nutrition, is at the forefront of this movement. His work at Hooke London moves beyond reactive medicine towards a proactive model engineered to enhance ‘healthspan’ – the period of life spent in good health.

The process begins with a comprehensive investigation, a day-and-a-half deep dive into a client’s unique biology. This involves advanced diagnostics including whole-body MRI scans, whole genome sequencing and extensive blood panels that measure not just standard markers, but more predictive indicators like Apolipoprotein B (ApoB). Measuring ApoB provides a direct count of the particles that cause arterial plaque, offering a far more accurate assessment of cardiovascular risk than a typical cholesterol test. This wealth of data is synthesised into a proprietary BioScore, which benchmarks a client’s biological age against their chronological age, creating a clear roadmap for intervention.

From this foundation, every recommendation is tailored. “The key bit is personalisation,” Aaron explains. “You might see something where somebody is giving generic information that may have worked for them – but that doesn’t mean that it’s going to work for you.” This philosophy is crucial when navigating popular but often misunderstood health technologies. Continuous Glucose Monitors (CGMs), for example, have been co-opted by the biohacking community to vilify individual foods. Aaron argues this is a misuse of a powerful tool. “Their real value is in revealing long-





“You can only train as hard as you can recover”

term patterns,” he explains. The goal is not to react to a single glucose spike, but to understand 24-hour trends and how sleep, stress and meal timing collectively impact metabolic health.

This nuanced, data-led perspective is vital when addressing the most talked-about drugs of the decade: GLP-1 agonists like Ozempic. While their effectiveness for weight loss is undeniable, Aaron highlights a critical missing piece in the public discourse: the preservation of muscle. Significant weight loss without targeted exercise can strip the body of metabolically active lean muscle, leading to a state of ‘sarcopenic obesity’ – a lower body weight but a higher, unhealthier body fat percentage. “The groups that didn’t resistance train saw much more muscle mass being lost,” he warns. The solution is to integrate these medications into a comprehensive programme that includes resistance training, ensuring that fat, not muscle, accounts for the majority of weight lost.

Aaron’s approach to fitness is built on four pillars: strength, cardiovascular health, mobility and balance. “You can only train as hard as you can recover,” he says, articulating a core principle that governs the balance between stress and adaptation. Key metrics like VO₂ max, the gold standard for cardiorespiratory fitness, and Heart Rate Variability (HRV), a proxy for nervous system recovery, guide the intensity and frequency of training. A low HRV reading is a clear biological signal to prioritise recovery over a strenuous workout,

preventing the slide from beneficial ‘overreaching’ into the detrimental state of ‘overtraining’. The latter, Aaron notes, is a chronic state of exhaustion that can suppress the immune system and disrupt hormonal balance.

Ultimately, the goal is to build a defence against the primary diseases of ageing: cardiovascular disease, cancer, type 2 diabetes and neurodegenerative conditions. It requires a consistent, intelligent and deeply personal strategy. It is not about finding a magic pill or a single perfect diet, but about understanding the core components of nutrition – adequate protein, fibre and the right distribution of fats – and tailoring them to individual needs.

The work at Hooke London is as much about psychology as it is about physiology. For clients who have struggled to make lasting changes, the clinic integrates a cognitive health team to help deconstruct ingrained habits. As Aaron puts it, consistency is the single most important factor. The dramatic New Year’s resolutions that fade by February are less valuable than the sustainable practices that become an effortless part of daily life. For him, this principle is embodied in a simple daily habit: stretching. He found that a simple but regular stretching routine had a significant positive influence, improving his sleep and performance more than other complex interventions. Indeed, this is the future of health: not a punishing regime of more, but a precise and committed application of small actions that count. **HW**



Since we spoke...

We went back to Aaron for an update on his work since our podcast interview.

Key Things to Know

The Precision Approach

- Generic fitness advice is often counterproductive; true optimisation demands personalisation
- Your biological needs change over time – what works in your 20s may not in your 40s
- The goal is to bulletproof against the ‘four horsemen of ageing’: cardiovascular disease, cancer, diabetes and neurodegeneration
- Consistency is the single most important word in fitness and nutrition

The Science of Fitness

- VO2 max is the gold standard for measuring cardiorespiratory fitness and a predictor of long-term health
- Heart Rate Variability (HRV) is a key indicator of nervous system recovery and should guide training intensity
- ‘Overreaching’ is a planned, short-term training push that can boost fitness after recovery
- ‘Overtraining’ is a detrimental state that suppresses immunity and hormonal balance
- More muscle mass increases your Resting Metabolic Rate (RMR), meaning you burn more calories at rest

Smarter Health

- Use Continuous Glucose Monitors (CGMs) to track long-term patterns, not to vilify individual foods
- Data can reveal how stress, sleep and meal timing impact your metabolic health
- ApoB is a more accurate predictor of heart disease risk than standard LDL cholesterol tests
- When using GLP-1 drugs like Ozempic, resistance training is critical to ensure fat (not muscle) is lost

Q: What has been the most exciting development at Hooke London since we last spoke?

AD: We are now beginning to offer a couple of new products at Hooke Fitness. We will shortly be offering fitness longevity testing, which will allow clients to understand where specifically to focus their training to optimise healthspan/lifespan outcomes. We are also offering the Onero programme – a resistance training programme with scientific backing that is focused on improving bone mineral density. As a result, clients can grow new bone mass – something not previously thought possible for most people suffering from osteopenia/osteoporosis.

Q: What has been the most surprising insight about a client that emerged from Hooke’s unique BioPortrait and BioScore?

AD: It’s how quickly the cognitive wellness component of the BioScore can change for clients. We have seen clients score very high and then, six months later, their cognitive wellness score plummets and their BioScore follows suit. Given how much of a role cognitive wellness plays in determining healthspan/lifespan, it’s clear that this is an area that is highly variable, and perceived stress levels play a significant role in mediating this.

Q: Has your own daily stretching routine evolved or revealed any unexpected benefits since you started prioritising it?

AD: Yes, it has helped immensely. I recently went on a surf trip to the Mentawai Islands for a couple of weeks and the difference in my flexibility, range of movement and balance was noticeably better. This helped my surfing a lot and, as a result, I was able to surf waves differently than when I was last there.

Q: What’s next on the horizon?

AD: I am very interested in supplements and compounds that purport to offer regenerative and anti-inflammatory benefits. There are a lot of people with stories about how these have been life changing for them. I have begun trialling them myself in eight-week blocks and monitoring for any benefits. I have some ongoing issues that are inflammation-related (medial epicondylitis and ongoing knee soreness) that I hope to use as subjective assessment areas when using these supplements/compounds. I have just finished trialling the peptide BPC-157, which has a lot of positive feedback on improving exactly these types of issues, but sadly I haven’t observed any noticeable difference from taking it.



Aaron Deere’s interview first appeared on **The HumanWare Project**. To watch this conversation and explore more pioneering insights into human potential, search for The HumanWare Project on YouTube or your podcast platform of choice. Discover more about Hooke London’s data-driven approach to healthspan at hooke.london



THE mind TRADERS

*Inside the investment revolution betting
billions on brain-altering medicines and
the future of human consciousness*



“How do we build the right systems and companies that are going to change the healthcare system to accept and deliver psychedelics at scale?”

Five years ago, investing in psychedelics meant betting on an industry that did not legally exist. Today, Joao Barbosa Da Silva of re.Mind Capital oversees a portfolio positioned at the frontier of mental health innovation, where ketamine derivatives are already garnering significant investment and next-generation brain technologies reshape human potential. The transformation from underground therapy to Wall Street darling represents one of healthcare’s most dramatic pivots.

“We’re at a point where psychedelics are moving from this very experimental, very early stage into actual regulated markets,” Joao explains. His fund, re.Mind Capital, launched in 2020 with a thesis that seemed radical: mental and brain health would become central to healthcare’s future. That bet now appears prescient.

As Joao notes, “Neuroscience and behavioural health are attracting some of the most capital. The most talented founders are starting to build companies in behavioural health.” The infrastructure he envisioned is materialising: “We have one that’s already approved. It’s called the Spravato – now a massively adopted drug, and it’s leading the way in helping us build out the infrastructure that will hopefully allow other psychedelics to follow suit.”

For Joao, who trained in medicine at Imperial College London before eventually transitioning to venture capital, the opportunity is about more than individual drugs. “There are two interesting places to invest in psychedelics,” he remarks. “One is this infrastructure. How do we build the right systems and companies that are going to change the healthcare system to accept and deliver psychedelics at scale?”

This infrastructure play shapes re.Mind’s strategy. While others chase molecules, Joao invests in the ecosystem: specialised clinics, therapist training programmes, insurance protocols, manufacturing capabilities. “This is everything from the insurance protocols and making sure that these things are in pharmacies and that you can manufacture at scale – to actually having the clinics and setting in place,” he explains.



The second investment opportunity lies in the molecules themselves – but not the original psychedelics. “We have the second and third generation of companies that are thinking: What have we learnt from the science? How can we iterate on the molecule itself so that it fits the healthcare system better?” These companies engineer psychedelics for practical realities: shorter duration, reduced intensity, easier medical supervision.

The science behind psychedelic investment is compelling. Compass Pathways’ Psilocybin targets the brain’s 5-HT_{2A} receptors, inducing neuroplasticity – a state where entrenched neural patterns become malleable. “You can actually see this at a neuron level where you have these growths in the neurons,” Joao describes. “In this state of neuroplasticity, you can create new ways of thinking, which you can imagine is very helpful in a patient who’s massively depressed.”

Yet the original psychedelics pose challenges for healthcare systems. An eight-hour psilocybin journey requires extensive supervision and specialised facilities. “We just can’t scale these 12-hour, very intensive high labour experiences,” Joao acknowledges. This limitation drives innovation. Second and third-generation companies now engineer molecules for shorter duration and reduced intensity while



“We’re only scratching the surface of understanding how the brain works”

maintaining therapeutic benefit. “How can we edit these molecules, still keeping true to what they do and the clinical benefit, but edit them so that they fit into the healthcare system?” he ponders.

The numbers backing psychedelic medicine are striking. Stanford’s Saint protocol – an intensive, week-long inpatient treatment involving eight hours daily of transcranial magnetic stimulation – achieves 78.6 per cent remission rates in treatment-resistant depression, meaning patients who have failed multiple conventional therapies. Standard antidepressants typically show 20-30 per cent efficacy in similar populations. Even unexpected connections emerge: GLP-1 drugs like Ozempic, initially for diabetes, show promise for addiction by “removing that craving that you have in food, which seems to translate to somewhat removing the craving for drugs,” according to Joao.

Investment risks remain real. Yet Joao views these hurdles as opportunities for sophisticated investors who understand the landscape. As he notes, companies like Compass Pathways with their COMP360 psilocybin have navigated these regulatory challenges to reach pivotal stages in development.

“Mental health and neuroscience really haven’t seen much innovation in the past 20, 30 years,” he observes. “The last breakthrough was antidepressants, which don’t work very well.” This innovation drought created pent-up demand now driving capital allocation. Mental health and neuroscience rank among the top venture destinations within digital health, therapeutics and medical devices.

Beyond psychedelics, re.Mind’s portfolio spans the spectrum of brain intervention. Blackrock Neurotech has implanted brain-computer interfaces in over 50

patients, enabling paralysed individuals to control robotic limbs through thought. Ultrasound devices target deep brain regions for anxiety without surgery. Each technology contributes to Joao’s vision of “integrated holistic models of care”, where mental and brain health anchor overall wellness.

A personal element grounds Joao’s investment philosophy. His daily routine – identical lunch, morning exercise, systematic habit formation – reflects conviction that “so much of longevity will come from developing good behaviours, and so much of good behaviour is just neuroscience.” He practises what he funds: using behavioural design to optimise performance.

For potential investors, Joao emphasises the sector’s exponential growth trajectory. “We’re only scratching the surface of understanding how the brain works,” he states. With each breakthrough – from thought-to-speech interfaces to neuroplasticity-inducing medicines – the surface reveals deeper opportunities. The convergence of AI, neurotechnology and psychedelics positions brain health as, potentially, “an enormous part of the entirety of healthcare.”

The psychedelic investment thesis ultimately rests on a simple observation: current mental health treatments fail too many people. With depression, anxiety and neurodegenerative diseases reaching epidemic proportions, the market demands innovation. Joao and re.Mind Capital are betting that innovation comes not just from new molecules, but from reimagining how society delivers mental healthcare. As regulatory doors open and infrastructure builds, that bet increasingly looks like the future of medicine itself. **HW**

Key Things to Know

The Psychedelic Investment Landscape

- Infrastructure investments (clinics, training, insurance protocols) may offer more stable returns than drug development
- Second and third-generation companies engineering shorter-acting molecules that fit existing healthcare systems

Market Dynamics & Opportunities

- Mental health hasn't seen major innovation in 20-30 years, creating massive pent-up demand
- Two investment approaches: drug development or infrastructure to deliver at scale
- Insurance protocols, manufacturing, specialised clinics all require funding
- Mental health and neuroscience now top sectors for venture capital allocation

The Science Driving Returns

- Psilocybin induces neuroplasticity via 5-HT_{2A} receptors
- Stanford's intensive Saint protocol (week-long, 8 hours daily) achieves 78.6 per cent remission vs 20-30 per cent for standard antidepressants
- Visible neuron growth occurs during psychedelic states, enabling new thought patterns
- Integration therapy as critical as the medicine itself for lasting change
- Unexpected applications: GLP-1 drugs showing promise for addiction treatment

Beyond Psychedelics: Brain Tech Convergence

- Blackrock Neurotech implanted 50+ patients with brain-computer interfaces
- Paralysed patients controlling robotic limbs and communicating through thought alone
- Ultrasound devices targeting deep brain regions non-invasively for anxiety
- AI dramatically improving brain signal interpretation and device performance
- Technologies converging toward integrated platforms for mental and brain health

Investment Considerations

- Infrastructure may offer better risk-adjusted returns than pure drug plays
- Behavioural interventions complement pharmaceutical approaches
- Market moving from experimental to regulated, creating institutional opportunity
- Joao's thesis: brain health will become "an enormous part of the entirety of healthcare"

Since we spoke...

We went back to Joao for an update on his work since our podcast interview.

Q: What has been the most exciting development at re.Mind Capital since we last spoke?

JB: We have made a few new investments – the latest is one backing the first company developing a care model using metabolic interventions for psychiatry. It's produced some really interesting results and is led by the leader in the space, Dr Shebani Sethi.

Q: Any updates on the Compass psilocybin trial results?

JB: Yes, they had a positive data readout for Phase III, which means they are now one step closer to approval.

Q: Besides having the same lunch every day, are there any other areas of your life in which you've removed choice to better control your behaviour?

JB: I've since removed lunch altogether!

Q: What's next on the horizon?

JB: Working on a few new interesting projects in mental health and neuroscience; nothing that's ready to share just yet, but hopefully they will be announced soon!

Joao Barbosa Da Silva's interview first appeared on **The HumanWare Project**.



To watch this interview and explore the future of human potential, search for The HumanWare

Project on your preferred platform. Learn more about re.Mind Capital at remind.vc



Silicon FROM Valley TO Brain Training

*When falling asleep in boardrooms
led one tech veteran to neuroscience,
he discovered technology that could
transform how we all think*



James Croall spent years in Silicon Valley's executive meetings fighting to stay awake. Not from boredom or late nights, but from a brain that simply wouldn't cooperate. "I would easily just fall asleep," James recalls. "My attention was so poor. I only succeeded thanks to my creativity rather than on my ability to get things done." The cybersecurity expert's struggles with narcolepsy-like symptoms and severe attention deficits might have derailed his career. Instead, they led him to discover a field that he believes will fundamentally change how humanity approaches cognitive performance.

After establishing himself in network security – with published research at Virginia Tech on DDoS attack mitigation – he realised his brain was becoming his biggest limitation. What began as a personal quest for better focus has evolved into Peak Mind – James' neurotherapy practice where he now helps Silicon Valley's high performers optimise their cognitive function. His journey from tech to brain training took seven years of intensive study while maintaining his cybersecurity career, driven by a revelation that challenges conventional thinking about human limitations.

"We're not limited by the brain we think we have," James explains. "We can train it, rewrite trauma and undo conditioning that leads to things like ADHD or even narcolepsy. It's almost like you're hacking into your brain." The science behind this transformation involves two primary approaches: neurofeedback and neurostimulation.

Neurofeedback, dating back to Joe Kamiya's pioneering work in 1962, acts like a mirror for the brain. When James first tried it, playing a racing game where the car's speed responded to his attention levels, he gained unprecedented awareness of how often his mind wandered.

"We're not limited by the brain we think we have. We can train it, rewrite trauma and undo conditioning that leads to things like ADHD or even narcolepsy"

"I didn't realise how often my mind went to other places," he says. "That insight into your own mind is pretty amazing." But awareness was just the beginning.

Neurostimulation – using gentle electrical currents, specific light wavelengths and targeted frequencies – offered a more direct route to change. Technologies like transcranial direct current stimulation (tDCS) and transcranial alternating current stimulation

(tACS) can help the brain learn new patterns more efficiently. According to James, while tDCS provides immediate effects that can help with conditions like migraines or depression "within minutes", tACS creates lasting change by training the brain over time.



"I thought I was creative before, but my creativity is far, far richer now because I have this flexibility and can actually go deeper into these liminal unconscious states"

James' approach combines multiple modalities for potentially enhanced outcomes, and the results he describes from his practice are striking. One client, a new father under pressure to perform at work, reportedly went from completing 20 per cent of his daily tasks to achieving 80 per cent within three weeks of intensive training. Another launched a coaching business after overcoming stress-related blocks.

His toolkit reads like science fiction but is grounded in decades of research. Pulsed electromagnetic field therapy (PEMF), FDA-approved since 1979 for bone healing, can entrain brain frequencies and increase blood flow. Photobiomodulation uses specific wavelengths of light – 810nm for reducing inflammation, 1070nm infrared for deeper brain penetration – to affect mitochondrial function. Even pink noise, the brain's natural background rhythm, can help interrupt pathological thinking patterns.

The democratisation of this technology particularly excites James. Consumer devices like the BrainBit Flex EEG headset, priced between £393 (\$499) and £1,023 (\$1,299), allow people to train at home with personalised protocols. "Products like this are going to make it more accessible and help this industry really take off," he predicts – although he cautions that devices like the Mendi headset or Sens.ai work best under professional guidance.

What distinguishes James' approach is his programmer's mindset applied to neuroscience. "We're trying to understand the language of the brain and then hack it," he explains. It's an apt metaphor from someone who spent decades decoding computer systems.

The implications extend far beyond individual optimisation. James points to environmental factors such as social media, constant notifications and multitasking that have "driven our brain to have poor dopamine and reward circuitry." However, his work suggests these modern attention deficits, whether genetic or acquired, need not be permanent.

For those with ADHD worried about losing their creative edge, James offers reassurance from personal experience. "I thought I was creative before," he reflects. "What I found is my creativity is far, far richer now because I have this flexibility. I can even go deeper into these liminal unconscious states. And the best thing is I can finally focus enough to actually follow through on all my creative ideas."

Looking ahead, James envisions profound societal transformation. "Imagine how much of our life is dictated by how our brain works and how we've been conditioned by the past," he says. "This can help us break free from that past and really be present and live. This has the potential, if we can reach scale, to really change the world." **HW**

Key Things to Know

The Technology Landscape

- Neurofeedback uses EEG to show your brain its own activity, enabling unconscious self-regulation
- Consumer devices now range from £79 (\$100) basic units to £1,023 (\$1,299) professional-grade EEG systems
- Photobiomodulation, PEMF, and various electrical stimulation methods each target different aspects of brain function
- The field combines approaches dating from the 1960s with cutting-edge consumer technology

The Science

- Modern environment (social media, notifications, multitasking) has disrupted dopamine reward circuitry
- These technologies can potentially reverse environmentally-acquired attention deficits
- Creativity may actually deepen with improved cognitive flexibility

The Evidence

- Clients have reported dramatic improvements, from completing only 20% of daily tasks to 80% within three weeks
- One client overcame stress-related blocks to launch a coaching business
- James himself no longer identifies as having attention deficit or sleep disorders after treatment

Practical Applications

- Most protocols require 20- to 30-minute sessions, multiple times per week
- Professional assessment includes cognitive testing, EEG brain mapping and personalised protocol development
- Home training possible with consumer devices, though professional guidance recommended
- Combination approaches (multiple modalities) can enhance outcomes

Who Can Benefit

- High performers seeking cognitive enhancement and sustained focus
- Individuals with attention deficits (genetic or environmentally acquired)
- Those experiencing stress-related performance blocks
- People interested in preventive cognitive health as they age

Future Outlook

- Consumer neurotechnology market expanding rapidly with devices for sleep, focus and stress
- Technology democratisation with home-use devices could make brain training as common as going to the gym

Since we spoke...

We went back to James for an update on his work since our podcast interview.

Q: What has been the most exciting development at Peak Mind since we last spoke?

JC: As a small practice, my biggest development has been to go even deeper with my clients. As part of each QEEG in around 75 per cent of cases, I now include a review of genetic influences on brain function and neurotransmitter balance. While I agree that the 'chemical imbalance' theory of mental health has a lot of problems, I've learnt that some people don't have enough biochemical support (or have factors working against them) to make neurofeedback and neurostimulation as effective as it could be. In many cases, I recommend personalised supplementation or even follow up lab testing to help people really reach their best.

Q: Any standout cases of clients achieving peak performance?

JC: I recently worked intensively with an executive struggling with not just attention but a history of bipolar disorder. After some investigation, we discovered that the root cause of his attention and mood problems was actually mercury toxicity! I referred him to an excellent local functional medicine doctor and he's feeling and performing much better as he detoxes. Another case is a startup entrepreneur whose first venture failed due to bankruptcy, but with a comprehensive course of neurostimulation and neurofeedback, he's now able to sit with investors and really listen – deeply – and respond, not react. He's on his way to close his first round of funding.

Q: Any new insights from your own neurostimulation practice?

JC: A holistic approach is critical. While I'm still a relatively new practitioner, I've already seen SO many cases that had genetic, toxic or other factors that would have prevented what I do from working had I not looked deeper. Combining what I do with traditional therapy is also important, because I'm a coach, not a counselor, so I obviously don't do psychotherapy with my clients. Neurotherapy helps remove the big blocks, revealing so much more to work with in therapy.

Q: What's next on the horizon?

JC: I'm spending a great deal of time right now on my upcoming book – *The Dream of Matter: Neuroscience and Decoding the Mathematics of the Soul*. Whether the reader chooses to adopt the worldview that the universe is made of thought and the brain is a reflection of the mind or soul, or that the universe is made of 'stuff' and the mind is an emergent property of matter, I present a novel way to understand the brain and the importance of mental health in shaping our society.



James Croall's insights into neurohacking first appeared on **The HumanWare Project** podcast.

To explore more conversations at the intersection of human potential and technology, visit **The HumanWare Project** podcast. Learn more about James' work at peakmind.health



THE SCENT OF tomorrow



*How pioneering researcher Marianna Obrist
is unlocking smell as the next frontier in
human performance and longevity*

Research has shown that when you shake someone's hand, the first thing you do afterwards is bring it to your nose. You don't realise it, but you're literally sniffing them to decide if you trust them. This unconscious behaviour reveals something profound: our most overlooked sense might be our most powerful.

Marianna Obrist has spent the last 15 years researching and unlocking the power of scent. As Professor of Multisensory Interfaces at the Department of Computer Science, University College London, and Co-founder of Hynt Labs Limited, a University spin-out commercialising digital scent technology, she is creating digital scent solutions that can for example help people recover their sense of smell (e.g. COVID-19 patients), enhance sleep quality through personalised scent delivery and potentially detect neurodegenerative diseases earlier on. "Smell is the only sense which has a direct connection to the brain," Marianna explains. "When molecules enter your nose, they go directly to where your memories and emotions are processed."

As interest in elite performance and longevity grows and becomes increasingly data-driven, Marianna's work suggests we have been ignoring one of our most sophisticated biological systems. Her journey began with a simple observation: when

we design new devices and interfaces, we forget that humans bring far more capabilities to the relationship than just eyes and ears. "Everything we do, we experience through all our senses," she notes. "They give us a picture of the world, and that's where we process information, make decisions, change our behaviours."

Working with artists and immersive experience designers, she developed technologies that could deliver precise scents at specific moments. One collaboration involved Tree VR, a virtual reality experience where users embody a tree in the Amazon rainforest. As you grow from seed to towering giant, you smell the earth, feel the wind, sense the temperature changes. When humans arrive to cut down the trees, the smell of smoke completes the visceral warning about deforestation.

During the COVID-19 pandemic, as millions lost their sense of smell, Marianna's team accelerated development of digital smell training devices. The technology is strikingly uncomplicated: a device delivers controlled scents while users rate their perception on a mobile app. Do this twice daily for six months, and remarkable things happen. "People became much more mindful of their sense of smell," Marianna shares. "Not just when they did the training, but also when they walked around. They started to notice things they didn't notice before."



"Regular mindful exposure to scents improves scent perception, helps us memorise better and sharpens our cognitive processes"



"Smell is the only sense which has a direct connection to the brain"

The science is compelling. Regular smell training doesn't just rehabilitate a damaged sense – it appears to enhance cognitive function. "Research has shown that regular mindful exposure to scents not only improves scent perception, but also helps us memorise better and sharpens our cognitive processes, which I think is very exciting because it means we can keep our brain fit through our nose!"

This has profound implications for longevity. Marianna's team was working with Andreas Keller at Rockefeller University to develop digital diagnostic tools for early detection of Parkinson's and Alzheimer's through smell testing. "It's an invisible disorder," she says. "We don't even know if our sense of smell is working as it should be because there is no baseline."

The commercial applications are emerging through Hynt, which Marianna co-founded with her former postdoctoral researcher. Their first consumer focus is sleep enhancement – creating personalised scent experiences that adapt in real time to sleep cycles. Unlike static lavender sprays, this technology responds to biometric data, delivering the right scent at the right moment.

"We want to be science-driven," Marianna emphasises. "Not just creating another gadget, but something that actually improves people's lives." The company is validating their technology in leading sleep clinics, measuring effects on sleep patterns and brain activity. And so, Marianna's work represents a new frontier.

The potential applications span from enhancing meditation and learning to pre-surgery relaxation. She looks ahead to future homes where scent delivery technology is as integrated as lighting and electricity. "Imagine switching on the light and connecting it with all the different devices that provide you with the right stimulation, depending on whether you want to work out or relax on the sofa. And with AI now on the scene too, over time there will be even more personalisation based on individual behaviours and patterns. I look forward to a future where all this is hopefully not just an add-on but a part of the creation process," she muses.

Indeed, at a time when AI threatens to replicate many human capabilities, our multisensory experience remains uniquely ours. "What distinguishes us as humans?" Marianna asks. "When we're designing these experiences, we should bear in mind how to preserve that humanness, while allowing technology to augment our experiences," she remarks.

Looking to her own life, Marianna shares that she and her husband have become meticulous about their daily rhythms, with cooking serving as both creative outlet and sensory training. Opening the fridge without recipes, combining ingredients by instinct, she creates meals that engage all the senses. All of which suggests that the future of human enhancement might not require invasive procedures or exotic compounds, but, rather, it might be as simple as learning to smell again. **FW**



Since we spoke...

We went back to Marianna for an update on her work since our podcast interview.

Key Things to Know

The Science of Smell

- Smell is the only sense with direct brain connection, bypassing usual sensory processing routes
- Olfactory information projects directly to areas controlling memory and emotion
- This unique pathway explains why scents can instantly transport us through time
- Changes in smell perception may precede neurodegenerative diseases

Digital Scent Technology

- Precise scent delivery devices can be controlled for timing, intensity and duration
- Current applications include COVID-19 smell recovery, sleep enhancement and VR experiences
- Technology can provide personalised, adaptive experiences based on biometric data
- Digital smell training shows measurable improvements in both olfactory perception and cognitive function
- Training makes users more mindful of scents in everyday life

Commercial Applications

- Sleep optimisation through dynamic scent delivery responding to sleep cycles
- Early disease detection through regular olfactory testing
- Enhanced meditation, learning and therapeutic applications
- Future integration into smart homes as standard feature alongside lighting

Q: What has been the most exciting development at Hynt since we last spoke?

MO: We have been advancing our digital scent technology solution through integrating AI-driven scent adaptation, dynamically adjusting scent delivery based on individual biometric feedback. It's incredibly exciting to see how our Hynt technology is moving from theory to real-world application.

Q: Any new results from your sleep clinic validation study illustrating the impact of personalised scent experiences on sleep?

MO: Our initial findings are highly encouraging. The data indicate a substantial effect of personalisation, which enhances the overall impact beyond the type of scent alone. Notably, we observed improvements in both sleep onset and participants' reported restfulness in the morning. We look forward to deepening these insights as we conduct more extensive data analyses.

Q: Any personal insights on how your own relationship with scent has evolved through scent training?

MO: It's fascinating how training your nose can rewire not only your sensory perception but also your emotional connection to the world around you. I've found myself becoming far more attuned to subtle nuances – from the scent of freshly cut grass while passing a park to the comforting aroma of jasmine in my living room. This has deepened my appreciation of scent and its importance for human health and wellbeing, even though I've long understood the theory as part of my research. Being able to transition from scientific investigation to practical application and, most importantly, to its adoption in daily life is what drives my passion and underpins the vision at Hynt: to transform existing interaction paradigms and audiovisual-dominated experience spaces through the enrichment of scent.

Q: What's next on the horizon?

MO: Our vision is to make personalised scent technology accessible to anyone who could benefit from it, seamlessly integrated into everyday life, rather than being a luxury or niche experience.



Marianna Obrist's interview first appeared on The HumanWare Project. To watch this conversation and discover more

pioneers at the intersection of technology and human potential, visit The HumanWare Project online. Learn more about Marianna's work on digital scent technology at hynt.net



THE hunger ADVANTAGE

*Inside the Buck Institute
laboratory where fruit flies
and fasting are revealing the
molecular secrets of longevity*

The toast is barely golden when Dr Pankaj Kapahi delivers the news that will change how you see your breakfast. “A few minutes of cooking bread produces 50 new advanced glycation end products,” he says, examining the molecular aftermath of the Maillard reaction – that delicious browning that makes food taste better, but worse for your health. “And that’s what makes the toast so tasty.”

It is precisely this kind of uncomfortable truth that has made Pankaj one of the most influential researchers in longevity science. At the Buck Institute for Research on Aging in Northern California, where he has spent nearly two decades unravelling the molecular mechanisms of ageing, his work bridges the gap between what we want to eat and what our cells need to thrive.

“I’m not a popular person at parties,” Pankaj admits with dry humour. “All this knowledge doesn’t work in my favour.” But for those seeking to understand – and potentially slow – the ageing process, his insights are invaluable. His research has identified fundamental connections between diet, metabolism and lifespan that are reshaping how we think about longevity.

At 18 or 19, when Pankaj first encountered studies on dietary restriction, he experienced what he describes as a revelatory moment. “I walked around thinking, wow, I have very special knowledge. Just imagine if there were a chance to add an extra 10 years or more of healthy life. Why wouldn’t you take it?” This early discovery set him on a path that would define his career. “Studying science is one way I can serve society,” he reflects. “It’s what gave me a lot of happiness, to discover new things.”

He chose ageing as his focus at a time when few researchers were tackling the field. “It seemed a very complex problem to study,” Pankaj recalls. “And also, you’d think, why should you lose your loved ones early on if there are ways to slow down ageing?”

The Humble Fruit Fly

This enthusiasm for dietary restriction – reducing calorie intake without malnutrition – has anchored much of Pankaj’s career. In his laboratory, fruit flies serve as unlikely prophets of human longevity. “For about 70 to 80 per cent of human disease genes, you can find similar genes in the fly,” Pankaj explains. These tiny creatures, with their short lifespans and well-mapped genomes, allow his team to rapidly test interventions that might take decades to study in humans. “Four Nobel Prizes have been awarded to work that started with flies,” he notes.

His most significant early contribution came during his postdoctoral work, when he was among the first to demonstrate that inhibiting TOR (Target of Rapamycin), a nutrient-sensing pathway, could extend lifespan. “TOR connects nutrients in the environment to the growth of a cell,” he explains. “We found that if you inhibited TOR either early or late in life, it extended lifespan.”

When Sugar Turns Toxic

But it is his work on sugar toxicity and advanced glycation end products (AGEs) that offers the most immediate implications for daily life. These compounds, formed when sugars react with proteins,

accumulate in our bodies and drive many age-related diseases. “Sugar is actually detrimental not because of the levels of glucose, but because of what glucose does to the cell,” Pankaj notes. The byproducts of sugar metabolism create compounds like methylglyoxal, which react with amino acids to produce AGEs that drive pathology.

His research has revealed that cooking methods matter as much as ingredients. Those caramelised edges on grilled meat, the crispy coating on fried foods – they are all rich in AGEs. “Studies have shown that if people who are diabetics go over to raw food, that actually can reduce their risk of diabetes, and can even reverse it,” he explains, though he is careful to note this requires further clinical validation.

The Clock Inside

The timing of our meals proves equally crucial. Pankaj practices 16-hour intermittent fasting, eating within an eight-hour window each day. “Once you’ve started eating, it’s hard to stop,” he observes. “It’s easier to convince yourself to delay eating your breakfast.” This approach, he has found, not only reduces overall calorie intake, but also enhances the amplitude of circadian gene expression – the daily rhythms that govern cellular repair and metabolism.

“Every cell has a clock,” Pankaj explains. “Estimates argue about 70 per cent of our genes are rhythmic.” His research shows that dietary restriction amplifies



“Just imagine if there were a chance to add an extra 10 years or more of healthy life. Why wouldn’t you take it?”

these rhythms, improving the body’s ability to switch between building up nutrients (anabolism) and breaking them down (catabolism). At night, the body performs repair functions. “Just imagine trying to sleep after eating a big meal,” he says. “The body just got a signal to wake up.”

One of his most striking findings involves the connection between early life events and later health outcomes. His analysis of UK Biobank data revealed that women who experience puberty before age 11 and give birth before 21 face a significantly higher risk of diabetes and obesity later in life. “Those early life events have a very important effect on things that happen later in life,” he emphasises, noting that the optimal window for childbirth, from a metabolic health perspective, appears to be around age 30.

Evolution’s Mismatch

The modern food environment, Pankaj argues, represents an evolutionary mismatch. “We evolved in conditions of low food. In the past, there was an advantage to being able to eat more because we were not sure whether we were going to get our next meal or not. Now, you can eat sushi three times a day.” Faced with this abundance, our survival mechanisms work

against us. “We’re hardwired like any animal in the zoo. You don’t want to feed it because they overeat.”

His prescription for longevity might disappoint those seeking uncommon solutions. “I think the best way to think about the optimal diet is as a stoic way of living. The simpler it is, the better.” He prioritises fibre above all else. “If you eat whole foods and ensure that your fibre intake is right, then you change a lot of things,” he explains, from microbiome health to blood sugar regulation.

That said, for Pankaj, working around ageing isn’t merely about extending lifespan. “It’s more important to have more life in your years than more years in your life,” he muses. This shift in perspective has shaped his current thinking about longevity research. “The best way to optimise your health is to use it as well as you can.”

As obesity and diabetes rates climb despite keener health awareness, Pankaj calls out the paradox. “On one hand, we’re increasing our knowledge, but on the other, society as a whole is not improving. Which tells you what a challenging problem this is.” Taking heart, he draws parallels to the public health victory over smoking: “I think continued and heightened awareness is what will help us become better as a society.” **HM**

Key Things to Know

The Sugar-Ageing Connection

- Advanced glycation end products (AGEs) form when sugars react with proteins
- Cooking methods matter: grilling, frying and toasting significantly increase AGE content
- AGEs drive inflammation and accelerate ageing processes
- Methylglyoxal, a byproduct of sugar metabolism, is particularly reactive

The Fasting Advantage

- 16-hour fasting windows enhance circadian gene expression amplitude
- Intermittent fasting improves alertness, memory and physical performance
- Timing matters: eat three to four hours before sleep to optimise repair processes
- Start gradually: move from 12 to 14 to 16-hour fasting periods

Early Life, Later Health

- Women experiencing puberty before 11 and childbirth before 21 face significantly higher risk of diabetes and obesity later in life
- The optimal window for childbirth from a metabolic perspective appears to be around age 30
- Access to abundant food is driving earlier puberty ages
- TOR and insulin signalling pathways link early growth to later disease

The Longevity Formula

- Prioritise fibre above all other dietary considerations
- Embrace “stoic” eating: simple, whole foods with minimal processing
- Maintain consistent mealtimes to support circadian rhythms
- Follow the Japanese principle: eat until 80 per cent full

“It’s more important to have more life in your years than more years in your life”

Since we spoke...

We went back to Pankaj for an update on his work since our podcast interview.

Q: What has the most exciting development been at Buck since we last spoke?

PK: We found that dietary restriction slows dementia and prevents the accumulation of glycogen in neurons, which is toxic and causes dementia.

Q: Do you have any updates from the glycation supplement clinical trials?

PK: Regarding glycation, our pilot trial shows that GLYLO reduces calorie intake and can alleviate post-menopausal hormonal imbalance – by lowering FSH (follicle-stimulating hormone).

Q: Has your 16-hour fasting routine revealed any new insights?

PK: Nothing new to report.

Q: What’s next on the horizon?

PK: Our study on GLYLO extending lifespan and improving insulin sensitivity has been accepted for publication. We have several other studies coming up next on how lowering glycation can improve eye and cardiac health.



Watch Dr Pankaj Kapahi’s complete interview on The HumanWare Project, where he demonstrates longevity experiments in the Buck Institute’s fly room and shares additional insights on the science of ageing. Learn more about his research at buckinstitute.org





CATEGORY: INVESTMENT

The Future of Longevity Investment

Where will the next BioAge IPO come from – and who's funding the revolution?

A HUMANWARE Investment Supplement

The longevity investment landscape has reached an inflection point. What was once the province of Silicon Valley biohackers and eccentric billionaires has evolved into a sophisticated sector attracting institutional capital at unprecedented levels. In 2024, global longevity investment surged to £6.8 billion (\$8.64 billion) across 325 deals – a staggering 220 per cent year-over-year increase that outpaces traditional healthcare sectors by orders of magnitude.

Offering an institutional viewpoint on this complex landscape is Hope Luo, Head of Private Equity at Omega Capital, overseeing £120 million (\$152 million) in venture investments across healthcare and frontier technology. Her comments provide valuable perspective on key trends shaping longevity investment. Meanwhile, Méline Liu, founder of The HumanWare Project – the series behind HUMANWARE – continues her mission to connect cutting-edge longevity projects with the investment community. Hope is driven by a passion for ensuring breakthrough science reaches the capital it needs to flourish.

“The acceleration we’re witnessing reflects a fundamental shift from speculative to evidence-based investing,” comments Hope, drawing on her experience managing portfolio companies across multiple regions. With over 15 years navigating transactions worth more than £8 billion (\$10.16 billion), she has witnessed the longevity sector’s evolution from fringe science to mainstream opportunity. “What’s changed is that we now have proof points – actual clinical data, regulatory pathways and, most importantly, clear routes to commercialisation.”

This investment supplement examines four critical sectors poised to define the next decade of longevity investment: the general longevity landscape that’s attracting record capital, the neurological health revolution powered by AI and brain-computer interfaces, the controversial yet promising psychedelic medicine frontier, and the long-overlooked female health market finally receiving its due attention. Each represents not just scientific breakthroughs, but profound changes in how we approach human health and ageing.

About the Contributors

Hope Luo is Head of Private Equity at Omega Capital, overseeing £120 million (\$152 million) in venture investments across Healthcare, Frontier Technology and Artificial Intelligence. With over 15 years of investment experience spanning transactions worth more than £8 billion (\$10.16 billion), she brings deep sector expertise in biotechnology, medical devices and digital health.

Méline Liu is the founder of The HumanWare Project, the leading platform connecting longevity innovators with investors and the broader public. Her work has established critical bridges between cutting-edge science and capital markets, facilitating understanding and investment in the longevity revolution.



The Longevity Investment Landscape

From Backwater Science to £600/\$762 billion Market Opportunity

The numbers tell a compelling story. The broader longevity biotech market is projected to reach £480 billion (\$610 billion) by 2028, growing at a compound annual rate of 9.2 per cent. Yet this barely scratches the surface of what Nobel laureate Venki Ramakrishnan calls a complete transformation of the field.

“Ageing used to be a kind of backwater field,” Ramakrishnan observes. “It was not considered serious biology but now, because of modern tools, we’re actually able to make it into harder science. And so more and more mainstream biologists are going into ageing research.”

Hope identifies several key segments driving this growth, with therapeutics targeting cellular ageing mechanisms showing the strongest innovation momentum. “Senolytic drugs and NAD⁺ (nicotinamide adenine dinucleotide) pathway modulators are attracting significant attention,” she notes, pointing to anti-ageing therapeutics specifically projected to grow from £63 million (\$80 billion) in 2025 to £2.2 billion (\$2.79 billion) by 2040. “This indicates substantial therapeutic pipeline development and regulatory pathway clarification driving investor confidence.”

The evolution is perhaps best illustrated by the journey of BioAge Labs, which completed a £158 million (\$201 million) IPO in September 2024 – one of the year’s most successful longevity-focused public offerings. However, the company’s subsequent decision to discontinue its lead obesity candidate azelaprag in December due to safety concerns serves as a reminder of the sector’s inherent risks.

KEY LONGEVITY INVESTMENT METRICS



Market Size:
£6.8 billion
(£8.64 million)
invested in 2024
(325 deals)



Growth Rate:
220%
year-over-year
increase



Projected Market:
£480 billion
(£610 billion)
by 2028



Leading Segment:
Discovery Platforms
(£2.1/\$2.67 billion,
28% of funding)



Average Timeline:
7-10 years
from funding
to exit

The Public Versus Private Equation

The distinction between public and private opportunities reveals the sector's maturation. "Public longevity markets offer greater liquidity and established regulatory pathways," Hope explains, citing companies like the now-public BioAge and Alzheon, which secured £80 million (\$102 million) in Series D funding before pursuing its IPO strategy. "But private markets currently dominate, offering deeper innovation exposure and partnership opportunities with academic institutions."

The timeline question looms large for investors accustomed to software's rapid returns. Hope doesn't sugarcoat the reality: "Longevity investments typically mirror biotech development cycles, requiring seven to 10 years in private markets from initial funding to potential exit events." This extended horizon encompasses preclinical research, regulatory approval processes and clinical trial phases that can stretch significantly for novel ageing interventions requiring long-term efficacy data.

Managing the Risk Portfolio

The risk factors are substantial and multifaceted. "A key challenge remains regulatory uncertainty, as guidance for longevity-related therapies is continually evolving among global health authorities," Hope cautions. Clinical trial complexity increases exponentially when measuring healthspan improvements over traditional disease endpoints. Rapid advances in technologies such as cellular reprogramming and gene therapy underscore the importance of continuous innovation and adaptability within the sector. Yet perhaps the most significant hurdle is market adoption. "Ageing interventions may face reimbursement hurdles and require consumer willingness to pay for preventive rather than curative treatments," Hope observes.



Where Mind Meets Machine in the £281/\$357 billion Frontier

The neurohealth investment space represents one of the most dynamic intersections of technology and medicine. The global neurology market reached £54 billion (\$69 billion) in 2024, with digital health applications alone representing £32 billion (\$41 billion) – projected to explode to £225 billion (\$286 billion) by 2034 at a remarkable 21.8 per cent compound annual growth rate.

"The convergence of AI, biotechnology and neuroscience creates unprecedented therapeutic and diagnostic opportunities," Hope explains. Mental health digital solutions led the charge in 2024, attracting £2.2 billion (\$2.79 billion) across 184 deals – a 38 per cent year-over-year increase that reflects both pandemic-accelerated adoption and defining changes in care delivery.

The brain-computer interface (BCI) market exemplifies the sector's transformative potential. Growing from £1.4 billion (\$1.78 billion) in 2022 to a projected £5 billion (\$6.35 billion) by 2030, BCIs are transitioning from science fiction to clinical reality. Companies like Neuralink, with £544 million (\$691 million) in total funding, are joined by more accessible players like Subsense, which raised £14 million (\$17.8 billion) for non-surgical approaches.

Morgan Stanley's Kallum Titchmarsh doesn't mince words about the opportunity: "This is, to us, the next big opportunity in medtech – and it's rare. BCIs have been in development for 100 years, essentially. When you are five years away from full commercial launches, I think it's time to get excited and get ahead of the curve."

NEUROHEALTH IN NUMBERS



Global Market:
£54 billion
 (\$69 billion) (2024)
£76 billion
 (\$97 billion) (2029)



Digital Applications:
£32 billion
 (\$41 billion)
£225 billion
 (\$286 billion)
 by 2034



Mental Health Funding:
£2.2 billion
 (\$2.79 billion)
 (184 deals,
 +38% YoY)



BCI Market:
£5 billion
 (\$6.35 billion)
projected by 2030



Potential TAM:
£320 billion
 (\$406 billion)
(Morgan Stanley estimate)

AI's Transformative Role

Artificial intelligence isn't just enhancing neurohealth investments – it's fundamentally rewriting the playbook. "AI and machine learning serve as foundational technologies enabling precision neurology through pattern recognition in brain imaging, EEG analysis and biomarker identification," Hope notes.

These technologies are accelerating drug discovery by identifying novel therapeutic targets and predicting treatment responses, dramatically reducing clinical trial costs and timelines. Machine learning algorithms are achieving unprecedented diagnostic accuracy in conditions ranging from Alzheimer's to depression and epilepsy, creating entirely new market opportunities for early intervention.

Newfund Capital's team explains the timing: "We are at a moment where technologies such as signal capture, miniaturisation, materials, AI and brain imagery have reached the maturity to transform science into a product. These technologies are no longer limited to research laboratories, but are now being used in hospitals and homes."

The Investment Thesis

Hope sees both defensive and offensive opportunities in brain health. "Defensive opportunities centre on ageing-related neurodegeneration, with Alzheimer's and Parkinson's therapies addressing growing demographic needs and established reimbursement pathways," she explains. Digital mental health platforms offer defensive characteristics through recurring revenue models and lower regulatory barriers.

The offensive plays are equally compelling. "Brain-computer interfaces, cognitive enhancement technologies and AI-powered diagnostic platforms could create entirely new market categories," Hope suggests. Neurostimulation devices for depression and anxiety represent balanced opportunities, combining established clinical evidence with innovative delivery mechanisms.

Nita Farahany's vision captures the transformative potential: "Neural interface imagines a new world where, rather than having the chokehold, you are operating more like one with the devices that you're operating, and you're operating without the chokeholds in between."



Female Health's £83/\$105 Billion Opportunity

From 2.3% to Mainstream: The Investment Transformation

The statistics are staggering in their disparity. Despite representing 50 per cent of the global population, women's health companies received only 2.3 per cent of total healthcare venture funding historically. Yet 2024 marked a turning point, with female health investment reaching £2.1 billion (\$2.67 billion) – a 55 per cent increase from 2023.

“The historical underfunding stems from research bias toward male physiology, regulatory complexities around reproductive health and limited female representation in investment decision-making,” Hope explains. “But we’re witnessing a fundamental shift driven by growing awareness of the £83 billion (\$105 billion) market opportunity, coupled with female investors gaining prominence and data demonstrating superior returns in femtech.”

The numbers tell a compelling story. Biopharma now commands 35 per cent of women's health venture investment, up dramatically from previous years, reflecting serious therapeutic development in areas like endometriosis and menopause. Digital health platforms focusing on reproductive health and fertility tracking continue to attract significant capital, though their share decreased to 38 per cent from 54 per cent in 2021.

“Menopause-focused health technologies represent a growing area of interest, with significant potential for new solutions to meet the needs of women globally,” Hope emphasises. “Affecting 1.2 billion women globally by 2030 yet receiving minimal investment attention historically, this demographic shift creates substantial demand for hormone therapy alternatives, symptom management solutions and specialised healthcare delivery models.”

FEMALE HEALTH INVESTMENT EVOLUTION

**Historical
Funding:**
2.3%
*of healthcare
venture capital*

**2024
Investment:**
**£2.1
billion**
*(\$2.67 billion)
(+55% YoY)*

**Biopharma
Share:**
35%
*(up from
single digits)*

**Menopause
Market:**
**1.2
billion women**
by 2030

**Market
Opportunity:**
**£83
billion**
*(\$105 billion)
globally*

Technology as Catalyst

Regulatory and technological changes are accelerating market development. “The FDA's increasing openness to digital therapeutics and remote monitoring creates regulatory tailwinds for femtech innovation,” Hope observes. Advances in wearable technology, AI-powered diagnostics and telemedicine platforms enable more personalised and accessible women's healthcare delivery.

The growing acceptance of direct-pay healthcare models allows companies to bypass traditional reimbursement challenges while building evidence for eventual insurance coverage. “The smartest founders in this space aren’t chasing trends – they’re systematically addressing the massive care gaps that have existed for decades,” Hope observes. “When you consider that conditions like endometriosis take an average of seven years to diagnose, or that menopause affects every woman yet remains clinically underserved, the opportunity becomes clear.”

Hope is particularly enthusiastic about AI’s transformative potential in women’s health. “We’re seeing AI democratise access to care while driving breakthroughs in fertility technology, early cancer detection and predictive models for conditions like preeclampsia,” she notes. “These aren’t incremental improvements – they’re fundamental shifts in how women’s healthcare can be delivered.”



The Psychedelic Renaissance

Navigating the Complex Landscape of Mind Medicine Investment

The psychedelic medicine market represents one of the most intriguing yet complex sectors in longevity investment. “Given the regulatory complexities and evolving legal landscape, I will focus on market dynamics rather than specific investment opportunities,” Hope says, as she frames her observations carefully.

Current market sizing varies widely, with estimates ranging from £2.4 billion (\$3.05 billion) to £8 billion (\$10.16 billion) by 2030, reflecting both the sector’s nascent stage and regulatory uncertainties.

“The therapeutic areas where psychedelics show promise are well-documented,” Hope notes, assessing the market. “Depression, PTSD, addiction and end-of-life anxiety represent significant unmet medical needs where traditional pharmaceuticals often fall short.”

The regulatory landscape is evolving rapidly. Australia’s 2023 decision to allow psilocybin and MDMA prescriptions for certain conditions marked a watershed moment, while the FDA’s designation of psilocybin as a “breakthrough therapy” for treatment-resistant depression signals growing institutional acceptance.

However, the risks remain substantial. “Sector growth may be shaped by regulatory changes and evolving societal perceptions,” Hope notes. “Models involving supervised administration and integration therapy introduce additional layers of complexity compared to conventional pharmaceutical practices.”

Navigating Longevity Investment in 2025 and Beyond



Recent Developments and Future Trajectories

The longevity investment landscape in 2025 continues to evolve at breakneck pace. BioAge's journey from £238 million (\$302 million) IPO success to pipeline recalibration exemplifies both the sector's promise and perils. The company's pivot from its discontinued azelaprag programme to a £440 million (\$559 million) partnership with Novartis focused on ageing biology and exercise physiology demonstrates the resilience and adaptability required in this space.

Other notable developments include Alzheon's continued progress towards its anticipated IPO following its £80 million (\$102 million) Series D, and the emergence of discovery platforms as the dominant funding category, capturing 28 per cent of all longevity investment in 2024.

Regional Considerations

For UK and European investors, the landscape presents unique considerations. "European investors encounter unique regulatory frameworks, with approval processes sometimes requiring additional clinical data relative to other regions," Hope observes. "The UK's £3.8 billion (\$4.83 billion) annual life sciences R&D investment creates strong early-stage innovation, but European companies often seek US partnerships for late-stage funding and commercialisation."

The Bottom Line

What keeps Hope most excited about the space? "Scientific advances across areas such as cellular reprogramming and AI-powered drug discovery are opening new possibilities for extending healthspan," she reflects. "These sectors address massive unmet medical needs affecting billions globally, with ageing alone representing the largest risk factor for chronic disease."

The potential for platform technologies, where single innovations enable multiple therapeutic applications, offers exceptional scalability and return potential. Additionally, demographic trends including ageing populations and increased mental health awareness create sustained demand drivers independent of economic cycles.

Perhaps most surprisingly, the sector remains dramatically underinvested relative to its potential impact. Longevity investment's £6.8 billion (\$8.64 billion) in 2024, while impressive, represents less than 1 per cent of total global healthcare spending – suggesting the revolution has only just begun.

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The Brain Hacker

*How one neuroscientist is rewiring women's health
through the power of electrical stimulation*

For decades, women have been told that debilitating period pain is simply part of life – they should take a painkiller and push through. But Dr Emilė Radytė, a Harvard and Oxford-trained neuroscientist, believes this approach is fundamentally flawed. “It’s shocking how long we’ve accepted certain side effects as normal – some as serious as a 7% chance of heart attack – just from taking women’s health products like oral contraceptives and pain medication,” she asserts.

This isn’t just another wellness entrepreneur making bold claims. Emilė has spent years in emergency rooms, research labs and the corridors of power at Public Health England. Now, as founder of Samphire Neuroscience, she leads a revolution that

could transform how half the world’s population experiences their monthly cycles.

The path from Lithuanian teenager to Harvard scholar to Oxford PhD wasn’t linear, but each step revealed pieces of a puzzle that would eventually become Nettle™ – the world’s first brain stimulation device designed specifically for PMS and menstrual pain. “During my time leading Harvard’s emergency medical service, about 50% of our calls were psychiatric emergencies,” Emilė recalls. “That was my first visceral experience of how broken our mental health system really is and how limited the available solutions are.”

But it was during her doctoral work at Oxford, where she straddled the departments of psychiatry

and engineering, that the pieces began to fall into place. “Most of the depression patients I was treating were women and, for many of them, these episodes coincided with reproductive events,” she explains. The revelation was both personal and professional – here was a massive blind spot in medicine, affecting billions of women, largely ignored “because men don’t have these additional cycles.”

The science behind Nettle™ is elegantly simple, though it took years of research to perfect. Using transcranial direct current stimulation (tDCS), the device sends gentle electrical currents to two specific brain regions. The front targets the prefrontal cortex – the brain’s emotional control centre that becomes unbalanced during PMS. The back addresses the motor cortex, which influences pain perception. “Fundamentally, our pain is always in the brain,” Emilé explains. “There’s no pain unless the brain has processed it. What we do is increase the brain’s pain perception threshold, so by the time the actual pain signal arrives, your brain ignores it.”

The results have been remarkable. In clinical trials, 72% of users saw their pain reduced by more than half within a single month. Two-thirds experienced significant improvements in mood and functionality. But perhaps most revolutionary is what the device doesn’t do – it doesn’t flood your body with hormones or chemicals that affect organs they were never meant to reach.

“We’re so used to thinking that the best solution is to pop a pill,” Emilé muses. “But when you really think about it, taking a chemical where 80% gets degraded before reaching your bloodstream, and the rest potentially poisons your other organs – well, that’s actually the weird approach. Going directly to the brain region that’s affected? That’s straightforward.”

The device itself looks deceptively simple – a minimalist headband that wouldn’t appear out of place in a high-end meditation studio. Users wear it for just 20 minutes a day during the five days before their period. For Emilé, it has become an effortless

part of her pre-period morning routine: “I just use it a couple of times in the days leading up to my period, usually first thing in the morning while I write my emails, and I actually find it pretty relaxing. Doing it has given me such a sense of control and agency,” she shares.

But this isn’t just about individual relief. Emilé envisions a future where women’s health is treated holistically, where data from your 20s informs treatment in your 40s, where suffering isn’t dismissed as just part of being female. “I want my daughter to grow up in a very different world than I did. One where we’re not expected to push through pain because we’re ‘strong, independent women’, but where we have options that actually work with our biology rather than against it,” she reflects.

As for how Nettle™ has been received by other women, Emilé shares a story about a long-term user who forgot her device while travelling. When her period started with all of its old, severe symptoms, the woman truly realised the value it has brought to her life. “There and then she committed to using it regularly,” Emilé recounts. “But, to me, the real insight was how insane it is that we take suffering for granted until we realise we don’t have to.

Once you experience not feeling the symptoms, having them come back almost feels worse because you know that you can now do something about them.”

Meanwhile, Samphire is also developing a device specifically for menopause, recently unveiled to acclaim at a New York conference, and offering hope to women not just at different stages of their cycle, but through different seasons of their life.

In a world where women’s pain has been dismissed, minimised or medicated into submission for centuries, Emilé isn’t just offering a new device. She is proposing a fundamental shift in how we understand and treat the female brain. And for the millions of women who have been told their monthly suffering is just part of life, that shift can’t come soon enough. **HW**

*“Once you experience
not feeling the
symptoms, having
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almost feels worse
because you know
that you can now
do something
about them”*

Since we
spoke...

“I want my daughter to grow up in a very different world than I did”

Key Things to Know

The Science

- The brain's prefrontal cortex becomes unbalanced during PMS, losing its ability to regulate emotions effectively
- Pain perception isn't just physical – our brains can be trained to increase pain tolerance through targeted stimulation
- Different types of pain require different treatments – chronic menstrual pain operates differently from acute injury pain

The Technology

- Transcranial direct current stimulation (tDCS) has 30+ years of safety research with no serious adverse events
- This technology needs just 20 minutes daily for 5 days before your period
- It works by rebalancing brain activity rather than flooding the body with hormones or chemicals

The Results

- 72% of users experienced over 50% reduction in pain within one month
- Two-thirds see significant improvements in mood and daily functionality
- The effects can be maintained with reduced usage over time as the brain adapts

The Future

- Emilè and her team have a menopause-specific device in development
- She has a vision for longitudinal women's health tracking across life stages
- She aims to transform women's healthcare from reactive treatment to proactive brain health

We went back to Emilè for an update on her work since our podcast interview

Q: What has been the most exciting development at Samphire since we last spoke?

ER: It's been a big few months – we've just completed our clinical trials on PMDD and kicked off two clinical trials on endometriosis (one in the UK, one in the US), are expanding warehouses across the EU, and just launched our subscriptions, which make our Nettle™ at-home brain stimulation more accessible than ever. Lots of momentum!

Q: Any surprising feedback from users?

ER: Not surprising exactly, but incredibly heartwarming. We've heard from people who used to rely on their partners just to get through the worst days and now feel fully in control... Or people who used to track symptoms like clockwork and now barely notice them. One user described finally feeling present and capable in the days leading up to her period – able to care for her kids calmly, move through the day without pain ruling everything, and even rest without that heavy sense of guilt. Stories like that remind us what a massive gap there's been in support, and how powerful it can be when you finally get your life back. (Many more of them in their own words at Trustpilot.)

Q: Any personal insights from your continued use?

ER: Yes! Most users say getting used to Nettle™ as part of their routine can take two to three months, but positive effects continue increasing over time, so we've loved seeing our users stay loyal and feel well. Our studies of real-world Nettle™ users have shown that after six months of using Nettle™, 89 per cent of users have changed their medication use, with 69 per cent of all users reducing the amount of painkillers they need, 25 per cent changing their hormonal contraceptive use, and 22 per cent changing their antidepressant use, which shows a massive change in behaviour. On top of that, six months into using Nettle™, over 80 per cent of users have reported having to take fewer sick days, saving an average of two full days per month. This shows a massive long-term benefit, not only to individual symptom relief, but also to users' daily experience and quality of life.

Q: What's next on the horizon?

ER: We're gearing up to expand to the US, Canada and Australia, and are working on a reimagined version of Nettle™ (built on everything we've learnt from our early users!). Can't wait to share more soon.



Dr Emilè Radyté's interview first appeared on **The HumanWare Project**. To watch this interview and many others, search for the

channel on YouTube or your podcast platform of choice. Discover more about Samphire Neuroscience and their groundbreaking work at samphireneuro.com



“The purpose and objective of psychopharmacology is the suppression of a symptom. What we’re doing with this is we’re addressing the source of the issue.”

The Frequency Healer

How one neuroscientist is revolutionising mental health by orchestrating the brain’s own electrical symphony

For decades, the treatment of psychological distress has followed a familiar script: identify the symptoms, prescribe medication to suppress them, and hope for the best. But Dr Tiff Thompson, Co-Founder of NeuroField Neurotherapy, believes this approach fundamentally misses the point. “The purpose and objective of psychopharmacology is the suppression of a symptom,” she explains from her Santa Barbara clinic. “What we’re doing is addressing the source of the issue.”

This isn’t merely another wellness trend dressed in scientific language. Tiff has spent over a decade pioneering a radical departure from conventional mental health treatment – one that treats the brain not as a black box to be chemically adjusted, but as a sophisticated electrical system capable of being retuned to optimal performance.

Since establishing NeuroField Neurotherapy in 2013, Tiff has been at the forefront of what she calls “computational neuro-analytical processes” – a mouthful that essentially means using cutting-edge technology to understand why someone’s brain produces the symptoms they experience, then systematically correcting the underlying neurological imbalances.

The journey begins with mapping. Patients undergo comprehensive EEG and ERP (event-related potentials) testing, creating a detailed picture of their brainwaves and how their neural networks respond to stimuli. “We rarely get a pure ADHD, for instance,” Tiff notes. “There’s usually a combination, and because the mind and the brain are inextricably linked, there’s a way to understand why the individual is experiencing the symptoms they’re experiencing given the neurological findings that they have.”

“Openness to new experiences and openness to other people’s perspectives is an age-defying thing. The more available we are for all the possibilities, the more possibilities are available to us.”

What sets NeuroField apart is Tiff’s orchestra conductor approach to neurostimulation. Rather than relying on a single intervention, she blends multiple modalities like a master musician crafting a symphony. Transcranial direct current flows point-to-point through the brain. Alternating current delivers specific frequencies. Aperiodic noise – what Tiff poetically describes as “life force energy” – provides an underlying hum. Add vagal nerve stimulation, photobiomodulation using targeted light, and pulsed electromagnetic field therapy, and you have a treatment as complex as the brain itself.

“Frequency is like music,” Tiff explains. “And there are blends we can create that will do all different kinds of things.” Her team can orchestrate frequencies ranging from a languid 0.31 Hz – a slow, three-second wave – to a rapid-fire 300,000 Hz, each serving a different therapeutic purpose.

The science behind this approach draws from a profound understanding of the brain’s electrical nature. Tiff likes to illustrate the fundamental reality of our existence with a striking analogy: if you expanded a baseball to the size of our planet, the electrons floating within it would be the size of cherries. “We’re working with frequencies that the body naturally emanates and we’re giving it back what it wants,” she says.

Perhaps most intriguingly, Tiff’s team has pioneered frequency-enhanced water – spending eight hours overnight stimulating water with anti-inflammatory frequencies. “When you drink it, you’re drinking water, but you’re drinking frequency-enhanced water,” she explains, illustrating the clinic’s philosophy that healing can be found in the most fundamental elements of existence.

The results speak for themselves, though not always in ways patients expect. Tiff recalls a man who came for tremor treatment. While his tremor improved, his wife observed something more profound: “She told him he was so much nicer now that he’s doing this therapy.” The neurological healing had unlocked emotional and relational improvements no one had anticipated.

This holistic transformation reflects Tiff’s core insight about neuroplasticity. “Your brain is going to follow paths of least resistance,” she explains. “It’s just going to do the things that are easiest to do.” Through targeted stimulation, NeuroField doesn’t just treat symptoms – it creates new neural pathways, opening

possibilities for patients to express themselves differently.

The treatment protocol itself is elegantly simple despite the underlying complexity. After initial mapping and analysis, patients sit with electrodes placed strategically on their heads, receiving their customised frequency blend. Sessions typically occur daily or twice daily, with progress measured through quantifiable before-and-after brain mapping. “We show you your pre and your post and we can tell you what percentage of your brain has changed,” Thompson explains.

For some, transformation comes quickly – within several sessions or even just one. The average treatment requires 20 to 30 sessions for most conditions, though severe cases like traumatic brain injury or severe autism require longer interventions. What remains consistent is the scientific rigour: every claim backed by measurable neurological change.

Tiff’s vision extends beyond individual treatment. Through the School of Neurotherapy, she’s training a new generation of practitioners in quantitative EEG analysis, neurotherapy certification, and soon, neurostimulation techniques. “Neuroscience is a beautiful burgeoning field, and all over academia we can see experiments that are being run, but it’s not being used clinically very well,” she observes.

Her personal approach to neuroplasticity is refreshingly human. When asked about maintaining peak performance, Tiff does not cite complex protocols or exotic supplements. Instead, she talks about playing with her children. “I’ll go and I’ll be with my children and their childlike wonder, to the best of my ability. There is a magic to childhood, and so they keep me open to that.”

This openness, Thompson argues, is the secret to cognitive longevity. “Openness to new experiences and openness to other people’s perspectives is an age-defying thing. The more available we are for all the possibilities, the more possibilities are available to us.”

As mental health treatment grapples with questions of efficacy, side effects and long-term sustainability, Tiff’s work suggests a fundamental reframing. Rather than viewing the brain as a biochemical system to be managed, NeuroField treats it as the electrical organ it truly is – one capable of being precisely tuned, optimised and healed through the very frequencies that define its operation. **HM**

Key Things to Know

The Science

- The brain operates as an electrical system producing measurable frequencies and noise patterns
- Aperiodic noise acts as underlying life force energy governing brain function, similar to properties that control star luminosity and weather systems
- Neuroplasticity states can be maintained for up to 90 minutes after treatment, allowing for lasting change
- Different conditions require different frequency blends, customised through computational analysis

The Technology

- EEG and ERP testing create detailed maps of brain function and responsiveness
- Multiple neurostimulation modalities work together: transcranial currents, electromagnetic fields, light therapy and vagal stimulation
- Pulsed electromagnetic field devices use copper coils wound 200-300 times to generate precise frequencies
- Water can be 'programmed' overnight with therapeutic frequencies for enhanced healing effects

The Results

- Treatment averages 20-30 sessions for most conditions, though some see changes within one session
- Pre and post brain mapping provides quantifiable percentage improvements
- Conditions treated include anxiety, depression, PTSD, ADHD, learning disabilities, and age-related cognitive decline
- Patients often experience unexpected improvements beyond their presenting symptoms

The Approach

- Treats root neurological causes rather than suppressing symptoms
- Addresses the brain as an organ requiring precise tuning rather than chemical management
- Combines multiple modalities for comprehensive treatment rather than single interventions
- Provides ongoing education through the School of Neurotherapy for practitioner training

Since we spoke...

We went back to Tiff for an update on her work since our podcast interview.

Q: What's been the most exciting development at NeuroField since we last spoke?

TT: We have implemented the use of AI profiling for various conditions in the NeuroField software, which is helping us better understand how individuals' EEG and event-related potential findings align with established clinical diagnostic profiles.

Q: Any new insights from the frequency-enhanced water experiments?

TT: No, although this has been incredibly popular and effective, there have been no new insights.

Q: Has your clinical approach to delivering neuroplasticity treatments evolved since we last spoke?

TT: We have started seeing patients exclusively on an intensive basis (once or twice daily for one to two weeks), as this has proven to be the best model for neurostimulation's efficacy. We're seeing fast and meaningful changes in patients as a result.

Q: What's next on the horizon?

TT: We are considering franchising. Although still provisional, the expansion of the NeuroField Neurotherapy centres seems to be a foregone conclusion.

 **Dr Tiff Thompson's interview first appeared on The HumanWare Project. To watch this interview and many others, search for The Humanware Project on YouTube or your podcast platform of choice. Discover more about NeuroField Neurotherapy and their groundbreaking work at neurofieldneurotherapy.com**



THE HUMANWARE EDIT

The World's Leading Longevity Clinics

*A peek inside the world's most advanced
longevity clinics, from San Diego to Sardinia*

Today's best longevity clinics offer something far more ambitious than traditional medicine: the promise of not just treating disease, but preventing it entirely – and even slowing down the ageing process. At these exclusive addresses, pioneering diagnostics meet five-star hospitality, creating sanctuaries where optimising your healthspan becomes an art form as much as a science.





Clinique La Prairie, Switzerland

The Original Pioneer

Since 1931, this lakeside sanctuary in Montreux has set the gold standard for luxury longevity. With over 50 medical specialists and a client list that reads like a Who's Who of the 20th century – Marilyn Monroe, Pablo Picasso, Carla Bruni – Clinique La Prairie pioneered the concept of the medical spa. Today, their signature CLP Extract 'rejuvenation formula' and week-long programmes (£8,000 (\$10,160) to £40,000 (\$50,800)) continue to attract those seeking cellular renewal with Alpine views. The 1,600m² spa and 38 luxury suites ensure the medical excellence comes wrapped in five-star comfort.

Fountain Life, USA

Where AI Meets Longevity

Co-founded by Tony Robbins and Peter Diamandis, Fountain Life represents the future of preventive medicine. Using AI-powered diagnostics, they've identified potentially life-threatening conditions in 14 per cent of seemingly healthy members – people who felt fine but harboured hidden dangers. With locations across America and memberships ranging from £5,200 (\$6,604) to £17,200 (\$21,844) annually, they offer whole-body MRI scans, advanced genetic testing, and 24/7 concierge medical care. "We're not waiting for disease to strike," their literature promises. "We're finding it before it does."



Human Longevity Inc., USA

The Genomics Powerhouse

Founded by genome pioneer Dr J. Craig Venter, this San Diego clinic holds one of the world's largest private whole genome databases. They collect an astounding 150 gigabytes of data per client – equivalent to scanning every page in a small library. With over \$600 million invested in diagnostic capabilities and 10,000+ clients served, they offer packages from £6,000 (\$7,620) to £15,200 (\$19,304). Their bold '\$1M Prostate Cancer Pledge' for members demonstrates their confidence in catching disease early.

Chenot Palace Weggis, Switzerland

The Biological Reset

Nestled on Lake Lucerne, Chenot Palace operates on the principle that true transformation requires time – hence their seven-night minimum stay. Their 100+ medical experts deploy everything from whole-body cryotherapy at -110°C to antigravity treadmills. The revolutionary Chenot Method® combines traditional wisdom with space-age technology, including bio-energetic check-ups and epigenetic profiling. At £4,400 (\$5,588) to £5,700 (\$7,239) per week, guests experience what the clinic calls a complete ‘biological reset’.

Photo credit: Guy Archard



SHA, Spain

East Meets West

Multiple winner of “World’s Best Wellness Clinic” – although now referring to itself as a longevity resort – SHA has mastered the fusion of traditional Chinese medicine with cutting-edge biotechnology. Located on Spain’s stunning Mediterranean coast within the Sierra Helada Natural Park, their 300+ professionals integrate nine holistic disciplines into personalised programmes. From ‘Well-ageing & Prevention’ to ‘Leader’s Performance’ packages designed for high-stress executives, programmes range from £2,400 (\$3,048) to £12,000 (\$15,240) weekly.



RoseBar Longevity at Six Senses Ibiza

Dr Mark Hyman’s Island Laboratory

Led by functional medicine pioneer Dr Mark Hyman, RoseBar brings 30+ years of expertise to the glamorous setting of Six Senses Ibiza. Their ‘Young Forever Programme’ (£3,850/\$4,890) promises to challenge conventional ageing through epigenetic insights and what they term ‘longevity pathway activation’. It’s where Balearic luxury meets serious science, offering three to seven-night journeys that blend spiritual wellbeing with cellular optimisation.

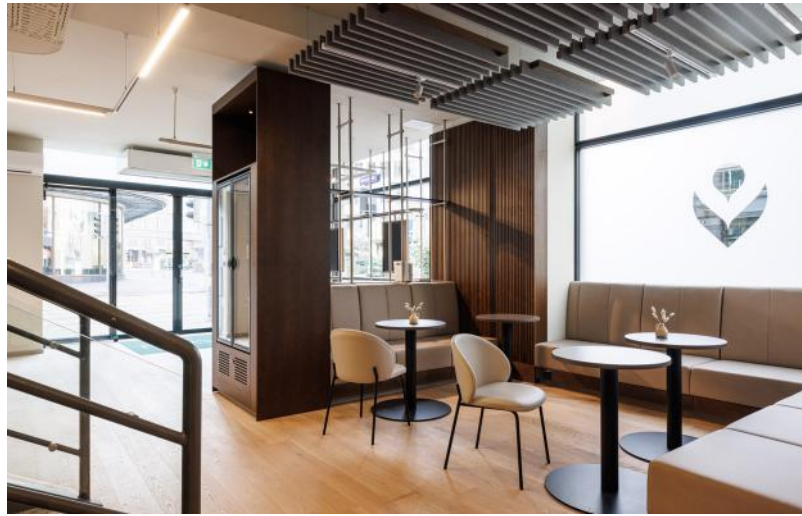
Photo credit: Six Senses Ibiza



AYUN, Switzerland

Longevity for the Time-Poor

As Switzerland's first walk-in longevity clinic, AYUN represents a more accessible tier of elite health optimisation. Founded by Dr Leonie Bode, it offers comprehensive diagnostics without the week-long commitment required elsewhere. Check-ups range from £2,000 (\$2,540) to £5,850 (\$7,430), including everything from genetic analysis to HBOT and cryotherapy. It's longevity medicine for busy professionals who can't disappear to a mountain retreat.



Golden Door, California

The Original Wellness Sanctuary

Founded in 1958, this Japanese-inspired retreat on 377 acres literally helped create today's £3.31 trillion (\$4.2 trillion) wellness industry. Limited to just 40 guests weekly with a 5:1 staff ratio, it offers an intimate, transformative experience. The exclusive Men's Week programme (£9,600/\$12,192) counts Howard Stern, Liev Schreiber, and Rupert Murdoch among alumni, with profits supporting philanthropy – luxury with a conscience.

HansHouse

Luxury Hospitality in Sardinia

Set to launch on Sardinia's ultra-luxury wellness scene in 2026 is HansHouse, the deeply personal project of hospitality entrepreneur Hans Cauchi. Located in Golfo Aranci, this stunning sanctuary features a holistic spa and longevity centre developed in collaboration with Italian wellness innovators Starpool. The facility integrates Blue Zone wisdom with advanced anti-ageing science. Mediterranean gardens dotted with citrus and olive trees, plus a private 800m² beach club create spaces for profound reconnection with nature's healing rhythms.



LONGEVITY CLINICS IN NUMBERS

£6.7 billion

(\$8.51 billion) Invested in the longevity sector in 2024, including longevity clinics, with a 220% increase in investment from 2023

14%

Percentage of 'healthy' Fountain Life members that discovered they had potentially life-threatening conditions through AI diagnostics

-110°C

Temperature of whole-body cryotherapy chambers at Chenot Palace Weggis

THE FAST FACTS

150 gigabytes

The amount of health data collected per client at Human Longevity Inc.
(equivalent to scanning every book in a small library)

1931

Year Clinique La Prairie pioneered the luxury medical spa concept
(still operating today)

5:1

Staff-to-guest ratio at Golden Door, California's ultra-exclusive wellness retreat

3-5 million

Projected number of centenarians worldwide by 2050
(compared to 95,000 in 1990)

20 minutes

The daily time commitment needed for most cutting-edge longevity treatments, from brain stimulation to meditation protocols

109%

Life extension achieved in elderly mice through cellular reprogramming

The quest for longevity has evolved far beyond simple vitamin supplements and annual check-ups. These pioneering clinics represent a new paradigm in healthcare – one where prevention trumps treatment, where data drives decisions, and where the boundaries between medicine and luxury have beautifully blurred. Whether through AI-powered diagnostics, cellular rejuvenation, or ancient wisdom reimaged for the modern age, each offers its own path to that most precious commodity: time itself. For those ready to invest in their future health, these establishments stand ready to decode, optimise, and perhaps even extend the very essence of life. **HW**

The HumanWare Project will be launching highly curated longevity trips and bespoke longevity concierge services in 2026. For those interested in joining these exclusive experiences, please email magazine@tela.space





THE Optimisation INVESTIGATION

Inside London's Hooke clinic, where comprehensive biomarkers and brain scans promise to reveal your true biological age

As part of a documentary episode filmed for The HumanWare Project, Founder Méline Liu has come to a Mayfair clinic renowned as one of the top preventive centres in London to undergo what Hooke calls 'the investigation' – a comprehensive health assessment that goes far beyond standard check-ups. Brain scans, blood analysis and fitness testing will reveal hidden truths about ageing. This is preventive healthcare at Hooke London – where the future of medicine looks less like treating disease and more like preventing it entirely.

"How well am I ageing?" is the question that Dr Clare Nieland says drives everything at Hooke. The answer, she explains, lies not in the calendar but in a proprietary calculation called the BioScore – a number derived from comprehensive testing that claims to reveal your biological rather than chronological age.

The distinction matters. While your birth certificate marks time's passage, your cells tell a different story. At Hooke, that story unfolds through what Clare describes as analysis of over 200 biomarkers – comprehensive blood panels assessing

everything from liver function to hormones, alongside cutting-edge diagnostics spanning brain activity to metabolic function.

Reading the Body's Electrical Map

The WAVE brain scan represents perhaps the most intriguing element of Hooke's investigation. As Professor Pierre-Marc Bouloux explains to Méline, the helmet-like device measures electrical activity across different brain regions, tracking voltage and regional distribution of brain activity.

"Whenever there is a difference between the charges inside and outside the cell, you create a voltage," Pierre-Marc notes, making the complex surprisingly comprehensible. The technology – essentially an advanced EEG system – allows tracking of brain function over time, which Pierre-Marc explains can be "quite useful in identifying abnormal brain function, which might, for example, denote a susceptibility to neurodegenerative diseases like Alzheimer's." He adds that this test provides individuals with "a baseline that can be tracked over time, over months or years."



The Optimisation Philosophy

What distinguishes Hooke's approach is its refusal to accept 'normal' as good enough. Clare describes how standard laboratory reference ranges merely indicate whether you're free from disease – but at Hooke, the goal is optimisation.

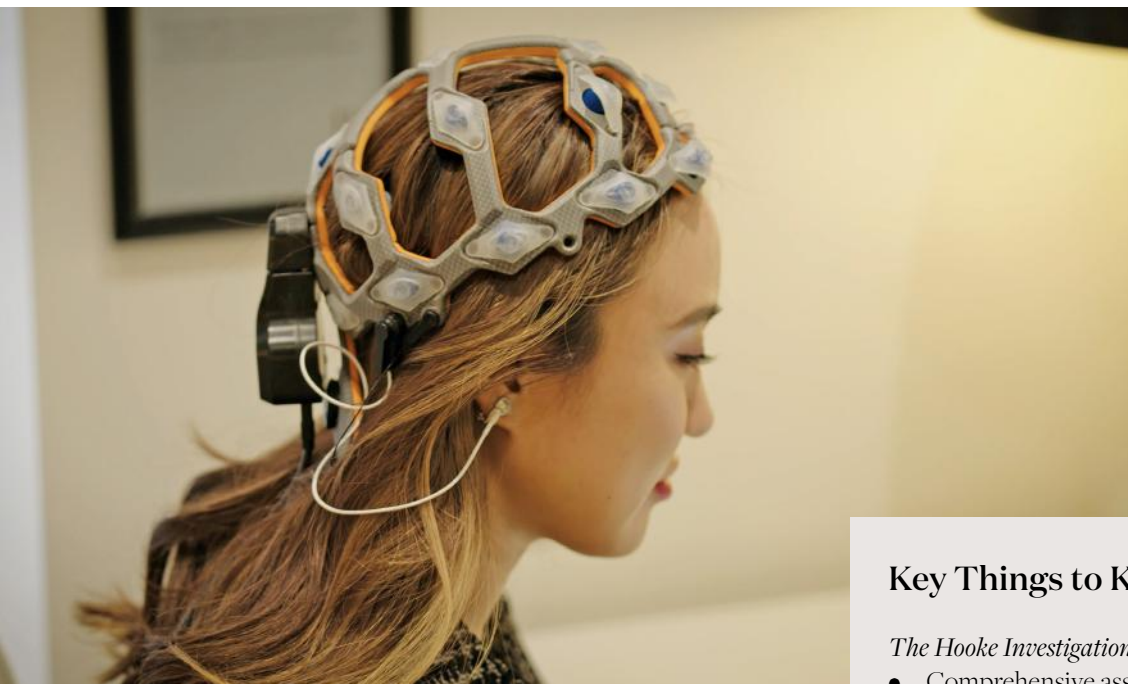
"We don't just want you to be inside that reference range," she emphasises. "We want to optimise you." This philosophy extends beyond blood work to physical performance, where fitness and nutrition expert Aaron Deere conducts assessments that reveal the body's true capabilities – or limitations.

The fitness testing reads like an athlete's combine:

VO2 max for cardiovascular capacity, grip strength correlating with overall health outcomes, vertical jump measuring power output. But perhaps most revealing is the resting metabolic rate test, which Aaron explains can vary dramatically between individuals. "We've seen resting metabolic rates as high as 2,500 calories," he notes, highlighting why generic dietary advice often fails.

A Personalised Approach

This personalisation extends to one of Hooke's differentiating factors – a cognitive health team that supports cognitive and emotional health and recognises that sustainable wellbeing changes require



“We don’t just want you to be inside that reference range. We want to optimise you.”

more than prescriptions and protocols. As Aaron observes about behaviour change: “You really need the help of an expert to understand how you break these habits and how you embed new habits in their place.” Their team helps clients change behavioural patterns that have been entrenched for 20 or 30 years.

Emphasising this unique approach to each client from initial assessment to ongoing support, Clare highlights: “Every patient or client that I see is an individual. Nobody walks in their shoes other than the person sitting opposite me. It’s really important to remember that there is no one-size-fits-all.”

The Hooke experience ultimately presents a paradox of modern preventive medicine. While their investigations employ impressive technology and command premium prices, the interventions often prove remarkably simple. The value lies not in discovering secret formulas but in the precision of diagnosis and the support to implement change.

As Méline reflects after her comprehensive assessment: “Data definitely gives a certain truth about your health and yourself.” But more than data, Hooke offers what she calls “hands-on guidance” – the human element that transforms numbers into actionable insights. **HM**

Key Things to Know

The Hooke Investigation

- Comprehensive assessment combining brain scans, blood analysis and fitness testing
- Proprietary BioScore reveals biological versus chronological age
- Over 200 biomarkers analysed
- Results benchmarked for optimisation, not just disease absence

Brain Voltage Mapping

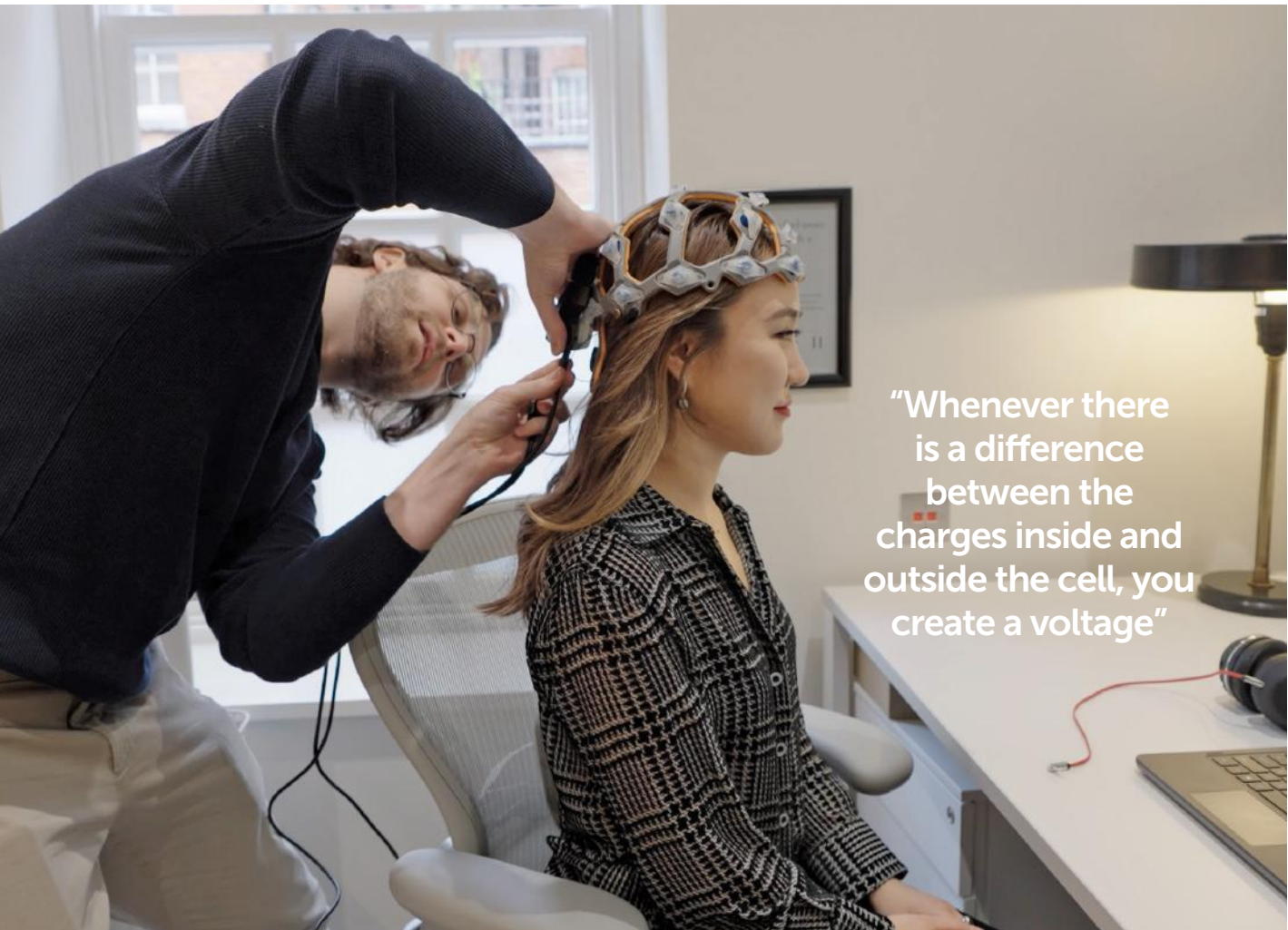
- WAVE technology measures electrical activity across brain regions
- Tracks voltage created by charge differences between cells
- Provides a baseline for monitoring cognitive health over time

The Optimisation Approach

- Standard lab ranges only indicate absence of disease
- Hooke targets optimal performance within healthy parameters
- Fitness testing includes VO2 max, grip strength, vertical jump and metabolic rate
- Resting metabolic rates can vary dramatically between individuals

Personalised Support System

- Cognitive health team helps break decades-old behavioural patterns
- Every intervention is tailored to individual biology and circumstances
- Combines precision diagnostics with human guidance
- Focuses on sustainable change rather than quick fixes



“Whenever there is a difference between the charges inside and outside the cell, you create a voltage”

PREVENTIVE VS REACTIVE: THE PARADIGM SHIFT

Traditional Healthcare

Wait for symptoms to appear

Treat disease after diagnosis

Standard reference ranges = ‘healthy’

One-size-fits-all protocols

Annual check-ups if at all

The Hooke Approach

Detect imbalances before symptoms

Prevent disease through optimisation

Optimised ranges for peak performance

Personalised interventions

Continuous monitoring and adjustment

The Bottom Line: While NHS health checks occur every five years after 40, Hooke’s model tracks biological changes in real-time, catching whispers before they become shouts.



This documentary episode exploring Hooke London’s comprehensive health investigation was filmed for The HumanWare Project, offering viewers an inside look at the future of preventive healthcare. Watch the full documentary on **The HumanWare Project’s** YouTube channel. To learn more about Hooke’s investigations and personalised health optimisation approach, visit hooke.london





The Mouth Detective

*Why one of the world's top award-winning dentists believes
your teeth hold the secret to living well past 100*

The moment a new patient settles into Dr Sameer Patel's chair at his Marylebone clinic, E11even Dental, he becomes a detective. Not searching for cavities or checking gum lines – though he does that too – but looking for clues about diabetes, heart disease, even early signs of dementia. In an era when medicine increasingly fragments the body into specialities, Sameer represents a different approach: treating the mouth as mission control for whole-body health.

“We’re not just looking at teeth,” Sameer explains from his practice, where he leads a team of 17 dentists. “We’re reading the body’s early warning system. I’ve diagnosed diabetes through gum inflammation more times than I can count. The mouth tells us what’s happening everywhere else, sometimes well before symptoms appear.”

This holistic perspective has earned Sameer recognition by being Tatler’s recommended dentist and winner of the British Indian Awards 2017. But more importantly, it’s transforming how his patients –



"The biggest misconception in dentistry is when to brush in the morning. It must be first thing, before eating."

many of whom travel internationally to see him – think about longevity itself.

The statistics supporting Sameer's approach are compelling. Research from *Science Advances* has identified *Porphyromonas gingivalis* bacteria from gum disease in the brains of Alzheimer's patients. Columbia University studies show clear links between periodontal health and brain MRI markers. The American Dental Association confirms that for every one per cent increase in HbA1c, the odds of periodontitis increase by 18 per cent.

"Renowned neuroscientist Andrew Huberman has now designated oral health as the seventh pillar of health," Sameer notes, referencing the Stanford neuroscientist's influential framework. "It sits alongside sleep, nutrition, exercise – all the fundamentals. That's how critical this is."

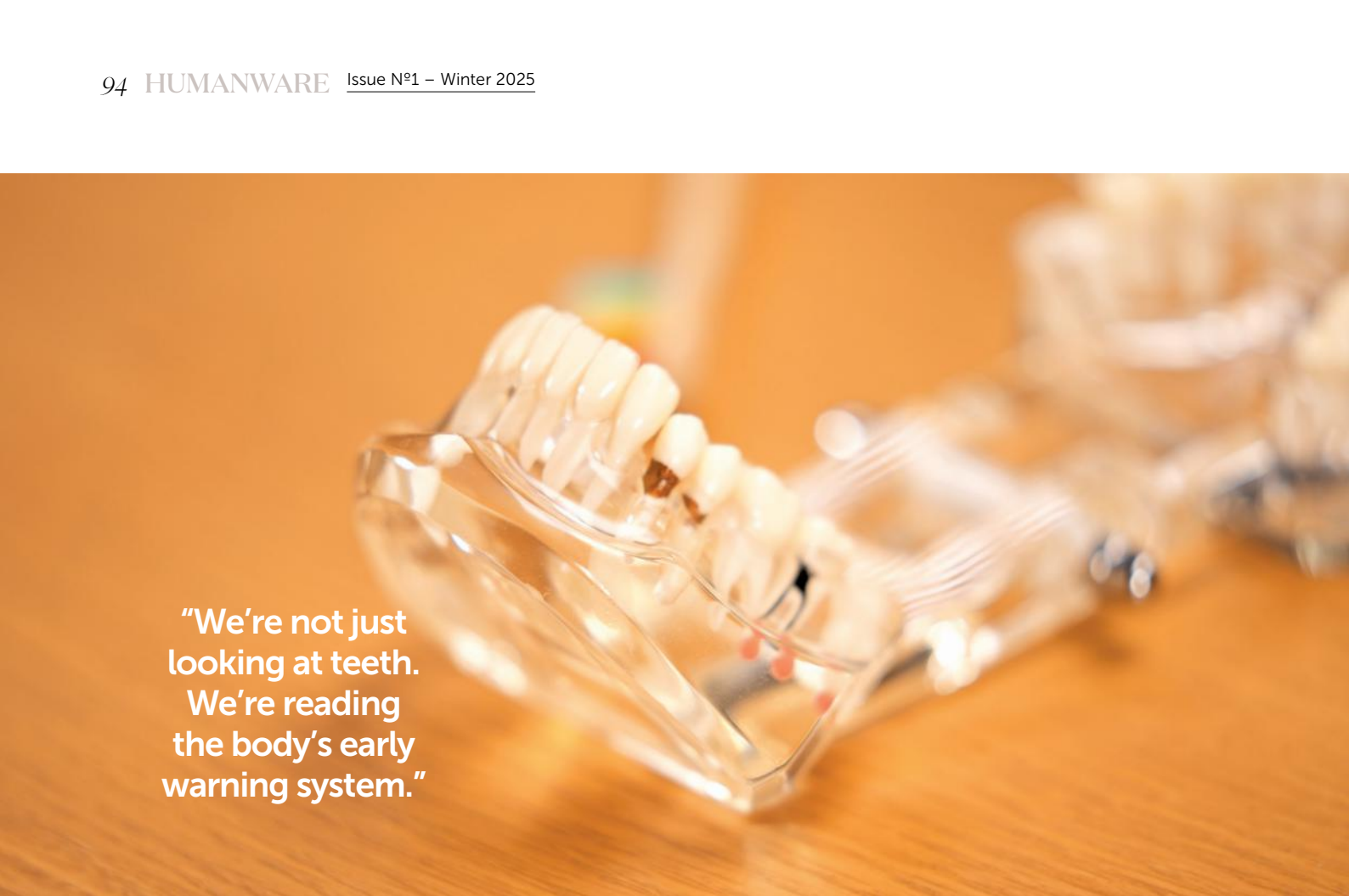
Yet most of us, Sameer observes, fundamentally misunderstand how to care for our mouths. Take the simple act of brushing teeth. "The biggest misconception in dentistry is when to brush in the morning," he reveals. "It must be first thing, before eating. Otherwise, you're feeding bacteria that convert food to acid, then brushing away softened enamel. You're literally eroding your teeth while trying to clean them."

The correct routine, he explains, involves brushing at 45-degree angles with circular motions, flossing before brushing (not after) and, crucially, using the PÄRLA tongue scraper to clean the tongue, where Sameer suggests significant bacteria reside. His patients receive detailed instruction on technique, transforming a mundane routine into precision healthcare.

But technique alone is not enough in our modern world. Sameer sees alarming trends in younger patients: excessive wear from grinding, erosion from carbonated drinks and stress manifesting as dental damage. "People in their thirties [are] showing wear patterns I'd expect in someone twice their age," he observes. "We're literally grinding ourselves down."

The solution involves more than night guards and better brushing. Drawing from *The Telomere Effect* by Nobel laureate Elizabeth Blackburn and Dr Elissa Epel, Sameer advocates for comprehensive lifestyle changes. Evening routines matter as much as morning ones: warm showers, breathwork, fiction reading, eliminating blue light exposure. "Your day should start one hour before bed," he insists.

His advice extends to unexpected areas. Warm water, not cold, aids enzyme function and digestion. Sugar should be confined to mealtimes, never consumed throughout the day. Regular hygienist



“We’re not just looking at teeth. We’re reading the body’s early warning system.”

visits act as “backstops,” catching what daily routines miss. For Sameer, these aren’t just dental tips – they’re longevity strategies.

The traditional dental model, Sameer believes, has failed patients by focusing on repair rather than prevention. In his practice, annual check-ups include oral cancer screenings, systemic health assessments and long-term planning. “We’re tracking trajectories, not just fixing problems. If someone’s wearing their teeth at an accelerated rate, we need to understand why and intervene early.”

This preventive philosophy also extends to areas like orthodontics. While traditional approaches often involved removing teeth – sometimes eight or more – Sameer’s practice extracts teeth in only a handful of cases annually. “When you remove teeth, especially in women, you see flattened profiles that age the face,” he explains. “We’re learning from past mistakes.”

Even Dental’s business model reflects this patient-centric approach. Unlike many practices focused on quick cosmetic fixes, Sameer’s team plans treatments in phases, allowing patients to spread costs while maintaining oral health. “It’s about creating partnerships, not transactions. Some patients I’ve seen for 20 years – I know their mouths better than they do.”

For those seeking a dentist, Sameer recommends looking beyond convenience. “Find someone who

“People spend thousands on supplements and treatments but ignore the one system that directly connects to their heart, brain, and gut.”

makes you feel comfortable asking questions, who explains the ‘why’ behind treatments. If the staff seem happy, that tells you about the practice culture. And yes, ask friends with healthy smiles for recommendations.”

The implications of Sameer’s approach extend far beyond individual health.

If oral health truly represents a seventh pillar of wellness, then those who skip regular dental visits are undermining their longevity potential. In a world where we optimise everything from sleep to nutrition, the mouth remains oddly neglected.

“People spend thousands on supplements and treatments,” Sameer reflects, “but ignore the one system that directly connects to their heart, brain and gut. We have patients living into their nineties with their own teeth, eating well, living fully. That’s not luck – it’s maintenance.” **HW**

Key Things to Know

The Science

- Oral bacteria directly link to Alzheimer's, with Porphyromonas gingivalis found in affected brains
- Every 1 per cent increase in HbA1c raises periodontitis odds by 18 per cent
- Periodontal health correlates with brain MRI markers and cardiovascular health
- The mouth serves as an early warning system for diabetes and systemic inflammation

The Routine

- Brush first thing in the morning before eating to prevent acid erosion
- Use 45-degree angles with circular motions, never scrubbing horizontally
- Floss before brushing, not after – think of it as “pre-washing”
- Use a metal tongue scraper to clean your tongue daily where significant oral bacteria reside
- Keep sugar confined to mealtimes to prevent constant acid attacks

The Modern Challenges

- Stress-induced grinding accelerates tooth wear beyond natural ageing
- Carbonated drinks (even sparkling water) cause enamel erosion
- Poor sleep routines increase grinding and oral health problems
- Young professionals show wear patterns previously seen only in elderly patients

The Preventive Approach

- Annual comprehensive check-ups, including oral cancer screening
- Regular hygienist visits as “backstops” for daily care
- Night guards for grinding prevention
- Tracking long-term patterns rather than fixing isolated problems
- Phased treatment planning for affordability and optimal outcomes

The Longevity Connection

- Oral health now recognised as Huberman's “seventh pillar” of wellness
- Direct connections between oral and systemic health throughout the body
- Preventive care enables keeping natural teeth into your nineties
- Early intervention costs far less than reactive treatment
- Proper oral care supports healthy ageing and quality of life

Since we spoke...

We went back to Sameer for an update on his work since our podcast interview.

Q: What has been the most exciting development at E11even Dental since we last spoke?

SP: We've been super busy helping people find their confidence and their smile. We get referrals from existing clients, but it's the organic way we create smiles that's proving especially popular with individuals focused on longevity.

Q: Have you come across any other unexpected health conditions through oral examinations recently? Any new discoveries that highlight the importance of preventive dentistry?

SP: The most common problem I'm seeing right now is tooth substance loss caused by over-scrubbing, acid erosion and teeth grinding. This is very different from the decay we used to see in the past, which was mainly linked to poor oral hygiene, high sugar intake, and non-preventative dentistry. Today, even things like lemon water, fizzy drinks and sparkling water can erode enamel at the same rate as sulphuric acid. It's something to be mindful about as it can lead to tooth loss.

Q: Besides hydrating with warm water, have you added any new favourite biohacks to your routine?

SP: I'm a big believer in monitoring sleep and making sure you get eight hours of quality rest so your REM and slow-wave sleep targets are met. That way, you set yourself up with the mental acuity you need for the tasks ahead the next day.

Q: What's next on the horizon?

SP: For me, it's about continuing to focus on wellness and well-being – through supplements and lecturing, as well as my Elite Dental Leadership Academy.



Dr Patel shared these insights with **The HumanWare Project**, exploring how oral health connects to longevity and whole-body wellness. Watch the full conversation on YouTube or your favourite podcast platform. Learn more about Dr Patel's practice at ellevendental.com



The Youth Alchemist

A young entrepreneur's quest to transform ageing from inevitable decline into reversible code

The fish tank metaphor comes up early in conversation with Alina Su. “Think of it like changing the water in a fish tank,” the 20-something CEO explains, describing how our blood accumulates cellular debris over time. “The water always gets dirtier if you’re not changing it. But after you remove the old water and add fresh, it becomes clear again.” It’s a deceptively simple analogy for what might be the most audacious medical proposition of our time: that human ageing isn’t a one-way street.

Alina represents a new breed of biotech entrepreneur – one who views death not as philosophical certainty but as an engineering problem. As Co-Founder and CEO of Generation

Lab, she leads a company that emerged from stealth in early 2024 with a bold claim: they can measure – and potentially reverse – your biological age through a combination of sophisticated testing and plasma treatments that sound more science fiction than medical fact.

The path that brought Alina to this moment reads like a carefully orchestrated rebellion against mortality itself. Thinking about the grandfather she never met because he died to neurodegenerative disease before she was born, at age 11, Alina recognised her mission. “I realised then that the reason I was put on this earth was to extend human life as much as possible,” she declares. By 15, she was interning at a neurodegenerative disease department. At Berkeley,





she infiltrated the laboratory of Dr Irina Conboy, a pioneer in rejuvenation biology, by bringing her lattes every day for months – despite Conboy never drinking them.

“I told her she should commercialise this technology,” Alina recalls of their early encounters. The response was unequivocal: “No.” But Alina persisted, building her first medical device company while still at university, using it as proof she could transform cutting-edge science into real-world application. When Conboy finally called to say she was ready, Alina made a decision that she says would horrify most Asian parents: she left Harvard Medical School’s PhD programme to bet everything on the possibility of extending human life.

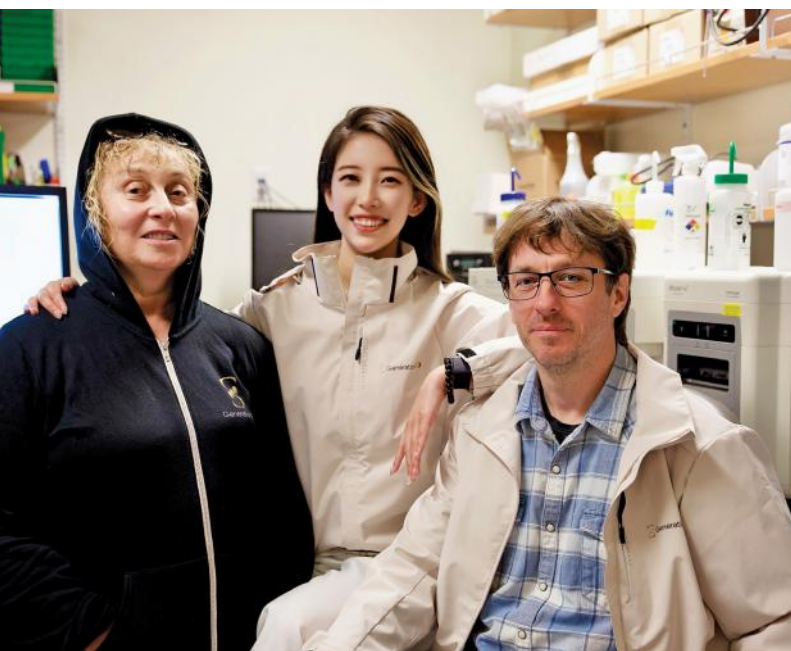
“Alina left Harvard Medical School’s PhD programme to bet everything on the possibility of extending human life”

The science behind Generation Lab rests on two interconnected innovations. First, their SystemAge Test analyses DNA methylation patterns – what Alina calls the “software” of our bodies – across 19 different organ systems. Unlike genetic tests that reveal fixed code, this examines how our genes express themselves, a process that changes based on sleep, stress, diet and dozens of other factors. According to

“Those not tracking their health right now will be limited to their 80s. Those paying attention to the latest technology will live longer naturally.”

recent research from Stanford, our bodies experience major molecular shifts at ages 44 and 60, periods when specific interventions might prove most valuable.

But measurement is only half the equation. The company's more controversial offering involves replacing TPE with a single injectable shot therapeutic plasma exchange (TPE), an FDA-approved procedure for autoimmune conditions that Alina's team believes can reset our biological clocks. The process removes approximately two-thirds of a patient's plasma – the liquid component of blood carrying cellular waste and inflammatory markers – and replaces it with an albumin solution.



“Soon we'll be able to live to 120 or even 150 years old, but we'll have to start replacing body parts”

“We're not using young blood,” Alina emphasises, addressing the vampire-adjacent imagery that haunts this field. “It's the removal of the old plasma that matters, not what you put back in.” The company points to research showing this process can reduce biological age markers, though independent verification remains limited and the FDA explicitly states such treatments are not approved for normal ageing.

The implications, if even partially true, reshape fundamental assumptions about human life. Alina envisions a world where 60 becomes “the new half of life,” where retirement at 65 transforms into a mid-career sabbatical. She speaks of living to 120 or even 150, though she acknowledges that beyond 120, “we need to replace our body parts with different silicon-based solutions.”

Yet for all the futuristic vision, what is most striking about Alina is her pragmatism. She tracks her own biological age quarterly, has refined her sleep from three hours to a disciplined eight, and speaks of longevity not as abstract concept but as daily practice. When demonstrating the company's blood collection device during the interview, she handles her own apprehension with the calculated courage of someone who has internalised her own message: that time itself is the ultimate commodity.

“Everyone who's not tracking their health right now will be limited to their 80s,” she states with the certainty of youth coupled with data. “Those paying attention to the latest technology, tracking their biomarkers and optimising their sleep – they'll live longer naturally.”

The fish tank will need changing again, of course. Alina admits their current plasma exchange protocol requires treatment every three to six months, though they're developing enhanced formulations to extend the intervals. But in a world where we accept that cars need oil changes and phones need software updates, perhaps the strange proposition isn't that our bodies might need similar maintenance – but that we ever believed they didn't. **HM**

Key Things to Know

The Science

- DNA methylation patterns reveal biological age across 19 organ systems
- Major molecular ageing shifts occur at ages 44 and 60
- Different organs age at different rates – your heart might be younger than your brain
- Epigenetic age can be influenced by lifestyle factors unlike fixed genetic code

The Technology

- SystemAge Test costs £393 (\$499) and requires a small blood sample collected at home
- Results include organ-specific ageing rates and personalised intervention recommendations
- Therapeutic plasma exchange removes two-thirds of plasma to eliminate cellular waste
- The FDA approves TPE for autoimmune conditions but not for normal ageing

The Promise

- Alina suggests humans could live to 120–150 years with current and emerging technologies
- Beyond 120 years humans may require silicon-based solutions to replace body parts
- Regular testing allows tracking of intervention effectiveness over time
- The goal isn't just longevity but extended healthspan – staying vital longer

The Reality

- Plasma exchange treatments need repeating every 3–6 months
- Scientific consensus on anti-ageing plasma treatments remains divided
- Claims about reversing biological age by decades lack peer-reviewed verification
- Treatments operate in regulatory grey areas with limited long-term safety data

“We’re creating the Ageless Generation. We’re the first generation of human beings able to extend healthspan and lifespan. A hundred years isn’t impossible – 120 is the target.”

Since we spoke...

We went back to Alina for an update on her work since our podcast interview.

Q: What has been the most exciting development at Generation Lab since we last spoke?

AS: We’ve doubled our clinic network to 200+ global partners and closed a Seed+ round led by Accel, with backing from Samsung, Steve Aoki and NBA stars like Giannis Antetokounmpo. Most excitingly, we now have ex vivo human data showing regenerative effects from our therapeutics, positioning Generation Lab not just as the fastest-growing AI longevity platform, but as a true pipeline for reversal therapies.

Q: Have any new noteworthy outcomes or patterns emerged from the TPE treatment?

AS: Yes. We’re seeing early evidence that TPE reduces systemic inflammation and enhances regeneration of muscle, neuron and liver cells in ex vivo human studies. This supports our ongoing work to translate plasma exchange into a single weekly self-injection – making ageing reversal more scalable and accessible than ever.

Q: Any new insights on quarterly biological age testing?

AS: With over 300 million real-life ageing data points, SystemAge is proving what the longevity world has long hoped for. We can now measure the impact of interventions like stem cells, HBOT and peptides in real time – across the brain, immune system and 19 organs and systems. We’ve seen users reverse years of biological age and catch silent risks early, like a flagged heart age that led to a CT scan revealing hidden calcification. This is the future of healthcare: detecting problems before symptoms start, and proving what actually works to slow ageing.

Q: What’s next on the horizon?

AS: Through SystemAge, we’re building the world’s most advanced longitudinal ageing data library. Tracking how every organ system responds to longevity interventions in real people, over time. To bridge the gap today, we’re launching a personalised longevity recommendation engine: a GPS for your biological age matching you with the most effective treatments based on your unique ageing signature. This isn’t just diagnostics; it’s the foundation for the first therapy that doesn’t just slow ageing but reverses it too.



Alina Su’s interview first appeared on **The HumanWare Project**. Watch the complete conversation and explore more breakthrough discussions at The HumanWare Project on YouTube or your preferred podcast platform. Learn more about Generation Lab’s biological age testing at generationlab.org



THE *Premium Longevity Products* Transforming Wellness

*Welcome to the new frontier of accessible
longevity, where cutting-edge science
meets uncompromising luxury*

The longevity market has evolved from niche biohacking circles to mainstream wellness, with premium products now offering clinical-grade results at home.

This comprehensive guide reveals what makes each of these 16 cutting-edge products worth their premium price points – from LED masks that celebrities swear by to brain-training devices revolutionising women's health.



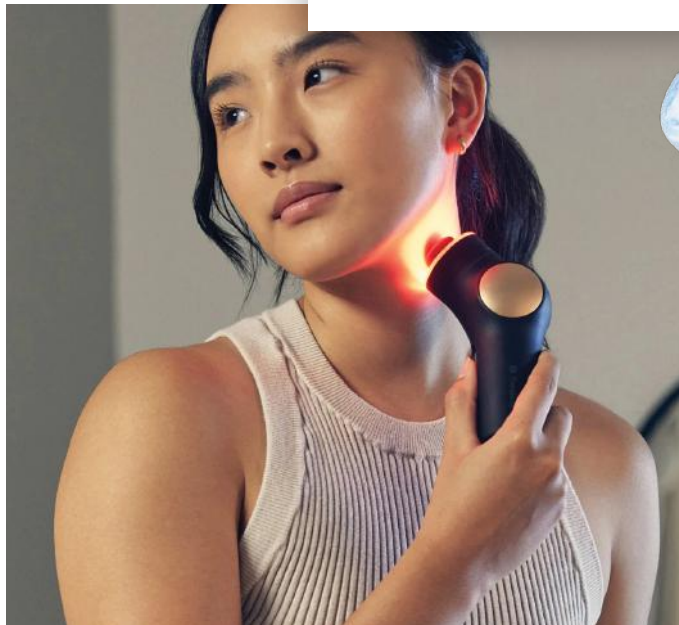
Omnilux Red Light Therapy Devices

£312 (\$396)

The red carpet secret that made dermatologist appointments obsolete. Kim K's glow? Thank these 132 LEDs delivering dual-wavelength technology. Ten minutes daily and 98 per cent of users report firmer skin. Consider it your morning coffee, but for your face.



*Advanced skincare
devices delivering
clinical results at home*



Therabody TheraFace PRO

£315 (\$400)

The overachiever of facial tools – eight treatments crammed into one sleek device. Its satisfying percussion melts TMJ tension faster than you can say "jaw clenching." Celebrity make-up artists won't touch a Met Gala without it. Magnetic attachments = less faff, more face time.



Alastin Restorative Skin Complex 2.0

£154 per oz (\$196)

The post-procedure potion plastic surgeons gatekeep. TriHex Technology sounds made-up but actually demolishes old collagen while building fresh supplies. *Prevention Magazine* crowned it wrinkle royalty. Think of it as Marie Kondo for your face – out with the old, in with the bouncy.

Revolutionary skincare formulations backed by decades of science



SkinCeuticals CE Ferulic

£144 per oz (\$183)

The vitamin C that ruined all other vitamin Cs. Duke University's patent means it actually stays stable (revolutionary, we know). Hailey Bieber bathes in it. At this price, it had better make you glow like a glazed doughnut. Spoiler: it does.



OneSkin OS-01 FACE

£78 per oz (\$99)

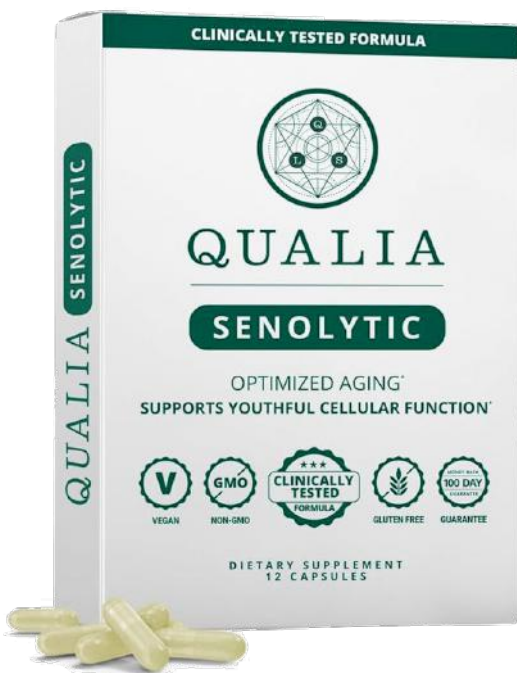
Scientists tortured 900 peptides to birth this age-reversing miracle. It literally deletes zombie cells from your face. One study showed seven years vanished – poof. Like pressing CTRL+Z on your skin, minus the irritation drama of retinol.

Elysium Basis NAD+ Supplement*£379-569 annually (\$481-723)*

MIT genius + eight Nobel laureates = this youth-boosting formula. Increases NAD+ by 40 per cent, which translates to "goodbye, afternoon slump!" Plot twist: 80 per cent of doctors secretly pop these. The subscription that actually earns its keep in your bathroom cabinet.



*Cutting-edge
supplements targeting
cellular ageing*

**Qualia Senolytic***£654+ annually (\$831)*

The two-day monthly detox for your cells. Eliminates the cellular equivalent of that friend who overstays their welcome. Users report knees that suddenly remember how to knee. Ben Greenfield is obsessed. Your joints will send thank-you cards.

MitoQ Pure Mitochondrial Support*£640-853 annually (\$813-1,083)*

The pill that makes your cells act 20 again. NASA feeds it to astronauts, which is all you need to know. Users report feeling like they've discovered coffee for the first time. At £1.60 daily, it is cheaper than your double-shot-oat-milk-vanilla situation.





OxyNova 7 Hyperbaric Chamber

£5,526-6,316 (\$7,018-8,021)

Your personal oxygen bar, but make it medical-grade. Marcus Rashford recovers in one. Long-COVID-19 sufferers are seeing 65 per cent improvement rates. It's even roomy enough for parent-child bonding (or solo Netflix sessions). Beats dropping £395 per clinic visit forever.



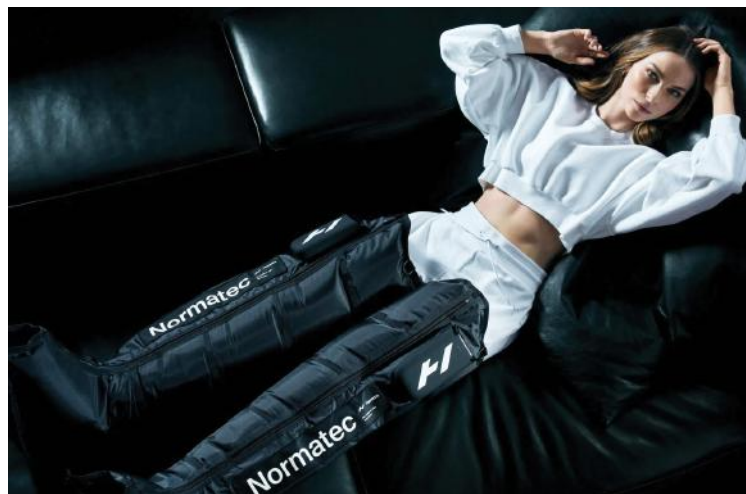
*Professional therapy
devices bringing clinic
treatments home*



QRS 101 PEMF Home System

£2,757 (\$3,501)

German engineering meets space station tech. Sounds like sci-fi, works like magic on chronic pain. Floyd Mayweather swears by it. Eight-minute sessions beat handfuls of ibuprofen. Six-month return policy because they know you won't need it.



Hyperice Normatec Elite Compression Boots

£789 (\$1,002)

The boots that swallowed the competition – zero tubes, all integrated. NFL player Patrick Mahomes invested his quarterback money in these bad boys. It's like having a sports masseuse on speed dial, minus the awkward small talk. Your marathon-running friend will steal them.



BrainBit EEG Headband

£394 (\$500)

The overachiever's brain scanner. Four channels of medical-grade data for those who find Muse too 'beginner'. Not for the faint of heart or technically challenged. If you speak fluent biohacker, this is your mother tongue.



Samphire Neuroscience Nettle™ Headband

£360 (\$457)

The period pain assassin disguised as sleek tech. Brain stimulation meets "why didn't someone think of this sooner?" 77% get significant relief. PMDD warriors are calling it life-changing. 20 minutes during hell week = actual human functionality restored.

*Brain training
technology revolutionising
mental wellness*



Mendi Neurofeedback Headband

£236 (\$300)

Brain training that's actually addictive (in a good way). Stanford uses it, and 52,000+ are hooked. Like Duolingo for your prefrontal cortex, but you'll actually use it daily. Free app forever – the subscription model's worst nightmare.

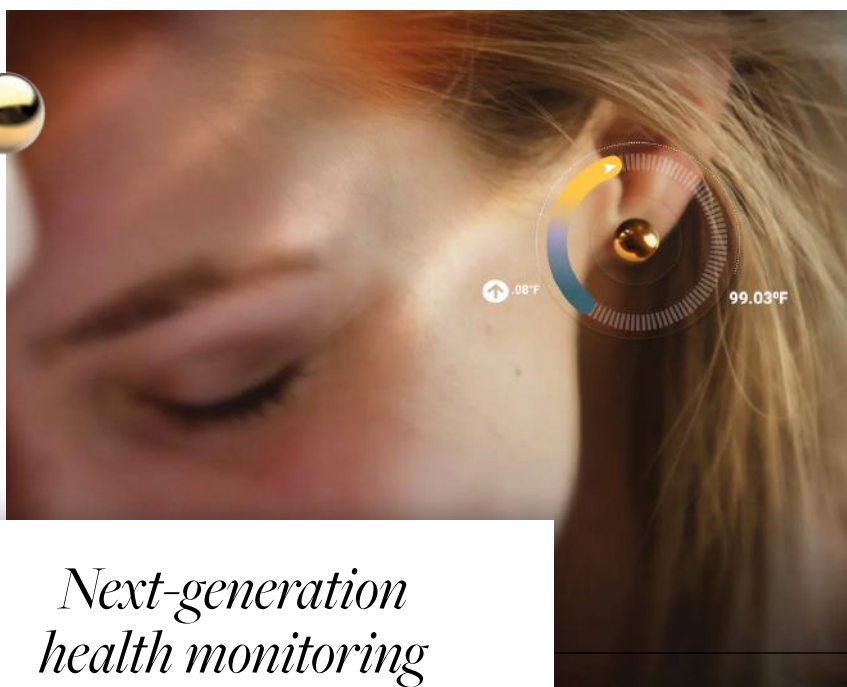




Incara Smart Earrings

£197 expected (\$250)

Health tracking finally got the fashion memo. These university-tested stunners monitor everything while looking drop-dead gorgeous. More accurate than wrist wearables (ears don't lie). Six colours, two-week battery, zero "is that a fitness tracker?" questions. Landing in 2025.



Next-generation health monitoring and testing



TruDiagnostic TruAge Complete

£394 (\$500)

The receipt for your biohacking efforts. Analyses 900,000+ markers to reveal your real age (brace yourself). Bryan Johnson's favourite report card. 85 pages of "I told you that supplement worked." The ultimate flex for longevity nerds.



Making premium longevity accessible

These 16 products represent the cutting edge of consumer longevity technology, each justified by unique mechanisms, clinical validation and transformative user experiences. While premium-priced, they deliver professional-grade results that previously required expensive clinic visits or remained completely inaccessible to consumers.

The key to maximising value lies in choosing products aligned with your specific health goals – whether that is reversing visible ageing, optimising cellular health, enhancing recovery or tracking biological age. Many users report that combining complementary technologies (like using TruAge testing to measure the effectiveness of supplements and devices) creates synergistic benefits that justify the investment in premium longevity solutions.



THE DOCTOR redefining age

Inside the Chelsea clinic where medicine meets human optimisation

“Industrialised healthcare is similar to how Ford industrialised the manufacturing of cars,” Dr Mohammed Enayat states. “We have a heart doctor, but you can’t speak to them about your stomach problems. Which doesn’t make much sense as you’re one human body.”

This fundamental disconnect drove the London-trained GP and TEDx speaker to abandon traditional medicine’s siloed approach. Now, from HUM2N, his longevity clinic, Dr E – as he is more commonly known – pioneers therapies that stimulate stem cell production, reverse a decade of physical decline in two weeks and help patients reduce their medication requirements.

The journey began when Dr E studied functional medicine at the Institute of Functional Medicine over ten years ago. “When I started applying this to patients with autoimmunity, I was really surprised that we could improve people’s health and their requirement

for medication would decrease,” he shares. The results challenged everything traditional medical training had ever taught him.

His approach rests on four interconnected pillars. First, digestive health – how efficiently the body digests, absorbs and excretes nutrients. Second, the balance between immune function and inflammation. Third, hormonal harmony across stress, thyroid and sex hormones. Fourth, metabolic efficiency and key micronutrients. “When you start to look at the human body in this way, we find ways to explain current health states and improve function,” he explains.

HUM2N’s treatments target what Dr E calls the “hallmarks of aging” – biological processes that deteriorate over time. Hyperbaric oxygen therapy exemplifies this approach. Patients breathe pure oxygen under pressure, triggering stem cell release from bone marrow, which creates new blood vessels and improves organ health.



**"Energy is the currency for longevity.
Preserve your energy whenever you can"**

Intermittent hypoxic-hyperoxic therapy (IHHT) delivers even more dramatic results. "VO₂ max decreases 10 per cent approximately a decade from 30 onwards," Dr E explains. "A two-week protocol can increase your VO₂ max by between 5-10 per cent. That's a decade of decline we're reversing in two weeks!" The treatment strengthens the heart, expands lung capacity and improves vascular health through controlled oxygen cycling.

Ozone therapy takes a paradoxical approach. By introducing controlled oxidative stress – injecting medical ozone into the blood – it triggers the body to produce powerful antioxidants. "You upregulate production of superoxide dismutase and glutathione, which are amazing antioxidants that we don't produce as we get older," he says. The treatment also supports liver detoxification and stimulates mitochondrial biogenesis – the creation of new cellular energy factories.

NAD⁺ (Nicotinamide Adenine Dinucleotide) therapy addresses cellular energy directly. This vitamin B₃ derivative (essential for converting oxygen into energy), naturally depletes with age. Dr E has used it extensively, particularly for long COVID-19 patients. "Young people that otherwise before COVID-19 were completely fine couldn't get out of bed. NAD⁺ and hyperbaric oxygen helped replete them enough so they could start to do more and more bit by bit, until they fully got their lives back."

For aesthetic concerns like hair loss, Dr E employs exosome therapy – concentrated signalling molecules from stem cells. "Once upon a time, they thought these protein vesicles were waste products. Now they've found they're signalling molecules. If we inject them

directly into any area we're looking to regenerate, we get a massive healing response."

But all these therapies serve one purpose in Dr E's practice: "Energy is the currency for longevity," he emphasises. "Preserve your energy whenever you can and be very considerate of your energy reserve." He advocates identifying deterioration early. "The sooner we can notice the deterioration, the quicker we can prevent it."

Yet, Dr E expresses concern about the field's rapid commercialisation. "When something becomes trendy, there is a risk of losing quality," he warns. "When things are not done to a good standard, everyone loses. You lose its potential, what it could be – the future of healthcare."

He remains optimistic about innovations like the TruCheck cancer test, which detects circulating tumour cells from 70 types of cancers. "If you're catching things earlier, they're easier to treat," he notes, adding that all treatments should be guided by experienced medical professionals.

While Dr E acknowledges that traditional medicine excels at disease management, he is emphatic about how it fails at prevention. His clinic offers an alternative: healthcare that anticipates rather than reacts. "Our state now is determined by how we've lived, and our state in the future is how we live now. Big energy equals big bank."

In reimagining healthcare from disease management to human optimisation, Dr E offers a glimpse of medicine's hopeful future, where prevention trumps prescription and biological age becomes malleable. **FW**

Key Things to Know

The Four Pillars

- Digestive health: Efficient digestion, absorption and excretion of nutrients
- Immune/inflammation balance: Managing the relationship between immune response and inflammation
- Hormonal systems: Balancing stress (adrenal), energy (thyroid) and sex hormones
- Metabolism and micronutrients: Optimising energy production and essential nutrients

The Treatments

- Hyperbaric oxygen: Increases stem cells, creates new blood vessels, improves organ health
- IHHT: Potentially reverses a decade of VO2 max decline in two weeks
- Ozone therapy: Stimulates antioxidant production and mitochondrial biogenesis
- NAD+: Restores cellular energy pathways depleted by ageing
- Exosome therapy: Concentrated stem cell signals for tissue regeneration

The Science

- VO2 max (oxygen utilisation) declines 10 per cent per decade from age 30
- NAD+ naturally depletes with age, affecting energy and longevity pathways
- Stem cells and their signalling molecules drive regeneration
- Early detection through biomarkers prevents future disease

The Philosophy

- Energy as the currency for longevity means we should preserve and optimise biological resources
- HUM2N clinic combines functional, longevity and performance medicine approaches
- Identify deterioration before it becomes disease
- Combine functional, longevity and performance medicine approaches
- Consistency over perfection in health practices

"That's a decade of decline we're reversing in two weeks"

The Paradox of Healing

How ozone therapy triggers your body's own antioxidant factory

Step 1

The Controlled Challenge

Medical ozone is injected into the blood, introducing controlled oxidative stress to the body

Step 2

The Body's Response

This deliberate stress triggers the body to dramatically upregulate its own antioxidant production

Step 3

The Powerful Result

Your body begins producing superoxide dismutase and glutathione – "amazing antioxidants that we don't produce as we get older"

Additional Benefits

- Supports liver detoxification pathways
- Stimulates mitochondrial biogenesis
- Creates new cellular energy factories



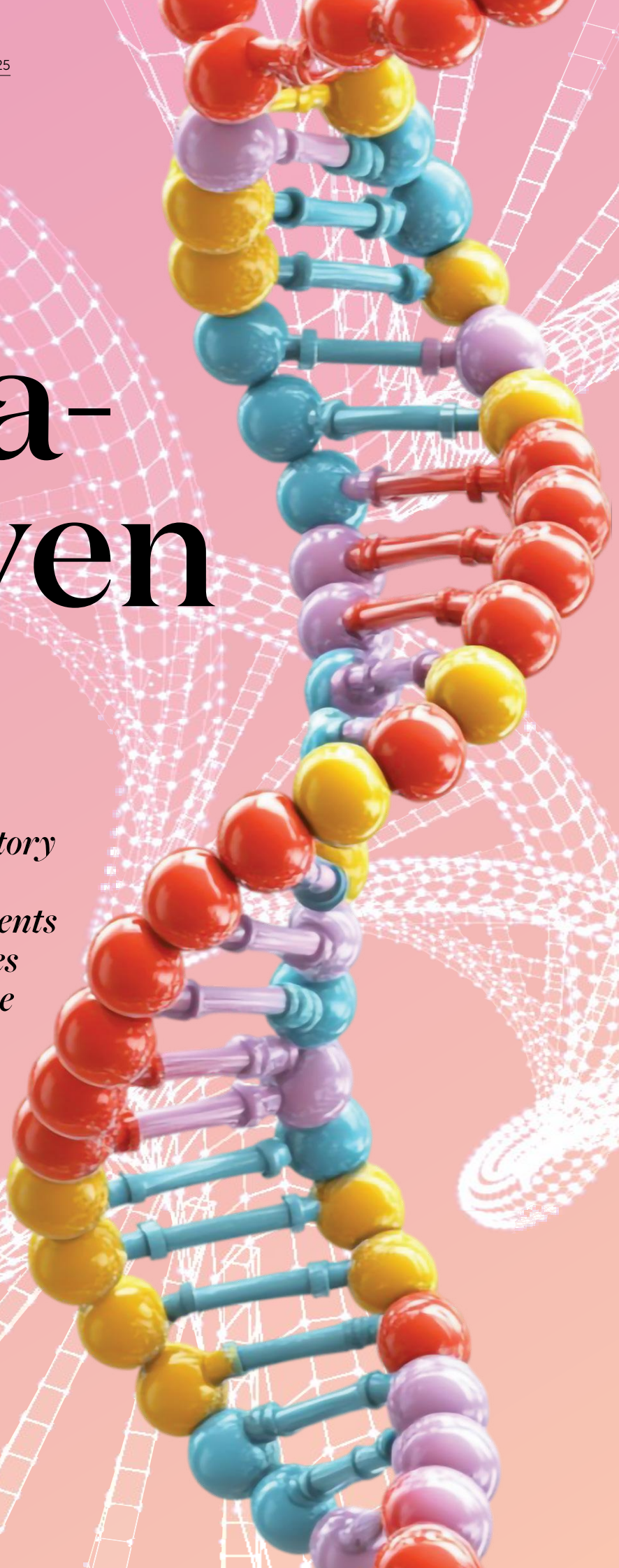
Dr Mohammed Enayat's interview first appeared on **The HumanWare Project**.

To watch this interview and others, search for The HumanWare Project, and discover more about Dr E's work at hum2n.com



THE Data- Driven LIFE

*Inside Stanford's
revolutionary laboratory
where thousands of
molecular measurements
are rewriting the rules
of preventive medicine*



Michael Snyder's glucose levels spiked after a viral infection around 14 years ago. While most doctors would have missed it entirely, Michael caught it immediately – not through symptoms, but through data. His genome had already warned him: type 2 diabetes lay dormant in his DNA, waiting for a trigger.

"We measure 135,000 things every time we measure someone," Michael says from his Stanford laboratory, where robots sequence DNA and smartwatches predict illness days before symptoms surface. The Stanford W. Ascherman Professor of Genetics has spent two decades transforming medicine from reactive guesswork into predictive science, using himself as patient zero.

The numbers tell a stark story. Michael reveals that nearly 12 per cent of Americans have diabetes, while 33 per cent hover in pre-diabetic territory. The scariest part is that most don't even know it. What's more, people spend their final 11 to 15 years in declining health – a gap between lifespan and healthspan that Michael believes data can close.

At Stanford's Center for Genomics and Personalized Medicine, which Michael directs, the contrast with conventional medicine is striking. A typical doctor's visit captures perhaps 15 measurements in as many minutes. Michael's team allegedly collects "tens of thousands of molecules" from blood and urine alone, creating what he calls "deep data profiles" that reveal disease years before the tell-tale symptoms properly manifest.

The approach paid off dramatically during COVID-19. Michael's research showed smartwatches could detect infection 80 per cent of the time, typically four days before the first symptoms appeared. His own device flagged his infection while an antigen test showed negative. Ignoring the data, he flew to New York – and spent a week quarantined in a hotel room. "I listened to my antigen test and not my smartwatch," he regretfully recalls.

The Molecular Revolution

Inside Stanford's sequencing centre, machines read human DNA like vast instruction manuals, breaking genetic code into fragments and reassembling the pieces to identify disease risk. "We sequence people's DNA and predict their risk for disease," Michael explains, demonstrating how saliva becomes data, revealing predispositions from diabetes to heart disease.

But genes, Michael emphasises, aren't destiny. According to Michael, only about 16 per cent of lifespan variation stems from genetics – the rest comes down to lifestyle. Even for centenarians, where genetics play a larger role, environment and behaviour remain paramount. "We eat 40,000 times more sugar than we did at the end of World War Two," he notes incredulously, linking dietary changes to the diabetes epidemic.

The real breakthrough lies in continuous monitoring. Michael wears multiple devices – smartwatches, rings, continuous glucose monitors – each streaming data about his body's inner workings. Heart rate variability conveys stress. Glucose curves expose metabolic dysfunction. Even skin conductance can signal diabetes progression. "For anyone who's ever worn one of these things, you'll never eat the same again," he says of continuous glucose monitors. "And I mean that in a good way."

The iPOP Pioneer

Michael's Integrative Personal Omics Profiling (iPOP) study began with an N-of-1: himself. By tracking thousands of molecular changes over time, he discovered that people age differently at the molecular level. Some are "immune agers", others "metabolic agers". Michael himself falls into both categories, though his immune ageing progresses slowly – a detail that shapes his personal health strategy.

Through micro-sampling – just drops of blood mailed from home – Michael's companies now offer deep molecular profiling to consumers. Iollo provides AI-driven recommendations based on 600 metabolites. January AI combines continuous glucose

"For anyone who's ever worn one of these things, you'll never eat the same again. And I mean that in a good way."

"The way we do health monitoring today is totally broken, and the way we practise healthcare is archaic. We wait till people get sick, then try to diagnose them."



monitoring with personalised nutrition advice. SensOmics develops next-generation wearables. All verified Stanford spinouts, backed by significant investment.

"I believe that with some re-engineering, we could probably have people live forever," Michael ventures ambitiously, before tempering expectations. Replacing mitochondria, refreshing stem cells – the technical challenges remain immense. For now, his prescription remains simple: eat more fibre, exercise daily, maintain muscle mass, get adequate sleep, lamenting that "most people don't sleep enough."

"I don't eat any ultra processed foods," he shares. "I cut that out once I became diabetic. My number one piece of advice would be to eat more fibre." This simplicity, however, masks sophistication.

Blue Zone populations – those pockets of unparalleled longevity – thrive on basic principles: movement, plant-rich diets, strong social connections. Modern technology can optimise these fundamentals, using data to strategically implement what our ancestors knew intuitively.

Beyond the Horizon

Michael envisions a future where molecular profiles guide daily decisions. Wake up to personalised recommendations based on last night's sleep data. Adjust meals according to real-time glucose responses. Catch infections before feeling sick. The technology exists; adoption lags behind. "I just think the way we do health monitoring today is broken, and the way we practise healthcare is archaic," Michael states. "We wait till people get sick, then try to diagnose them. Sometimes we're not even successful at that." His alternative – continuous monitoring while healthy – could transform medicine from damage control to prevention.

For those seeking practical steps, Michael's philosophy emphasises prevention through awareness rather than obsession with metrics. Let data guide but not dominate. As robots sequence DNA in the background and algorithms parse molecular patterns, shaping the future of medicine one measurement at a time, technology's role must clearly be to serve health, not the reverse. **HW**

"I believe that with some re-engineering, we could probably have people live forever"

Key Things to Know

The Numbers That Matter

- Michael's team measures tens of thousands of molecules from blood and urine samples
- Traditional doctor visits capture only about 15-20 measurements
- Nearly 12% of Americans have diabetes; 33% are pre-diabetic
- People spend their final 11-15 years in declining health
- Only 16% of lifespan variation comes from genetics

The Technology Stack

- Smartwatches detect COVID-19 80% of the time, on average, typically 4 days before symptoms
- Continuous glucose monitors transform eating habits through real-time data
- Micro-sampling allows deep molecular profiling from drops of blood at home
- Multiple wearables track heart rate variability, glucose curves and skin conductance

The Stanford Spinouts

- Iollo: AI-driven recommendations based on 600 metabolites
- January AI: Continuous glucose monitoring with personalised nutrition advice
- SensOmics: Next-generation wearable development
- All are verified companies backed by significant investment

The Paradigm Shift

- Move from reactive medicine to predictive prevention
- Use data to guide daily decisions without becoming obsessed
- Catch infections before feeling sick through continuous monitoring
- Transform healthcare from damage control to proactive health maintenance

DR MICHAEL SNYDER'S LONGEVITY PRESCRIPTION

The Healthy Lifestyle

- Eliminate ultra-processed foods completely
- Prioritise fibre above all dietary considerations
- Exercise daily and maintain muscle mass
- Get adequate sleep (most people don't)
- Follow Blue Zone principles: movement, plant-rich diets, social connections

The Genetic Truth

- For centenarians, genetics plays a larger role (60%)
- Genes aren't destiny – lifestyle matters more
- BRCA mutations and similar high-risk genes are exceptions requiring action

The Wearables Wisdom

- Heart rate variability: Higher is better (indicates good health)
- Workplace stress is the number one trigger of health alerts
- Skin conductance can indicate diabetes progression



Dr Michael Snyder's pioneering work at Stanford represents the vanguard of precision medicine. His documentary-style interview, which aired on **The HumanWare Project** and is available on YouTube, offers viewers an exclusive look inside the future of preventive healthcare. Discover more at med.stanford.edu/snyderlab



FROM
virtual
worlds
TO
living cells

*Now applying the engineering discipline
that built virtual realities, Oculus
Co-Founder Michael Antonov
is forging the computational tools
to decode human biology*



It begins with a feeling. For anyone who has donned an Oculus headset for the first time, the experience is visceral. The floor drops away, the world you knew is replaced by another, and a primal part of your brain accepts it completely. When a zombie lunges, you flinch. This power to create a new reality, to build a world from code and convince the senses of its truth, is what Michael Antonov mastered. Having co-founded Oculus and helped steer its £1.57 billion (\$2 billion) acquisition by Facebook, he could have stopped. Most would. But Michael felt differently: “I don’t think people who build stuff can really hang out on the beach for too long,” he says.

His focus has since shifted from the virtual to the biological, from simulating worlds to simulating life itself. As the Founder of Deep Origin, he is now taking on what he considers humanity’s greatest challenge: ageing. It is a pivot that seems dramatic, but for Michael, it is a logical progression. The common thread is an engineer’s conviction that with better tools, anything can be built – or rebuilt.

Michael’s journey began not in a Silicon Valley garage, but in Russia, from where he emigrated to the United States as a teenager. His family background was in science, with parents and grandparents who were biologists. Yet his own path was through code. In his 20s, long before Oculus, he and business partner Brendan Iribe founded Scaleform Corporation in 2004. The company created Scaleform GfX, a revolutionary tool that allowed video game designers to build animated, dynamic user interfaces – a technology that would become a staple in blockbuster games like *Mass Effect* and *Crysis*.

“The company’s mission is to organise, model and simulate biology, to speed up the rate of drug discovery and understanding of biology”

The Oculus story, now a piece of tech folklore, started with Palmer Luckey – a teenager building virtual reality (VR) headsets in his parents’ garage. A prototype caught the eye of legendary programmer John Carmack, creator of *Doom*, who showed it at the E3 conference in 2012. The impromptu demo sparked a media frenzy, hailing it as a genuine breakthrough. Michael and Brendan took notice. Soon after, their Kickstarter campaign to fund developer kits exploded,

raising its £186,000 (\$250,000) goal in hours and ultimately closing at nearly £1.86 million (\$2.5 million) just a month later.

For Michael, as Chief Software Architect, the critical challenge was solving something he calls positional tracking, in order to ensure that when you move in the real world, your view changes precisely in the virtual one. It required sub-millimetre precision. “When positional tracking started working, that was just super awesome because it was very new,” he recalls. “We didn’t know we could do it, and it was just so visually compelling.”

That breakthrough led to the 2014 acquisition by Facebook (now Meta) for approximately £1.5 billion (\$2 billion), a figure composed of £300 million (\$400 million) in cash and £1.2 billion (\$1.6 billion) in stock, with further performance-based incentives. The deal validated the technology, but for Michael, it also marked the start of a new line of enquiry. With vast teams of talented engineers at Facebook now pushing VR forward, he began to look for the next frontier.

He found it in the human body. “How much do we understand the human body?” he began to ask himself. “Can we actually understand the ageing process?” He saw a parallel between the challenges of VR and



“When positional tracking started working, that was just super awesome because it was very new. We didn’t know we could do it, and it was just so visually compelling.”

biology. Both are systems of immense complexity. And both, he believes, are limited by their tools. At his new company, Deep Origin, the mission is to build a unified platform to accelerate biological research. “The company’s mission is to organise, model and simulate biology, to speed up the rate of drug discovery and understanding of biology,” he states.

He distinguishes between two core approaches. The first is physics-based simulation, which models the mechanics of how molecules interact – a process that is precise but computationally expensive. The second is using AI to learn from vast datasets and predict outcomes, which is faster but can lack a clear explanation of its reasoning. Deep Origin’s strategy is to fuse them. By creating better, more accessible computational tools, Michael aims to democratise drug discovery, allowing smaller labs to contribute to breakthroughs that are currently the preserve of giant pharmaceutical companies.

This ambition extends to his personal life, where he applies the same experimental mindset to explore everything from red light therapy to temperature-controlled beds to optimise his health. He has also explored the off-label use of rapamycin, a potent prescription drug. While Michael suggests that in small doses it is not a big risk, it is critical to note that rapamycin is an FDA-approved immunosuppressant with significant potential side effects that should only ever be used under the strict supervision of a qualified medical professional. This discussion highlights a wider trend among tech pioneers using their engineering mindset to ‘debug’ their own biology.

From building virtual realities to decoding cellular ones, Michael’s work is a testament to the power of a single, driving question: if we had better tools, what could we build? For him, the motivation is simple: “Developing tools to decode longevity and lifespan would be the most impactful thing I could do.” His first answer changed how we play. His next may change how we live. **HW**

Key Things to Know

The Oculus Breakthrough

- The pivotal moment for Oculus was not a planned launch but an impromptu demo at the E3 conference in 2012 by *Doom* creator John Carmack, using a duct-taped prototype built by a 19-year-old Palmer Luckey
- A key technical hurdle was ‘positional tracking’, which allows a user’s physical movements to be perfectly mirrored in the virtual world
- Achieving sub-millimetre accuracy was a major engineering feat essential for creating a believable sense of presence
- The company’s 2012 Kickstarter campaign was a landmark event for the VR industry, crossing its £186,000 (\$250,000) goal in hours and ultimately raising nearly £1.86 million (\$2.5 million)

The New Mission: Tooling for Biology

- Michael’s current company, Deep Origin, aims to accelerate drug discovery by building better computational tools for scientists
- He believes the biotech industry lacks a unified, accessible platform, forcing individual companies to constantly reinvent basic tools, which slows the entire field down
- The goal is to fuse physics-based simulations with AI models, combining the accuracy of physics with the speed of AI to make research faster and more efficient

The Engineering Mindset

- Michael views ageing as a technical challenge and believes that just as complex software can be debugged and improved, biological processes can be understood and optimised with the right models
- His approach is driven by a motivation to build, which pushed him to tackle a new, even harder problem after the success of Oculus

The Future of Health

- Michael believes we are at a point in history where we can begin to truly model human biology from the atoms up, a development that could revolutionise medicine
- He is optimistic about the potential for brain regeneration, suggesting that within a decade it may be possible to deliver new neurons to help repair damage, though he acknowledges it remains one of the hardest problems to solve

Since we spoke...

We went back to Michael for an update on his work since our podcast interview.

Q: What has been the most exciting development at Deep Origin since we last spoke?

MA: One significant update is that we are gearing up for a major project in developing Absorption, Distribution, Metabolism, Excretion and Toxicology (ADMET) models for drugs in the human body. While I can’t share the details just yet, if it moves forward it would mark an important new direction for the company. Understanding the toxicity of novel molecules and their distribution and metabolism in the body is critical to evaluating their safety and potential as drugs – and being able to do this computationally could both reduce animal use and increase confidence in the clinic.

Q: Any unexpected feedback from potential pharmaceutical partners on your unified platform approach?

MA: No updates to share at the moment.

Q: Have you tried any new biohacking tools lately?

MA: I’m planning to try out a hyperbaric oxygen rejuvenation protocol and have ordered myself a chamber. I’ll see how it goes once it arrives in a couple of months.

Q: What’s next on the horizon?

MA: Besides the ADMET project, we are also in deep development on some of our physics-based modelling tools, with several releases planned over the coming months.



Michael Antonov’s interview first appeared on **The HumanWare Project**. To watch this interview and others, search for The HumanWare Project, and discover more about Deep Origin and its work at deeporigin.com





THE BODY'S SECRET CLOCK

Inside the Hooke London clinic where biological age is no longer fixed – and the GP revolutionising how we think about getting older

In a Mayfair clinic that feels more like a luxury wellness retreat than a medical facility, Dr Clare Nieland pulls up a screen displaying what looks like a constellation of data points. Each one represents a different aspect of human biology, from cardiovascular markers to cognitive function scores. Together, they form what, at Hooke, is called a BioPortrait – a comprehensive map of how well someone is actually ageing.

“While chronological age is fixed, biological age can be changed and adapted with just a few small changes,” says Clare, one of the longevity physicians at Hooke. “With small interventions, we can repeat test and we can see that your BioScore is improving.”

Clare splits her time between Hooke and the National Health Service (NHS), where she has witnessed firsthand the limitations of a healthcare system designed to treat disease rather than prevent it. After 20 years in general practice, she has become a leading voice in lifestyle medicine – a rapidly evolving field that treats health optimisation with the same rigour traditionally reserved for illness.

The journey to this point began not with a grand vision but with growing frustration. “The NHS was never designed to be a preventive health service,” Clare explains. “We treat disease, and that’s the model that we still practise.” Meanwhile, at Hooke, clients undergo testing of over 200 biomarkers, from

standard blood panels to advanced imaging. “I think age is just a number, but when we’re looking at the science behind it, we need the numbers and we need to know what those biomarkers show,” she asserts. The clinic’s proprietary BioScore synthesises this data into a tangible number that answers one critical question: how well am I ageing?

But Clare’s approach extends beyond sophisticated testing. Her framework rests on the six pillars of lifestyle medicine: physical activity, nutrition, sleep, stress management, social connection and avoidance of unhealthy substances – a deceptively simple formula.

“What we know about human behaviour is that we can’t rely on willpower alone,” she notes. Sustainable change comes from stacking new behaviours onto existing habits. If someone reaches for the biscuit jar every evening, the solution isn’t removing the jar – it’s understanding their evening routine and building healthier alternatives into it.

The most powerful predictor of longevity might surprise those expecting exotic supplements. VO₂ max – essentially how efficiently your body uses oxygen during exercise – is one of the markers associated with longevity. At Hooke, clients undergo medical-grade VO₂ max testing, receiving personalised training zones and detailed cardiovascular fitness reports. But Clare emphasises that improvements don’t require dramatic measures. “VO₂ max can be changed significantly just by a few small interventions in physical activity.”

This philosophy of incremental optimisation reflects Clare’s perspective on ageing itself. “Society has a perception that when you are old, you are useless to society,” she muses. “That is not true.” She points to Blue Zones – regions where centenarians routinely live active, purposeful lives – as evidence that our cultural assumptions need revision. Her own parents, at 74 and 82, still play badminton, hill walk and maintain rich social lives.

For those unable to access specialised clinics, Clare offers reassuring guidance. The NHS provides free health checks such as smear tests, mammographies, blood tests and lipid panels. But most importantly, she advocates taking ownership of your health journey. “Understand that you have the power within you to create good health.”

When asked what single change could most improve health, Clare resists the reductive answer. Instead, she counters with another question: “What’s the sort of person you want to be? Who do you



“While chronological age is fixed, biological age can be changed and adapted with just a few small changes”

want to be seen as by your friends, your colleagues?” This reveals that understanding your values allows everything else to fall into place.

As someone who practises what she prescribes, Clare meal preps on weekends, and her running kit travels with her between NHS shifts and Hooke appointments. These aren’t extreme disciplines but ingrained habits supporting her ability to show up as the best version of herself.

As for young people burning the candle at both ends, Clare does not prescribe premature prudence. “Life is for living, after all,” she acknowledges. “When you’re young, your body is more resilient and bounces back quicker. Our bodies are also very good at telling us when enough is enough, and I think we do become more aware of that as we grow older.” What matters, then, is listening to your body when it signals that it needs you to modify your behaviour – whether you’re 25 or 75.

Clearly, Clare’s vision for medicine’s future does not entail an ambitious chase after immortality or denying the natural ageing process. Rather, it is about ensuring that, whatever age appears on your passport, your body tells a story of vitality, purpose and sustainable health. In this new paradigm, age truly becomes just a number, while how you live becomes everything. **HW**



6

The Six Pillars of Lifestyle Medicine

1
Physical
Activity

2
Nutrition

3
Sleep

4
Stress
Management

5
Social
Connection

6
Avoidance
of Unhealthy
Substances

The key is to focus on small, sustainable lifestyle changes through habit stacking, rather than dramatic overhauls. How? By building new behaviours onto existing routines to avoid relying on willpower.

Key Things to Know

The BioScore Approach

- Hooke tests over 200 different biomarkers spanning cardiovascular health, metabolic health, inflammation, fitness and cognitive function
- The clinic's proprietary BioScore gives you a tangible number designed to answer: How well am I ageing?
- While chronological age is fixed, biological age can be changed and adapted with small changes
- Repeat testing shows BioScore improvements from targeted interventions

VO2 Max and Longevity

- VO2 max is one of the markers associated with longevity
- Can be changed significantly with just a few small interventions in physical activity
- Hooke offers medical-grade VO2 max testing with personalised training zones
- Even small improvements in fitness markers can have meaningful impact

Taking Ownership of Your Health

- NHS Health Checks are available free, including blood pressure, cholesterol and lifestyle assessments
- Knowledge is power – knowing your numbers helps you introduce sustainable changes
- Understanding your values helps everything else fall into place
- Social connection and purpose are crucial for happier, healthier ageing



Dr Clare Nieland's interview appeared on **The HumanWare Project** podcast. To discover more conversations

at the intersection of human potential and scientific innovation, visit **The HumanWare Project** on your preferred platform. Learn more about Hooke London at hooke.london



THE ovarian PARADOX



Why the secret to human longevity may lie in one of the organs that ages fastest

Dr Jennifer Garrison, Associate Adjunct Professor at the University of California, San Francisco, and Assistant Adjunct Professor at the University of Southern California, is decoding what might be medicine's most overlooked mystery: the chemical conversations between our brains and ovaries. What she's discovering challenges everything we thought we knew about ageing – and reveals why female biology holds the master key to extending human healthspan.

"If we could understand female ageing," Jennifer says, leaning forward with the near conviction of

someone on the verge of a breakthrough, "that would solve all of human ageing."

It's a bold claim, coming from the Co-Founder of the Productive Health Global Consortium (formerly GCRLE) and the former Director of the Center for Healthy Aging in Women at Buck Institute, but one backed by an uncomfortable truth. While women live longer than men in every country where it's been measured, they spend up to 25 per cent more of their lives in poor health. The culprit? Ovaries that age at up to 2.5 times the rate of other organs, creating a cascade of health consequences that medicine has largely ignored.

"If we could understand female ageing, that would solve all of human ageing"

Jennifer, a neuroscientist who studies the brain's 'Wi-Fi system' – the wireless chemical signals that control everything from sleep to reproduction – stumbled into this field seven years ago. "I thought I understood how my body worked," she admits. "I did not."

What she discovered was a staggering knowledge gap. Until 1993, most clinical studies excluded women entirely. More than 80 per cent of preclinical research used only male subjects. The result is a medical system operating with half the knowledge it needs, treating female bodies as mysteries rather than seeking to understand them.

"We've been underserved as a population for a century," Jennifer states matter-of-factly. "I can't think of anything more important that I could work on as a scientist."

The economics alone are compelling. According to research from Women's Health Access Matters, every £276 million (\$350 million) invested in women's health research generates £11 billion (\$14 billion) for the economy – a 40x return. Yet less than four per cent of private investment has gone to women's health companies. It's an untapped market worth billions, driven by the fact that women control 80 per cent of household healthcare spending decisions.

But Jennifer's work goes beyond economics. In her lab, she is uncovering how ovaries act as "architects of health" throughout a woman's entire life, orchestrating a complex symphony of signals that affect everything from bone density to brain function. When this symphony begins to fluctuate during perimenopause – a period characterised by over 135 recognised symptoms across multiple body systems – the impacts ripple through every aspect of health.

The most intriguing discoveries come from experiments that sound like science fiction. When researchers transplant young ovaries into older mice, they extend not just fertility but lifespan itself. Even more remarkably, when they remove all the eggs from these transplanted ovaries, the life-extending effects actually increase.

"That tells me the fertility function is somewhat separable from the health-promoting endocrine function," Jennifer explains. It is a finding that could revolutionise how we think about reproductive organs – not as baby-making factories, but as central command centres for whole-body health.

Similar breakthroughs are emerging from human studies. Emily G. Jacobs' groundbreaking '28andMe' research involved brain-scanning a woman every day throughout her menstrual cycle, revealing a breathtaking neural symphony that changes with hormonal fluctuations. When Emily repeated the study in men, she found they too have hormonal variability



affecting brain function, just on different timescales.

Perhaps most remarkably, in cases where young girls need cancer treatment that would destroy their ovaries, doctors now freeze tiny slices of ovarian tissue. Years later, reimplanting just one slice – anywhere with blood supply – can restart the entire brain-ovary conversation, restore menstrual cycles and even enable pregnancy. "Whatever's in that tissue," Jennifer marvels, "it's enough to restart the whole communication system."

For all the promise, challenges remain. Current hormone therapy, introduced in the 1940s, has not seen significant innovation since. "It's by far the best band-aid but for a lot of women it feels like a sledgehammer and they decide to go off it because of all the side effects," Jennifer notes. Sadly, diagnostic tools are primitive and many doctors don't even document age at menopause, despite its correlation with overall longevity.

Yet Jennifer remains optimistic. The Global Consortium she founded is building the research infrastructure needed to answer fundamental questions about female biology. Young women today, she points out, have unprecedented opportunities to collect longitudinal data about their bodies, turning their cycles from inconveniences into superpowers of self-knowledge. "We're entering a new era," she says. "The conversation that's happening now is completely different from 20 years ago."

As our discussion concludes, Jennifer returns to her central thesis: understanding why ovaries age faster than other organs isn't just about women's health – it is about cracking the code of human ageing more broadly. In the accelerated ageing of ovaries, she sees a preview of what happens to all our organs eventually. Solve one problem, potentially solve them all.

It is precisely the kind of paradigm shift that defines the future of longevity science: the biggest breakthroughs often come from looking where no one else has bothered to look. **HW**

Key Things to Know

The 2.5x Factor

- Ovaries age up to 2.5 times faster than other organs in the body
- By their late 20s or early 30s, when the rest of a woman's body is at peak performance, ovaries already show signs of ageing
- This accelerated ageing creates a 'healthspan gap' – women live longer but spend more years in poor health than men

The Research Revolution

- Until 1993, clinical trials routinely excluded women
- Only in 2016 did the National Institutes of Health (NIH) mandate that preclinical studies include female subjects
- More than 80% of historical animal research used males only
- Less than 4% of FDA-approved drugs in the last 16 years target female-specific conditions

Beyond Baby-Making

- Ovaries signal to nearly every tissue in your body – brain, heart, bones, muscles, liver
- They produce dozens of signalling molecules, some still unidentified
- During perimenopause, fluctuating signals create over 135 recognised symptoms across 3 categories
- The same brain region controlling ovarian function also manages sleep, temperature and emotions

The Investment Opportunity

- Women control 80% of household healthcare spending decisions
- Every £276 million (\$350 million) invested in women's health research generates £11 billion (\$14 billion) in economic returns
- The women's health market represents billions in untapped potential
- Current hormone therapy solutions have not seen significant innovation since the 1940s

Tomorrow's Breakthroughs

- Young ovary transplants in mice significantly extend lifespan
- Frozen ovarian tissue can restart reproductive function years after cancer treatment
- Brain imaging reveals both men and women have hormonal fluctuations affecting neural function, but on different timescales
- Understanding ovarian ageing could shed light on how all organs age

Since we spoke...

We went back to Jennifer for an update on her work since our podcast interview.



Q: What has been the most exciting development in your research centre since we last spoke?

JG: The most exciting things happening right now on the science front for healthy ageing in women are much-needed insights about ovarian function across the lifespan, progress towards finding geroprotective interventions that delay ovarian ageing, and predictive biomarkers and diagnostics to better predict and personalise treatment for age-related health transitions. There are also some super exciting things happening on the science funding front – perhaps a silver lining to the current mayhem happening at the federal level in the US. Several private foundations have stepped up to provide serious capital for research on women's health. They are filling an enormous gap and I hope the trend continues!

Q: What's next on the horizon?

JG: I am currently building the thing I most want to see in the world: it's a moonshot to transform how we optimise women's health at every age. It's focused on creating a completely new paradigm for how we approach and support women through their unique biological transitions. Stay tuned!



Méline's complete conversation with Dr Jennifer Garrison reveals even more groundbreaking insights into the future of longevity science. Watch the full interview at [The HumanWare Project](#) and learn more about her research at [globalconsortium.org](#)



THE WATER cure

At Lumati, former water bottling entrepreneur David Perez believes three baths a day could add decades to your life



In a sleek San Diego facility, David Perez recalls the exact moment that changed his trajectory from water entrepreneur to wellness pioneer. It happened years ago, as he watched tissue start to heal within 15 minutes of immersing his bleeding thumb in an oxygen-infused bath. “I thought it was interesting how water can make such a huge difference in therapeutic healing.”

From Bottle to Bath

That moment launched a journey that would transform David from water bottler to wellness pioneer. Today, his Lumati clinic attracts everyone from cancer patients to Silicon Valley executives, all seeking what he calls “an oil change” for the human body. The promise? Reverse your biological age through an unlikely trinity: water, light and energy.

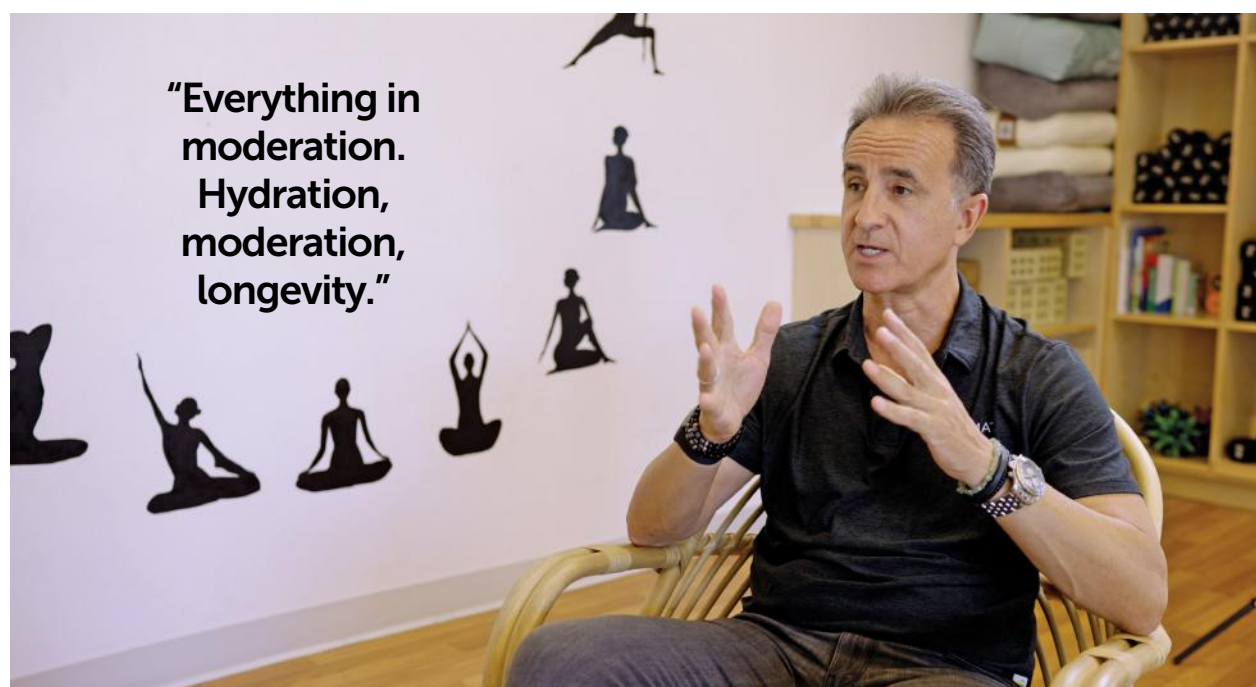
The science begins with a simple premise that David learnt from biohacker Gary Brecka: hypoxia – lack of oxygen at the cellular level – underlies most disease. “Tumours grow, cancer grows. Lack of oxygen cuts off nutrients,” David explains. His solution involves marathon bathing sessions: three hour-long soaks daily for two weeks, with 90-minute breaks between. According to David, after eight days of this protocol in Budapest, testing reportedly showed his biological age had reversed by 15 years. After two weeks? 33 years younger, he claims.

While such dramatic reversals lack peer-reviewed validation, the underlying technologies at Lumati rest on more established ground. The clinic deploys an arsenal of diagnostic tools that would not seem out of place in a teaching hospital: InBody composition analysers, Oligoscan spectrophotometry for mineral assessment and ECG monitoring. But it is the therapeutic approach that sets Lumati apart.

The Three-Pillar Protocol

“We’re all dehydrated,” David insists, explaining the first of his three pillars. The skin, our largest organ, becomes a gateway for healing. Traditional supplements must survive stomach acid, the pancreas, liver and kidneys. But immersion therapy delivers nutrients directly through the skin, “like a liquid IV,” he says. The baths contain carefully calibrated minerals, hydrogen and oxygen, creating what David describes as conditions for cellular regeneration.

The second pillar addresses nutritional uptake at the cellular level. When cells become hypoxic, they cannot absorb nutrients properly, leading to DNA damage and disease progression. Lumati’s proprietary liquid supplements, developed over eight years, aim to restore this cellular feeding mechanism. “It doesn’t matter if you have Type 1 or Type 2 diabetes, or any type of chronic illness,” David states. “We’ve got you covered.”



**“Everything in
moderation.
Hydration,
moderation,
longevity.”**



"A barrel of clean water costs about 5 to 10 times more than a barrel of oil. Potable water is the most scarce resource on the planet."

Energy forms the third pillar – not as the subjective feeling, but as measurable frequencies. Using bioresonance technology, Lumati claims to detect the vibrational signatures of everything from healthy organs to parasites. "All living organisms – whether it's a plant, an animal or a human, even cancer cells – have a resonance that they vibrate at," David notes. The clinic then uses targeted frequencies to 'balance' these vibrations, employing everything from Tesla coil-based devices to photobiomodulation with specific light wavelengths.

The three-bath-daily protocol is designed for those with chronic sickness. Lumati can now bring their innovative technology directly to clients' homes, allowing them to bathe regularly, once or twice a week, to enjoy preventive benefits from the comfort of their own homes.

The £3,000 (\$4,000) Question

For those unable to visit the £10,000 (\$13,500) -per-week clinic, David offers surprisingly practical advice: stop drinking tap water. "California and Florida have the dirtiest water," he warns, citing chloramines, trimethylenes and pharmaceutical residues. His prescription? Glass-bottled spring water or a quality

filtration system – an investment of £3,000 to £5,000 (\$4,000 to \$7,000) that he considers essential. "A barrel of clean water costs about five to 10 times more than a barrel of oil," he notes. "Potable water is the most scarce resource on the planet."

The man who spent 19 years bottling water now refuses to use plastic, having seen research on microplastic contamination. His company has partnered with filtration specialists and is developing technology to remove "forever chemicals" from blood. Plans include partnering with 500 clinics and resorts over five years and revolutionary imaging systems with "64,000 times the resolution of existing systems."

Yet, beneath the ambitious expansion plans and cutting-edge technology, David returns to fundamentals. When asked for his single most important longevity tip, his answer is almost disappointingly simple: "Drink water – not alcohol, and stay away from sugary drinks, as we know that sugar is poison. Water is key because it gets rid of 90 per cent of all diseases."

At 61, with what he describes as "the skin of a baby" and heart rate variability readings that rival athletes half his age, David clearly practises what he preaches: "Everything in moderation. Hydration, moderation, longevity." **HM**

Since we spoke...

Key Things to Know

The Three Pillars

- Hydration: Marathon bathing sessions deliver nutrients through skin
- Nutritional uptake: Proprietary supplements restore cellular feeding
- Energy: Bioresonance technology measures and balances cellular frequencies
- Combined approach claims to reverse biological ageing markers

The Technology Stack

- Oligoscan spectrophotometry measures minerals and heavy metals through light
- InBody analysis tracks body composition changes
- Photobiomodulation uses specific light wavelengths for healing
- Hydrogen therapy delivers the smallest molecule for cellular repair

The Protocol

- X3 1-hour baths daily for optimal results
- 90-minute breaks between sessions
- 2-week intensive programmes for chronic conditions
- Combines ancient principles with modern diagnostics

Water Wisdom

- Never drink tap water, especially in California or Florida
- Choose glass bottles over plastic always
- Budget £3,000–5,000 (\$4,000–7,000) for home filtration
- Consider hydrogen-enriched or oxygenated water for chronic illness

“It doesn’t matter if you have Type 1 or Type 2 diabetes, or any type of chronic illness. We’ve got you covered.”

We went back to David for an update on his work since our podcast interview.

Q: What has been the most exciting development at Lumati since filming?

DP: The launch of the Lumati app has definitely been the most exciting development. It’s allowing us to extend the Lumati experience beyond the clinic, giving our clients real-time access to their protocols and progress tracking. The feedback has been incredible – people love having that level of guidance and connection in their pocket. It’s helping us create continuity of care, which means the results we see in-clinic are being supported and amplified at home.

Q: Any new discoveries from your three-baths-a-day protocol?

DP: One of the biggest breakthroughs has come from upgrading our molecular hydrogen bath system. With this advancement, the benefits from the three-baths-a-day protocol have been even more profound.

Q: What’s next on the horizon?

DP: We’re rolling out V2 of our Recharge Portal, which will offer an even more elevated and seamless experience for our clients. We’re also collaborating with five-star hotels like Hotel Del Coronado and Alila Marea Beach Resort to bring wellness to their guests. It’s an exciting step in expanding our reach, making high-level wellness not only more accessible, but also integrating it into luxury hospitality around the world.



David Perez’s complete interviews aired on The HumanWare Project, offering viewers an unprecedented look inside the future of wellness technology. Learn more about Lumati’s protocols at lumati.com





THE UNIVERSE WITHIN

*One computer scientist's quest to
decode the cosmos in every human cell
is transforming medicine from reactive
treatment to predictive prevention*

Dr Maria Chatzou Dunford once dreamed of exploring distant galaxies. As a child gazing at the stars, she imagined herself as an astronaut or astrophysicist, drawn to the vast mysteries of space. It wasn't until secondary school that she discovered an equally infinite frontier much closer to home. "In every cell of our body, we have a small universe," she says. This revelation would not only drive her career, but potentially also carry strong implications for the future of human health itself.

Today, as CEO and Co-Founder of Lifebit, Maria leads one of genomics' most ambitious ventures – a platform that provides federated access to health data from 270 million patients worldwide. The company has raised £55.9 million (\$71 million) in funding, with backers including Tiger Global Management, and counts 23andMe, Flatiron Health and government programmes among its clients. Yet, the journey from stargazing child to biotech entrepreneur wasn't predetermined by any Algorithm.



“In every cell of our body, we have a small universe”

The turning point came during her grandfather's terminal kidney cancer diagnosis. While her family absorbed the devastating news, Maria experienced a different kind of reckoning. “Out of everyone in that room, I was actually understanding more than anyone what cancer was, what was causing it,” she recalls. The realisation transformed her relationship with biology from intellectual fascination to personal mission. “It was important for me to actually do something with that gift.”

That gift had been carefully cultivated through years of rigorous training – a BSc in Computer Science and Biomedical Informatics, followed by an MSc in Bioinformatics and a PhD in Biomedicine. During her doctoral research at the Centre for Genomic Regulation in Barcelona, she and fellow researcher Pablo Prieto Barja encountered a problem that would define their future. They were spending 80 per cent of their time wrestling with computational and data management challenges rather than focusing on biological insights.



"If ageing is a molecular clock, we can reverse it"

Their solution became Lifebit's foundation: a federated technology platform that brings analysis to data rather than moving sensitive health information between systems. "The entire existence of Lifebit has proven that there is definitely the technology and technical capability to guarantee that data is kept where it's designated to be," Maria explains. This approach addresses one of healthcare's fundamental tensions – the need to share data for research while maintaining patient privacy and control.

The platform's growth trajectory reads like a Silicon Valley success story. After graduating from Techstars, Maria discovered what she calls a "superpower" – fundraising. The initial £2.36 million (\$3 million) seed round was followed by a £5.9 million (\$7.5 million) Series A and a £47.2 million (\$60 million) Series B led by Tiger Global Management. But the real validation comes from their client roster, which spans pharmaceutical giants like Boehringer Ingelheim and national precision medicine initiatives like Genomics England in the UK.

What drives this momentum is a fundamental shift that Maria foresees in healthcare. "We're moving healthcare from symptom-based to data-based," she states. Currently, medical consultations begin with questions about how you feel – headaches, fever, fatigue. Maria envisions a near future where quick scanners generate comprehensive health data, enabling diagnosis and treatment before symptoms even appear.

This vision extends to newborn screening, where Maria notes that while current programmes typically screen for eight to 30 conditions, genomic sequencing could theoretically screen for over 400 diseases for which interventions exist. According to Maria, many of these interventions are surprisingly simple – supplements or vitamins that, when administered in the first months of life, can improve or prevent disease development entirely.

The implications stretch beyond individual health to challenge our understanding of ageing itself.

Maria describes ageing as potentially controlled by a "molecular clock" that triggers after reproductive age. "If it's a molecular clock, we can reverse it," she suggests, pointing to research on proteins that repair cells but become underexpressed as we age. While she acknowledges that these applications remain largely in research phases, the possibility of intervention offers much hope.

For those seeking practical longevity advice today, Maria's prescription is refreshingly straightforward: autophagy, the cellular "garbage collection" process activated by sleep, exercise and fasting. She practices what she preaches, eating within six- to eight-hour windows and prioritising protein over carbohydrates to maintain consistent energy levels throughout her demanding days.

On the entrepreneurial side of things, her journey hasn't been completely without challenges. Early board meetings tested her conviction when pharmaceutical clients weren't ready for cloud-based solutions. "Can we just do a very shallow copycat of other existing solutions?" her board suggested. Maria and Pablo refused, betting instead on their unique federated approach. Time proved them right.

Looking ahead, Maria sees artificial intelligence primarily as a tool for automation rather than discovery. "AI cannot yet do what people do not know how to do, but it *can* do better than humans what humans know how to do," she affirms. Lifebit's 2025 roadmap includes AI systems that will learn from expert researchers' analytical approaches, democratising sophisticated genomic analysis.

For Maria, the journey from 'wannabe' astronaut to genomics pioneer represents not a change of direction, but a shift in scale – from exploring outer space to navigating inner universes. As Lifebit continues building the infrastructure for precision medicine's future, her childhood wonder remains intact, now focused on the cosmos within. **HW**

Lifebit Today: Key Things to Know

The Federated Health Data Revolution

- Lifebit securely connects over 270 million patient records through Federated AI Platform, including largest US health and federal datasets – with data never moving
- Technology deploys within customers' own environments, maintaining safe harbour protections and absolute control
- Entrusted with most mission-critical infrastructures and precision medicine programmes across both US and international health systems, including:
- UnitedHealthcare/Optum: Powers next-gen research across 100M+ members' claims, EHR and pharmacy data
- NIH/National Library of Medicine: First federated research environment in NIH's AWS cloud for cross-agency biomedical research
- 23andMe: Powers access to 14M+ participant database and new Lung Cancer Genetics Study with 20 global nonprofits

From Billions to Prevention at Birth

- Sequencing the first human genome cost nearly \$1 billion
- Today, Lifebit enables national-scale genomics and preventive population health at a fraction of that cost
- As genome sequencing becomes as routine as a blood test, Lifebit's infrastructure is already embedded in national efforts across Singapore, the UK, Hong Kong and North America
- Lifebit is driving a future where birth-to-death datasets, newborn screening and genomic early-warning systems enable simple interventions before symptoms appear

The New Frontier of Longevity and Molecular Ageing

- Ageing may be governed by molecular signals that can be tracked, modulated and reversed
- Lifebit's platform supports cutting-edge research into cellular reprogramming, rescue proteins and molecular biomarkers of ageing – moving from theory to population-scale science

Practical Longevity Protocol

- Autophagy activation through sleep, exercise and time-restricted eating
- Maria eats within six- to eight-hour windows, prioritising protein
- Morning fasting combined with exercise maximises cellular repair
- Simple interventions today while awaiting tomorrow's breakthroughs

Leadership, Scale and Scientific Impact

- Lifebit has raised \$71M – including a \$60M Series B led by Tiger Global – now scaling profitably
- Serves major US agencies (NIH, upcoming VA, DoD, CDC, FDA) and international health systems (UK, Denmark, Singapore, Israel, Canada)
- Biopharma clients include GSK, J&J, Boehringer Ingelheim, UnitedHealthcare, 23andMe, Flatiron Health
- 2025 roadmap includes: Launching AI-native Platform V4 and global research accelerators for cancer and rare disease datasets
- Positioned as the infrastructure standard for real-world data and precision medicine globally

Since we spoke...

We went back to Maria for an update on her work since our podcast interview.

Q: What has been the most exciting development at Lifebit since we last spoke?

MD: We have made major strides in unifying the world's biomedical data. Our data network now connects over 270 million records, the largest of its kind globally. Today, our platform powers the world's most significant national biomedical research and health initiatives, enabling governments and organisations to unlock the full value of their health data, securely, at scale – and with life-changing impact for patients.

Q: Any early results from your AI integration strategy?

MD: We're already seeing our AI features simplify how users work with complex health data, making it faster, easier and more intuitive to get answers. It's boosting productivity and helping our clients make better, faster decisions.

Q: Any new strategies you've developed to stay on top of your fundraising game?

MD: Our core strategy has been to drive profitability while accelerating growth, proving that strong financial discipline and rapid global expansion can go hand in hand.

Q: What's next on the horizon?

MD: We are building Version 4 of the Platform, packed with AI-native features, deeper interoperability and global-scale data sharing capabilities. Plus, we are expanding our footprint with national initiatives across North America, Europe, APJ and the Middle East. Lifebit is not just scaling – we are setting the standard in how health data is used to improve lives worldwide



Dr Maria Chatzou Dunford's interview first appeared on The HumanWare Project.

To explore more conversations at the frontier of human potential and technology, visit The HumanWare Project, and discover Lifebit's genomic data platform at lifebit.ai





THE VOICE whisperer

In a Belsize Park clinic, a physiotherapist's hands reveal how tiny muscular adjustments can transform not just how we sound, but who we are

The transformation takes less than twenty minutes. In Ed Blake's London clinic, Méline Liu reads a simple paragraph about creating the future. Her voice sounds normal enough – clear, professional, controlled. But Ed's trained ear detects something else: constriction, elevation, a larynx held hostage by invisible muscular tension.

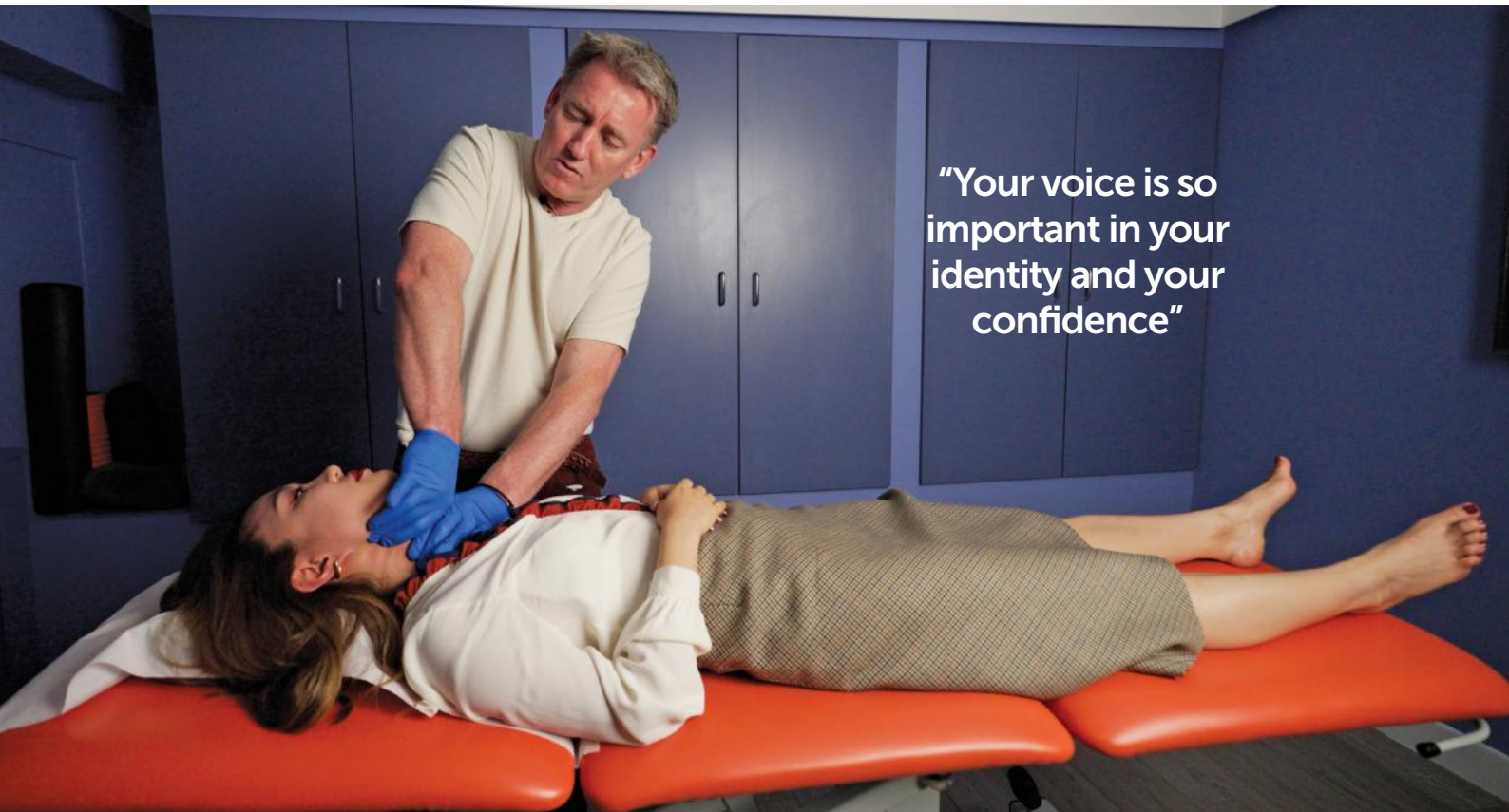
By the time Méline reads the same words again, something sounds different. "I feel like a stereo," she says, her voice now resonating from somewhere deeper, richer. "Like you put on the bass."

This is the curious alchemy of laryngeal manual therapy, where the manipulation of muscles most people do not know they have can unlock not just a different voice, but a different presence in the world. For Ed, a physiotherapist who has spent over two decades working with West End performers and voice

professionals, the connection between body and voice represents one of modern medicine's most overlooked relationships.

"Your voice is so important in your identity and your confidence," Ed explains, his hands demonstrating the location of the sternocleidomastoid muscle – that prominent band running down each side of the neck. When this muscle tightens, it doesn't just create neck pain but it also elevates the larynx, restricts its movement and fundamentally alters how sound resonates through the body.

The implications extend far beyond the stage. In Ed's Belsize Park clinic, he sees a growing epidemic of what he calls "tech neck" – young professionals whose forward-head posture from hours of screen time has created a cascade of problems. "You see this a lot, teenagers now coming in with headaches and problems in their neck," he observes. "And it's all



because they're just like that" – he mimics the universal smartphone slouch – "for hours."

The mechanics are deceptively simple. When we crane our necks forward to look at screens, the sternocleidomastoid and scalene muscles engage to support the head's weight. Over time, these muscles become chronically tight, compressing delicate structures and creating what Ed describes as a domino effect throughout the body. The larynx elevates and becomes rigid. The voice loses its resonance. Headaches develop. Sleep suffers. Identity itself can feel diminished.

"One of the primary complaints people make when they come to the clinic is that in loud social places, they either can't be heard, or if they have to force their voice to be heard, it tires very quickly and becomes painful," Ed notes. "And then they just don't want to go out because it's not fun."

His treatment approach reads like a masterclass in anatomical detective work. Through careful palpation, he identifies which muscles have become dominant and which have essentially switched off. The medial pterygoid, the scalenes, the muscles surrounding the

hyoid bone – each plays a role in this unique symphony within the body.

During the filmed session of our episode at The HumanWare Project, Ed's hands work with the precision of a master craftsman. He applies pressure to specific trigger points while gently mobilising Méline's head and neck, creating what he terms "an environment for change." The cricothyroid joint – critical for pitch control – is carefully rotated. The hyoid bone, that delicate floating structure that supports the larynx, is coaxed into a more neutral position.

"What we've done is we've lowered the larynx a little bit," Ed explains after the treatment. "That makes that chamber bigger. And then the sound can resonate better. And that gives you much more forward voice production."

The transformation in Méline's voice is immediately apparent, but Ed sees this as just one piece of a larger puzzle. His work with West End performers has taught him that sustainable vocal health requires a fundamental shift in how we think about the body.

"People often think that singers just stand up and sing," he says. "That's not true. They work unbelievably



**“Movement is the key.
And keeping the body
just in relative balance”**

hard. If their technique is poor and their voice fatigues or suffers, cancelling concerts is really bad. So they work to a place where they can reproduce that high level of performance night after night. That’s not talent, that’s hard work.”

For the rest of us – the knowledge workers hunched over laptops, the teenagers lost in their phones – Ed’s message is both sobering and hopeful. The body, he insists, is “a super malleable system.” The muscular patterns that create problems can be reprogrammed, but this demands dedication and awareness.

His prescription for the modern world is refreshingly practical. Simple exercises that engage the mid-back muscles. Regular stretching routines that reset tension levels. And perhaps most importantly, consciousness about posture before problems develop. “Movement is the key,” he emphasises. “And keeping the body just in relative balance.”

The session ends with Méline reading the passage one final time. The words are the same, but everything else has changed. Her voice carries a new authority, a grounded quality that seems to emanate from her core rather than her throat. It is a reminder that in an age of digital disconnection, the path back to ourselves might begin with something that seems as inconsequential as releasing the muscles that have learnt to hold us back.

“Our body is the ultimate instrument,” Ed reflects. And like any instrument, it requires not just occasional maintenance, but a deep understanding of how its parts work together to create something greater than their sum. **HW**

Key Things to Know

The Modern Epidemic

- Forward head posture from device use creates a cascade of problems beyond neck pain
- The sternocleidomastoid muscle, when chronically tight, elevates the larynx and restricts voice
- ‘Text neck’ is increasingly affecting teenagers, causing headaches and voice issues
- Chin-forward posture can lead to disc prolapse and facet joint injuries over time

The Voice-Body Connection

- Muscle tension dysphonia affects 10-40 per cent of voice clinic patients
- A tight larynx creates a smaller resonance chamber, making voices sound constricted
- Voice fatigue and social withdrawal often result from untreated muscular imbalances
- Professional singers work with both physiotherapists and voice teachers to maintain performance

The Treatment Approach

- Manual therapy can reposition an elevated larynx within a single session
- The cricothyroid joint controls pitch through vocal fold tension
- The hyoid bone and surrounding muscles are key to vocal resonance
- Creating ‘space’ in the body allows natural healing and improved function

Prevention Strategies

- Engage mid-back muscles to support proper head position
- Avoid sustained chin-forward postures when using devices
- Regular stretching resets muscular tension patterns
- Incorporate corrective exercises into existing gym routines

Warning Signs

- Voice fatigue in social situations
- Chronic headaches, especially above the eyebrows
- Nocturnal teeth grinding (indicating neck tension)
- Morning jaw pain or restricted mouth opening



“You see this a lot, teenagers now coming in with headaches and problems in their neck”

ED BLAKE’S VOICE & POSTURE TIPS

For Better Posture

- *“Keep your head in a position where the chin isn’t poking forward”*
- Strengthen mid-back muscles – *“they’re strong, and if they’re engaged, your head and neck are in a much better position”*
- Get proper ergonomic setup: decent chair, keyboard at right height, monitor at eye level
- Incorporate posture work into gym routines – *“10 minutes between treadmill and weights”*

For Voice Health

- Release the sternocleidomastoid muscle to lower the larynx
- Create space in the body for energy to flow
- Don’t force your voice in loud social settings – it leads to fatigue and pain
- Work with both physiotherapists and voice teachers if you are a performer

For Daily Maintenance

- Movement is the key – avoid sitting for 4 hours straight
- Do 20-minute stretch routine once a week to reset all tension levels
- Catch yourself in poor postures but never beat yourself up about it
- Target muscles you don’t routinely use when hunched at a keyboard

For Sleep & Jaw Issues

- Address teeth clenching by keeping stress levels down
- Break the nocturnal clenching cycle through both mechanical work and pre-sleep routine changes
- Avoid screens before bed to reduce jaw tension
- Consider that neck provides the ‘support platform’ for jaw clenching

Ed’s Bottom Line: *“It’s all about change. You’ve got to change the habit and the physical setup... Our body is an amazingly programmable instrument.”*



Ed Blake’s full interview on **The HumanWare Project** explores the fascinating intersection of physiotherapy and voice, revealing how small physical adjustments can create profound changes in how we express ourselves in the world. Learn more about his work at physioedmedical.co.uk





WHERE Cells TELL Time

Inside the UC Berkeley facility where 20 years of ageing research intersect with entrepreneurial vision

At the tissue culture hood inside Generation Lab in San Francisco, where cells grow in carefully regulated conditions, Alina Rui Su demonstrates the meticulous process of cellular research. “Every time we use it, we spray it out,” she explains, sanitising the workspace with ethanol.

The Harvard-trained scientist and *Forbes* 30-under-30 entrepreneur represents a new generation of scientist-founders. Together with UC Berkeley Professors Irina and Michael Conboy, she is building a company that emerged from their renowned laboratory in 2023.

“We were the youngest company that featured on *Fortune Health*,” Alina tells The HumanWare Project’s Méline Liu during an exclusive laboratory tour. The company has garnered coverage in *Fortune* and *Forbes*, positioning itself at the forefront of the longevity revolution.

The Marriage of Science

The story begins with an unusual scientific partnership. “My husband Michael and I have run Conboy Laboratory together for the past 20 years,” Irina shares. Their collaboration extends beyond the laboratory walls, as Michael admits, “We talk about science all the time. We go home and say, ‘How was your day?’ Well, same as my day, right?”

This round-the-clock dedication to understanding ageing has yielded extraordinary results. The couple’s groundbreaking 2005 *Nature* paper on parabiosis – surgically connecting young and old mice – challenged fundamental assumptions about the ageing process.

“We had been discussing why all the tissues and organs of the body age kind of together,” Michael recalls. The answer lay in what connects everything: the nervous system, blood vessels and, crucially, the blood itself. Their solution was as elegant as it was radical: physically join young and old animals to see what happens.



Stitching Mice Together

The parabiosis technique sounds almost primitive in its simplicity. “What happens when animals are stitched together is that the skin from one animal grows together with the skin of the other animal, and the blood vessels in the skin connect.”

Within weeks of the first experiment, something remarkable occurred. The old mice showed signs of rejuvenation – improved muscle regeneration, better organ function. But equally important was what happened to the young mice: they aged prematurely. The technique itself dates back to the 1800s, but the Conboys brought modern molecular biology to bear on an old experiment.

“People tried to suture different animals – from bigger ones like cows to very little ones like flies,” Irina notes. “But nobody asked the question of what would happen to tissues, cells and key determinant molecules in the old and young animals.”

Beyond Blood Sharing

A common misconception quickly emerged about their work. “People try to equate parabiosis with blood sharing. It is not blood sharing,” Irina emphasises. When you connect two animals, it is not just blood that is shared but entire organ systems. “The old mouse now benefits from a young liver, heart, kidneys and lungs,” she adds.

Another often overlooked factor is the impact on exercise. The old mouse, sutured to a younger counterpart that runs several miles nightly, is forced into activity. “So there are many, many compounding factors,” Irina explains.

This insight led to more refined approaches. “We switched to various devices where we could just exchange blood in about half an hour, without suturing mice together,” she continues. This work revealed plasma dilution as what she describes as “a highly rejuvenating procedure.”

The Stem Cell Secret

Central to the Conboys’ discoveries is understanding how stem cells maintain tissue health. “The key problem with age was that the muscle stem cells didn’t wake up after injury,” Michael explains. “They were there but didn’t start dividing to make more good muscle tissue.”

Their most intriguing finding involves what Michael terms “immortal DNA” – a mechanism by which stem cells might protect their genetic material. Using his arms to demonstrate DNA strands, he explains how during cell division, cells can distinguish between original and newly synthesised DNA.

“The cell can tell that this one was older than this one,” he shows, “and will put all the old ones into the stem cell that’s self-renewing. And all the newer pieces go into the daughter cell.”

Irina adds crucial context: “This one is a clean slate. It doesn’t have any annotations that were recently made. So it can acquire the fate for whatever we need from the tissue. This one has all of the markings or annotations of how to be a stem cell.”

“Take care of science and science will take care of you”



Million-Dollar Machines

The tour of Generation Lab's facilities reveals the extraordinary infrastructure required for cutting-edge ageing research. "This is not only a Generation Lab facility. This is what is called a core facility," Irina explains. Various startups can purchase access, giving them "unprecedented, multibillion-dollar infrastructure to conduct research."

The crown jewel is the flow cytometer, a laser-equipped device that analyses cells at single-particle resolution. "Each unit is costly yet powerful, opening vast possibilities for understanding cell behaviour," Irina notes. "This particular one can analyse cells at single-cell resolution – many of them in the population – until they become younger or older." The facility also houses automated microscopes that can image cellular changes for hours, capturing the dynamics of ageing in real time.

From Lab to Life

Generation Lab's mission is to translate these scientific insights into accessible products. Alina mentions working with 275+ clinics in the United States and worldwide, and references important legislative efforts to advance new longevity policy at the House of Representatives.

The company has also developed what it calls the world's first accurate preventive health tool: the SystemAge Test. Described by Alina as "the fortune teller of your health," the test tracks over 460 markers across 19 organs and systems to detect early signs of

ageing before disease becomes symptomatic. Alongside this, she refers to "Generation 1" – an injectable longevity cocktail designed to replace plasma dilution. "We are building the Ageless Generation, opening vast possibilities for unleashing human potential and understanding cellular behaviour."

The Path Forward

When asked about the reversibility of ageing, Michael offers a measured response. "I think health extension is doable. I think reversing some of the chronic illnesses of ageing is possible. But we're going to have to take many steps to get there."

For students and aspiring scientists, the Conboys offer simple but profound advice. "When in doubt, focus on the science," Michael suggests. "If you have to make a decision between A and B, ask: where does the science point? Go in that direction." Irina's philosophy is equally straightforward: "Take care of science and science will take care of you."

As the laboratory tour concludes, what emerges is a portrait of science at a crossroads. "Looking back, it's impressive to see what a long way we've come, turning 20 years of science into a real product that people can actually use," Irina reflects.

In this tightly controlled environment, decades of rigorous research are revealing that ageing might not be the one-way street we assumed. Now, a new generation of entrepreneurs like Alina is working to transform these insights into tools that can benefit anyone. **HW**



The Immortal DNA Mechanism

How Stem Cells Protect Their Genetic Blueprint

The Discovery During cell division, stem cells can distinguish between original DNA strands and newly synthesised copies. This selectivity may be key to maintaining stem cell identity across a lifetime.

The Sorting Process

Original DNA › Stays with the Stem Cell

Contains all the epigenetic markers and chemical modifications that maintain stem cell identity and self-renewal capacity

New DNA › Goes to the Daughter Cell

Lacks recent epigenetic markings, making it flexible enough to differentiate into any tissue type the body requires – muscle, blood or nerve cells

Why It Matters

This mechanism allows stem cells to preserve their ‘immortal’ genetic instructions while creating fresh daughter cells that can become muscle, blood or any other tissue type the body needs.



Key Things to Know

The Parabiosis Breakthrough

- Surgically joining young and old mice shows ageing can be influenced in both directions
- The technique dates to the 1800s but the Conboys brought molecular biology to the experiment
- It's not just blood sharing – entire organ systems are connected
- It led to the discovery of plasma dilution as a rejuvenating procedure

The Laboratory Infrastructure

- Generation Lab accesses UC Berkeley's multimillion-dollar core facility
- A flow cytometer analyses ageing at single-cell resolution
- Automated microscopes capture hours of cellular imaging
- Strict protocols maintain sterile conditions for cell culture

The Company Vision

- Building the Ageless Generation
- Generation Lab spun out from the Conboy Lab in 2023
- Featured as the youngest company in *Fortune Health* coverage
- The company translates scientific breakthroughs into products that make longevity science accessible
- It also partners with 275+ clinics and hospitals across the United States and worldwide



Watch the complete Generation Lab tour on **The HumanWare Project**, featuring exclusive access to the UC Berkeley facility where the future of ageing research takes shape. Learn more about Generation Lab at generationlab.com



THE resilience BLUEPRINT

How data-driven health is moving from the lab to the boardroom, transforming executive performance into a sustainable asset





“Learning how to shift between the sympathetic and parasympathetic systems is one of the most important things in high performance and in preventing burnout”

For decades, the badge of entrepreneurial honour was burnout – a relentless pace fuelled by caffeine and sleepless nights. “It used to be something to be proud of to say that, as an entrepreneur, you haven’t slept in three days,” says Bulėza Koci, Co-Founder of DRYM Health. “I think those days are gone.” Bulėza is at the forefront of a paradigm shift that reframes executive wellbeing not as a luxury, but as the core operating system for high performance. Her work is pioneering a move away from reactive ‘sick care’ towards a preventive and proactive healthcare model designed for the demands of modern leadership.

Her philosophy was forged in an unlikely crucible: the world of integrated cancer therapy. After studying pharmacy in the Czech Republic, Bulėza built a career in Germany, rising to become CEO of a company that created patient-specific pharmaceutical compounds for cancer treatments. The approach was holistic, combining cutting-edge medicine with nutrition and alternative therapies to support patients through gruelling treatment schedules. Yet, she found the work somewhat disappointing. The problem, Bulėza explains, was that “we were waiting until people got cancer to start working in an integrative and holistic way.” Her focus shifted from treating sickness to understanding what made the body robust enough to

withstand it in the first place. Bulėza notes that factors like muscle mass, which gives patients a higher chance of being able to handle cancer therapy, are critical for long-term health and longevity in any context. This insight sparked the creation of DRYM Health.

DRYM Health is built on four interconnected pillars: sleep, nutrition, movement and mind. The company works with leaders and CEOs to optimise their health in the same way an elite athlete prepares for competition. “If elite athletes are competing at the Olympics,” Bulėza reasons, “the recovery for them is just as important as exercise. They are actually prescribed to recover because they know that their performance the next day is directly linked to their recovery.”

Central to her methodology is mastering the body’s autonomic nervous system (ANS) – the unconscious control centre for everything from heart rate to digestion. The ANS has two main branches: the sympathetic (‘fight-or-flight’) and the parasympathetic (‘rest-and-digest’). The sympathetic system prepares us for action, flooding the body with energy to face a challenge. The parasympathetic system promotes recovery and calm. “Learning how to shift between these two systems is one of the most important things in high performance. And also in preventing burnout,” Bulėza states.



“Receiving a stressful email that triggers a full sympathetic response while we remain sedentary is almost like having a lot of electricity and not letting it out”

The modern workplace creates a physiological mismatch. A stressful email can trigger a full sympathetic response, yet we remain sedentary. Bulēza describes this as “almost like having a lot of electricity and not letting it out.” This chronic state of alert diminishes our nervous system’s resilience, its ability to bounce back from stress. Over time, this leads to burnout. The solution, Bulēza argues, is to consciously activate the parasympathetic state. This can be achieved through simple techniques like deep breathing, humming or even shaking the body to release pent-up energy, as well as establishing consistent sleep routines that anchor our circadian rhythm – the body’s master clock for hormonal regulation.

Nutrition is another key lever. Bulēza advocates an anti-inflammatory diet rich in whole foods, fibre and healthy fats while limiting sugar and ultra-processed items. While she notes that in her previous work with cancer patients, a ketogenic diet was sometimes explored under medical supervision to limit the glucose available to cancer cells, she stresses this is an

area of emerging research and not established advice for patients to undertake without consulting their oncology team. For healthy individuals, the goal is metabolic stability. Here, technology like a continuous glucose monitor (CGM) can offer personalised insight, a trend gaining traction in the ‘biohacking’ community. While some medical experts caution against its use in non-diabetics, fearing it may foster health anxiety, Bulēza suggests it can be a good investment for understanding how one’s body responds to different foods.

Ultimately, Bulēza’s approach is about leveraging data not to create anxiety, but to cultivate a deeper intuition. “Using the numbers to get a deeper sense of your intuition and understanding your body more, rather than just relying on numbers to tell you whether you feel good or not is our ultimate goal,” she says. It is a future where preventive health is seamlessly woven into the 24 hours of each day, creating a sustainable foundation for both personal wellbeing and professional success. **HW**

Since we spoke...

We went back to Bulëza for an update on her work since our podcast interview.

Key Things to Know

The CEO as Athlete

- The DRYM Health philosophy applies principles from elite sports to executive life
- Just as athletes schedule recovery as rigorously as training, leaders must master nervous system regulation to sustain peak performance and avoid burnout

Nervous System 101

- Your body has two key operating modes: sympathetic ('fight-or-flight') and parasympathetic ('rest-and-digest')
- Chronic stress keeps the 'fight-or-flight' system constantly activated
- Learning to consciously shift into 'rest-and-digest' through techniques like breathwork or even humming is crucial for recovery

Muscle as a Metabolic Organ

- Muscle mass is a critical predictor of longevity and resilience
- Beyond aesthetics, maintaining muscle is vital for metabolic health and increases your body's ability to withstand stresses like major illness

The Anti-Inflammatory Plate

- A diet focused on reducing inflammation is key
- This involves prioritising whole, unprocessed foods like leafy greens, high-quality olive oil and fibre, while avoiding ultra-processed products and excess sugar

Data-Driven Intuition

- Tools like wearable sleep trackers or a continuous glucose monitor (CGM) can provide powerful data
- The goal is not to become obsessed with numbers, but to use them to develop a more refined, intuitive understanding of your own biology

"Elite athletes are prescribed to recover because they know that their performance the next day is directly linked to their recovery"

Q: Since our conversation, you have stepped into the role of Chief Growth Officer at tulāh Clinical Wellness. What inspired your transition from DRYM Health?

BK: After building DRYM Health from the ground up, I felt called to bring my vision of redefining how high-performing individuals experience health and vitality into a more immersive, global context. As a next-generation longevity destination that bridges ancient healing traditions with advanced medical science, tulāh offered the perfect next step, and I am now leading the international expansion of a pioneering clinical wellness brand that merges ancient wisdom, modern medicine and data-driven technology.

Q: How is tulāh redefining the longevity and wellness space?

BK: tulāh brings together the best of ancient and future, East and West, where cutting-edge diagnostics meet timeless practices like meditation, plant-based healing and Ayurvedic therapies. We don't just help individuals recover or prevent burnout – we support deep inner transformation, empowering people to live not just longer, but more intentional, joyful and connected lives. It's a shift from performance alone to sustainable vitality, grounded in meaning and presence.

Q: What personal shifts have you noticed in stepping into this new role and chapter of life?

BK: tulāh isn't just a brand, it's a philosophy of life, and I'm learning to live it myself. I feel more present and attuned, immersed in both action and devotion, and more awake to the beauty within everyday moments. I've been diving deep into ancient wisdom, both intellectually and in practice, and I'm genuinely moved by how profoundly it's shaping the way I feel, lead and live.

Q: What's next on the horizon?

BK: From our flagship sanctuary in Kerala to future digital and urban formats, tulāh is set to reimagine what it means to live in balance – body, mind and soul – with the potential for impact I've never experienced before.



Bulëza Koci's interview appeared on **The HumanWare Project**. To hear the full conversation and others, tune into **The HumanWare Project** online, and learn more about tulāh Clinical Wellness at tulah.life





THE NEURAL ENGINEER

*How Ben Woodington is redefining the
boundaries between mind and machine*



"This is very, very high performance engineering comparable to space flight. These devices must survive in the body's very hostile environment."

The future of human biology isn't written in our genes – it is encoded in the electrical signals that pulse through our brains every millisecond. At least, that's the conviction driving Ben Woodington, Co-Founder and CEO of Coherence Neuro, whose path from electrical engineering at Cambridge to research in USC's Department of Biomedical Engineering is revealing just how profoundly our biology depends on electricity.

"The electronic underpinning of our biology is even broader than we ever thought," Ben explains. "We're finding that this electrical activity is underpinning almost every biological process in our body, in both healthy and disease states."

This revelation has profound implications. If disease states have unique electrical signatures, then perhaps we can detect them earlier, track them more precisely and treat them more effectively than ever before. For Ben, this is not theoretical but personal mission territory.

His journey into neurotechnology began in chemistry, developing drug delivery systems. But at a career crossroads, he found himself weighing the most impactful trends in healthcare over the next two decades. The choice crystallised around 2018, just as Neuralink was emerging and companies like Synchron were conducting their first human implantations.

"I thought, this field seems inevitable. This feels like a place that I need to work," he recalls. The decision led him to Cambridge, where he completed

his PhD wrapping electrodes around spinal cords to decode pain signals and explore rehabilitation through electrical stimulation.

The elegance of the approach struck him immediately. Rather than flooding the body with drugs that affect multiple organ systems, brain-computer interfaces offer precision, targeting specific neural circuits with minimal collateral impact. "Pain is being processed in the brain," Ben notes. "People say 'it's all in your head', and it really is all in your head. That's where it's being processed."

But Ben's research extends far beyond pain management. His most intriguing work involves cancer treatment and detection through neural biomarkers. According to Ben, cancer cells exhibit distinct electrical signatures that can be detected and classified using implanted electrodes. The science builds on established research showing that cancer cells operate at different electrical potentials than healthy tissue – typically between -10 to -30 millivolts compared to the -50 to -90 millivolts of normal cells, and even form functional connections between neurons.

"We can record cancer cells and the surrounding neurons directly," he explains. "You can actually put an electrode on a tumour and it has a specific electronic signature." When cancer interacts with the nervous system, particularly in the brain, this creates what he describes as "hyper excitement" around tumours – detectable patterns that AI can classify into neural biomarkers of disease state.



"That complete merging of machine data and human being is going to solve a lot of our problems and diseases. We've never had anything like that in the history of humankind."

The implications are not limited to detection but concern treatment too. Using electrical stimulation, researchers are exploring ways to disrupt cancer cell activity directly, modulate immune function or interfere with the supportive neural networks that some tumours exploit. It is an approach that feels both futuristic and elegantly simple.

"We want to completely control biological function disease state using electrical stimulation," Ben shares. "And we want to collect and distil data insights about human health in a way that's never been achieved before." The technology itself requires extraordinary precision. "This is very, very high performance engineering comparable to space flight," he explains. The devices must survive in what he calls the body's "very hostile environment" for decades while maintaining signal quality and avoiding rejection by immune systems.

Yet the engineering challenges pale beside the regulatory and cultural hurdles. These technologies necessarily face rigorous testing – years of in vitro bench work followed by animal studies before human trials. The process requires careful navigation of safety protocols for devices that will be integrated into people's most precious organ.

The cultural questions are equally complex. Brain-computer interfaces inevitably raise concerns about privacy, identity and human enhancement. "We are already plugged into machines," Ben observes, referencing our optical connection to smartphones and the behavioural nudging by technology companies.

The question becomes whether physical integration represents a fundamental shift or simply

the next step in human-technology convergence. For Ben, the answer lies partly in therapeutic necessity and partly in keeping pace with artificial intelligence advancement. "That complete merging of machine data and human being is going to solve a lot of our problems and diseases," he says. "We've never had anything like that in the history of humankind."

Currently, these technologies remain reserved for the very sick – people willing to accept surgical risks for therapeutic benefits. But Ben anticipates broader accessibility as devices become smaller, safer and more powerful. The economics will likely follow the smartphone model: initially expensive, eventually ubiquitous.

The timeline for healthy enhancement remains uncertain. It is cultural acceptance, rather than technical capability, that may prove the limiting factor. "I think it's ultimately going to be possible," Ben says. "Ethically, will it happen? Culturally, will it happen? These are two different questions."

What is undeniably clear is that the science is advancing rapidly. Multiple companies are developing implantable devices, and FDA approvals are approaching for the first generation of commercial brain-computer interfaces. The technology exists; the question is adoption.

For Ben, the work represents more than technological advancement – it is about fundamentally expanding human potential while alleviating suffering. In a field where breakthroughs could reshape the boundaries between mind and machine, that mission feels both ambitious and essential. **FW**

Key Things to Know

The Science

- Every biological process in the body has an electrical component that can be measured and potentially modified
- Cancer cells operate at different electrical voltages than healthy cells (-10 to -30 mV vs -50 to -90 mV)
- Brain-computer interfaces have evolved from 1960s deep brain stimulation research, representing convergence of decades-old technologies
- Pain processing occurs entirely in the brain, making targeted neural stimulation more logical than systemic drug treatments

The Technology

- Modern brain-computer interfaces can be as small as wireless chips powered by external wearable devices
- Signal quality through the skull is significantly degraded; implanted devices provide much higher resolution data
- Device upgrades can occur through software updates or modular hardware replacement during simple procedures
- Protected frequency bands prevent interference with other electronic devices

Current Applications

- First-generation devices focus on motor intent decoding for paralysed patients
- Therapeutic applications target depression, epilepsy, chronic pain conditions and cancer
- Cancer detection through neural biomarkers represents emerging frontier in oncology
- Clinical trials are expanding beyond treatment to early disease detection and closed-loop function

Future Implications

- Healthy enhancement applications may emerge as devices become safer and culturally accepted
- AI will process unprecedented amounts of biological data from implanted sensors
- The technology could enable real-time health monitoring and automatic therapeutic adjustments
- Economic accessibility is expected to follow smartphone adoption patterns



The Electrical Language of Life

Every cell has its own voltage signature and frequency

THE DETECTION WINDOW
The 20-60 mV difference between healthy and cancerous cells creates a measurable bioelectrical marker. Implanted electrodes can detect these voltage variations at the cellular level, while neural interfaces can identify patterns of hyperexcitability in tissue surrounding tumours. Advanced algorithms process these electrical signatures to classify disease states with increasing precision.

WHAT THIS MEANS
This electrical signature could enable earlier detection and targeted treatment without systemic drugs. Rather than relying on traditional imaging or biopsies, bioelectrical monitoring offers real-time, continuous assessment of cellular health at the source.



Ben Woodington's interview first appeared on **The HumanWare Project** podcast. To hear the complete conversation about the future of brain-computer interfaces, search for The HumanWare Project on your preferred platform. Learn more about neurotechnology research at opto.bio





THE memory KEEPER

Inside the lab where this Stanford-trained neuroscientist is uncovering why women's brains age differently – and what it means for humanity's future

In the liquid nitrogen tanks of Dr Ashley Webb's laboratory at the Buck Institute for Research on Aging, frozen cells hold secrets that could revolutionise how we understand brain ageing. Ashley, a molecular biologist turned neuroscientist, lifts a sample from the minus-196-degree storage with practised ease. These aren't just any cells – they are neural stem cells, the brain's own regenerative machinery that she believes may hold critical clues to preventing cognitive decline and understanding why more women than men develop Alzheimer's disease.

"The dogma has always been no new neurons," Ashley explains, her enthusiasm evident despite having shared this revelation widely countless times. "But it turns out that is very likely to be untrue."

In specific regions of the adult brain, particularly the hippocampus – our internal GPS and memory processor – new neurons continue to form throughout life. This discovery upends decades of neuroscience orthodoxy and opens possibilities that sound more like science fiction than laboratory fact.

Ashley's journey to becoming one of the world's leading researchers on brain ageing began not with grand ambitions but with simple curiosity. As an undergraduate, she discovered the intoxicating thrill of lab discovery – moving beyond textbook facts to ask questions no one had answered. That passion led her from the University of Washington to Stanford, and eventually to Brown University before she joined the Buck Institute in 2023.



“Get off your device and get out into the world”

But it was a surprising discovery about the X chromosome that would define her current mission. While investigating why women experience more frailty and higher rates of Alzheimer’s disease than men, Ashley’s team uncovered something unexpected: major changes occurring on the female X chromosome during ageing that don’t happen in males. “It took us by surprise,” she admits. During development, females silence one of their two X chromosomes to achieve genetic balance with males. According to Ashley, this silenced chromosome appears to undergo significant changes with age in female neurons – a finding that could explain sex-specific patterns in brain ageing and disease.

The implications extend far beyond academic interest. With dementia cases rising globally and women bearing a disproportionate burden, Ashley’s research offers hope for more personalised treatments. “We’re going to need separate treatments to help men and women,” she says. “We need to gain an appreciation of how mechanisms of ageing are different.”

Perhaps most encouraging is Ashley’s work on neurogenesis – the brain’s ability to generate new neurons. In her lab, mice given running wheels show remarkable results, as even aged mice are able to form new neurons in the hippocampus and demonstrate improved cognitive function. The translation to humans seems clear. “Exercise. I would put that at

“The dogma has always been no new neurons, but it turns out that is very likely to be untrue”

the top of the list,” Ashley states emphatically. But it is not just physical activity. Mental stimulation, social interaction and quality sleep all contribute to maintaining brain plasticity throughout life.

The revolution in brain health monitoring is already underway. Ashley points to newly available blood tests that can detect phosphorylated tau – an early biomarker of Alzheimer’s. Combined with continuous glucose monitors, sleep trackers and other wearable technology, individuals now have unprecedented ability to monitor and optimise their brain health. “The more that you can learn about what’s going on with your body, the better off you are,” she advises.

Yet, Ashley is careful to acknowledge the complexity of the science. The field of adult neurogenesis remains controversial, with conflicting evidence about the extent to which it can occur in humans. Brain development doesn’t simply ‘finish’ at 25, as popular wisdom suggests, but continues gradually with significant individual variation.

In Ashley’s vision of the future, brain health is not something we address after problems arise but something we actively maintain throughout life. She certainly practises what she preaches, incorporating running and strength training into her daily routine. “If I’m starting to feel tired, if I have a little bit of a slump, I don’t go and lie down. Instead, I do something physical,” she says.



Ashley notes that normal ageing does not involve significant neuronal death (another myth her research helps dispel). Instead, changes in connectivity and inflammation drive cognitive shifts. It is only in diseases like Alzheimer’s that neurons actually die in large numbers. This distinction offers hope: if we are not losing neurons, perhaps we can maintain and even improve brain function well into our later years.

At the Buck Institute, researchers from diverse disciplines unite around the single goal of understanding how we can live better, longer. Ashley’s collaborations on cellular quality control systems – the mechanisms that clear damaged proteins and organelles from ageing cells – represent just one example of how interdisciplinary science might finally give us the answer to healthy brain ageing.

“The future is bright,” Ashley declares optimistically. Indeed, the knowledge emerging from labs like hers promises to reinvent how we approach brain health, with reactive treatment giving way to proactive optimisation, as one-size-fits-all solutions are replaced by personalised interventions tailored to sex and individual biology.

For those at peak performance – the CEOs and high achievers who push their cognitive abilities to the limit – Ashley’s advice is very simple: sleep well, eat well, exercise, maintain social connections. “Get off your device and get out into the world,” she counsels. In an age of complex biohacking protocols and expensive interventions, perhaps the most sophisticated approach to brain health is also the most basic. **FW**

Dr Ashley Webb is a Scientific Co-Founder of Bolden Therapeutics.

“We’re going to need separate treatments to help men and women”



Since we spoke...

We went back to Ashley for an update on her work since our podcast interview.

Key Things to Know

The Science of Brain Ageing

- The hippocampus can generate new neurons throughout life, challenging the 'no new neurons' dogma
- Normal ageing does not involve significant neuronal death – cognitive changes result from altered connectivity and inflammation
- Women's brains age differently than men's due to X chromosome changes, potentially explaining higher Alzheimer's rates in women
- The brain remains plastic and adaptable throughout life with proper stimulation

Breakthrough Discoveries

- Ashley's team identified unexpected changes on the female X chromosome not seen in males during ageing
- Running and voluntary exercise can stimulate new neuron formation even in aged brains
- Phosphorylated tau blood tests can now detect Alzheimer's biomarkers much earlier on
- Microglia (brain immune cells) play a dual role – protective when healthy, harmful when inflamed

Optimising Brain Health

- Exercise tops the list of interventions – it increases blood flow and stimulates neurogenesis
- Quality sleep is essential for memory consolidation and clearing metabolic waste
- Social interaction and mental stimulation maintain neural connectivity
- Stress management is crucial – chronic stress decreases neurogenesis and accelerates ageing

The Future of Neuroscience

- Personalised treatments based on sex-specific ageing mechanisms are on the horizon
- Wearable technology and biomarkers enable unprecedented brain health monitoring
- Cellular 'cleanup' systems offer new therapeutic targets for preventing neurodegeneration
- Early detection through blood tests could transform Alzheimer's treatment outcomes

Q: What's been the most exciting development at the Buck Institute since we last spoke?

AW: We have completed an analysis of how gene expression in the human hypothalamus – a key brain region for homeostasis and healthy ageing – changes in ageing and in Alzheimer's. We found elevated neuroinflammation with age and disease in this brain area. We also identified specific changes in neurons that regulate sleep, which are linked to dysregulation of sleep patterns and circadian rhythms.

Q: Have there been any developments in your X chromosome ageing research?

AW: Yes! In our initial studies we found changes in gene expression with age in the female, particularly an increase in overall levels, which means that the X chromosome is becoming more active in the aged female brain. But we didn't know if this was also happening in males. Our new analysis indicates that the X chromosome is much more stable in males. This new finding gives us a clue as to the molecular underpinning of sex differences in the ageing brain, such as why Alzheimer's disease is more common in women compared to men.

Q: You were very excited to speak about your quality control in the cell collaboration. Has there been any progress here?

AW: We are seeing interesting differences in mitochondrial quality control in particular. In the aged neural stem cells, which are the source of new neurons in the adult hippocampus, we can see more mitochondrial damage. That's the bad news, but the good news is that we can also visualise turnover of these damaged mitochondria, even in the aged stem cells. So if we can tap into the mechanisms that clear the damaged mitochondria, we should be able to eliminate them and improve cellular health and new neuron formation.

Q: What's next on the horizon?

AW: We need to understand why the X chromosome changes in females but not males. What are the underlying mechanisms? If we can answer this question, it will give us insight into new molecular targets for precision medicine in men and women.

The future of brain health isn't just in revolutionary treatments – it's in understanding that our brains remain remarkably adaptable throughout life, waiting for us to unlock their potential through surprisingly simple interventions.



Dr Ashley Webb's fascinating interview first appeared on **The HumanWare Project, which you can follow on YouTube or your podcast platform of choice. To learn more about her work, visit [buckinstitute.org](https://www.buckinstitute.org)**



THE Architecture OF LONGEVITY



In a futuristic Parisian clinic designed with only naturally occurring shapes, and where forests sing through hidden speakers, architecture becomes the first intervention against ageing



“The check-up is only the beginning of the journey”

The building defies medical convention. In Paris’ second arrondissement, steps from Place Vendôme, Zoï longevity clinic occupies a space designed to feel anything but clinical. “If you look at the room, there is no angle,” Théo Deschamps-Peugeot, Zoï’s Chief Revenue Officer, points out as he guides The HumanWare Project’s Founder Méline Liu through the facility, for a special documentary episode, yet to be released at the time of going to print. Above, lights reproduce the quality of natural daylight. Through hidden speakers, a soundscape created from forest recordings provides an unexpected acoustic backdrop to cutting-edge diagnostics.

This is intentional theatre, but with serious purpose. “When you relax, we can gather data of higher quality,” explains Théo, as he takes Méline through the four-hour assessment that has drawn everyone from tech executives to professional athletes since the clinic opened in 2022. “The goal is for you to feel like you are in nature.”

This, in turn, forms part of Zoï’s wider vision to transform the French approach to preventive healthcare by making comprehensive health assessments not just medically rigorous but experientially transformative.

The Body’s Manual

The numbers tell a sobering story. According to Théo, 46 per cent of Zoï members discover pathologies they didn’t know existed. One per cent require

immediate surgery. Another 15 per cent need medical intervention for conditions like type 2 diabetes or grade 3 hypertension – life-threatening issues that had been silently progressing. “A lot of people are ignoring weak signals,” Théo observes, citing the example of a C-level executive who dismissed morning fatigue, only to discover his thyroid had essentially stopped functioning.

The assessment itself reads like a glimpse into medicine’s future. Over four hours, clients undergo a comprehensive examination to gather all the data needed to build what Théo calls their “body’s manual” – a personalised action plan spanning nutrition, supplements, therapeutics, exercise and daily habits. DEXA scans map bone density and body composition. CT imaging examines facial structures and lungs. Most intriguingly, optical coherence tomography (OCT) scans peer through the eyes to assess brain health via the optic nerves – a window into neurological function that conventional check-ups ignore.

“We can get a lot of information on how your brain is functioning from the state of your optic nerves,” Théo explains. The eyes also reveal cardiovascular risk, with retinal imaging increasingly used to predict heart disease years before symptoms manifest.

Beyond the Check-Up

What distinguishes Zoï from traditional executive health programmes isn’t just the technology but what happens after. “The check-up is only the beginning of the journey,” Théo emphasises.



The clinic's app, updated throughout the year-long membership, adapts recommendations based on progress and life changes. A new feature even allows members to scan restaurant menus for personalised meal suggestions based on their microbiome analysis and metabolic profile. "For example, we can say that based on your microbiome and immunity, you should order the fish," Théo demonstrates, showing how the technology translates complex health data into practical daily decisions.

By combining high-tech diagnostics and behavioural science, Zoï stands in sharp contrast to traditional healthcare, which waits for problems to manifest. Instead, the team at Zoï preventively identifies tell-tale weak signals – that afternoon energy dip, morning brain fog or subtle digestive discomfort – and traces them to root causes.

The Paradox of Popular Wisdom

Some of Zoï's findings challenge wellness orthodoxy. Ice baths, beloved by biohackers worldwide, can

"When you relax, we can gather data of higher quality"

disrupt hormones in certain individuals, Théo warns. The ketogenic diet, while beneficial for some, "can be harmful for the gut" in others. Even something as universally praised as morning exercise comes with caveats – though Théo himself swears by working out within 30 minutes of waking to boost dopamine and set the tone for the day.

Zoï's building itself embraces this personalisation. The wellness area, accessible to members year-round, features saunas, hammams, snow cabins and ice baths – but only after assessment determines which therapies suit each individual's constitution. The space upholds the biophilic design philosophy, with what Théo describes as "Japanese thermal bath" aesthetics that create an environment for restoration, rather than mere relaxation.

Digital Twins and Future Medicine

Looking ahead, Théo envisions a world where continuous monitoring becomes as routine as annual check-ups are today. "We'll be able to live-monitor your health," he predicts, describing a future of 'digital twins' – virtual models of our bodies that will compare their actual versus their ideal status to track deviations from optimal function in real time. The benefit of such a technology, he explains, is the ability to deduce risks for disease, hopefully preventing disease itself, in true predictive healthcare.

Such a future is not far off and this isn't mere speculation. Zoï already partners with wearable

“We can get a lot of information on how your brain is functioning from the state of your optic nerves”

companies and plans to integrate continuous glucose monitors, sleep trackers and other devices into their platform. The goal: catch those offending weak signals not annually but daily, allowing for interventions before imbalances become pathologies.

The clinic plans expansion beyond Paris, though Théo remains tight-lipped about specific locations. What he will share is the driving philosophy: making Zoī-level assessment accessible to “the greater numbers”, while maintaining the premium experience that makes follow-through more likely. **HW**

Challenging Wellness Myths

Popular health habits require personalisation based on individual biology. No single habit serves everyone, for example:

- Ice baths can harm hormones in some individuals
- Ketogenic diets may damage gut health for certain individuals
- Morning exercise upon waking may boost dopamine in some
- Supplements can be an excellent source of deficient vitamins, but are often overconsumed

***The Golden Rule:** Whether a habit is healthy or not depends on your body, not on a trend. Start by developing a full understanding of how your body works. Monitor and measure your body's response to a particular habit, and then only implement it if it improves your health and your life.*

Key Things to Know

The Zoī Assessment

- 4-hour comprehensive evaluation to build a body's unique manual
- Includes DEXA scans, CT imaging and OCT eye scans that reveal brain health
- Discovers unknown pathologies in 46 per cent of members
- Annual membership offers year-round support and facility access

Architecture as Medicine

- Zoī's biophilic design with curved walls and no angles promotes relaxation
- Natural light algorithms and forest soundscapes reduce stress during testing
- Higher quality diagnostic data obtained when patients are relaxed
- Building serves as preview of personalised medicine's experiential future

Future Vision

- 'Digital twin' technology will enable real-time health monitoring by positioning current vs optimal health status
- Continuous tracking will identify issues before they become pathologies
- Expansion planned to make comprehensive assessment more accessible
- Focus on transforming preventive medicine from reactive to predictive



This documentary on Zoī will appear on **The HumanWare Project**. Stay tuned for the episode to enjoy the full tour and learn more about the future of personalised medicine at zoi.com





In a business where patience is measured in decades, Patrick Aisher has learnt to see beyond the quarterly report. As Chairman of Kinled Holding Limited, he oversees a portfolio spanning brain-computer interfaces to cardiovascular innovations, guided by a philosophy inherited through four generations of entrepreneurs.

“I’ve never met a genuinely successful founder whose ambition is financial,” Patrick states. “Their ambition is always about a concept, an idea, a strategy that they think will help change the way the world works for the better. And, usually, the broader the application, the more successful it is.”

This philosophy has guided Kinled’s portfolio of companies through 22 successful IPOs, with 19 in the United States. The path from family business to international medical technology powerhouse began with different engineering entirely. Patrick’s great-grandfather was an inventor who created a company that employed over 10,000 people in construction. His grandfather patented PVC innovations in water management, becoming a world leader in the sector. His father built a highly successful business that went on to become the largest brick manufacturer in the USA. “So I grew up,” Patrick explains, “surrounded by people who always asked ‘Why not?’ as opposed to ‘Why?’”



FROM maps TO minds

*How a software entrepreneur
became Switzerland's gateway
to brain-computer interfaces*

That question led Patrick from software ventures in geospatial data to human biology's frontiers. "I worked in mapping for aerospace, and I found a great similarity with molecular science in biotechnology, particularly drug discovery," he explains.

His first biotech investment targeted respiratory syncytial virus (RSV), a potentially fatal childhood illness affecting the lungs. The company – started by one scientist with three people – licensed the drug and gained FDA approval within three years. "We sold the licence to MedImmune, which was acquired by AstraZeneca," Patrick recalls, achieving a 32x return over 36 months. "In my ignorance, I thought this

would be the norm, and that this could be repeated time and time again," he reflects. "Obviously, it's not that simple."

Drug development consumes enormous amounts of money, with many biotechs taking years to develop. Not all become success stories. Yet Patrick sees this as precisely why disciplined capital matters.

His approach crystallised around brain-computer interfaces twelve years ago. "We developed a business here in Switzerland using thin film technology for implanting a small electrode into the brain," he explains. The technology assists Parkinson's and epilepsy patients. "About two dozen patients walk



“What we’re looking for is people whose technology is game-changing and who have enough intellectual capability to see the project through from academia to commercial success”

around today with brain implants. They and their doctors manipulate the usage level to reduce traumatic tremors.”

“We have a patient who’s an artist,” Patrick recounts. “He was unable to hold a paintbrush without the implant. Now, with the implant, he paints and draws perfectly well.”

This paradigm shift sees electronic devices actively participating in bodily function, not just monitoring. Patrick envisions neurological implants becoming as commonplace as contact lenses and hip replacements, ranging from devices that manage blood pressure to brain stimulation that treats depression, sans medication side effects. He even mentions a sexual health implant for erectile dysfunction developed by EPFL Lausanne, which he has not invested in. “Ten years ago when the founder suggested this, I thought it unlikely, but it’s actually extremely possible.”

Patrick insists that “technology needs to step up its game.” He recalls approaching a leading spinal academic fifteen years ago about robotic surgery. “He said no doctor would ever use a robot to perform

surgery. Fifteen years later, that same expert has acquired six robots for his business.”

He shares how the team at Kinled has developed two incubators in Austria and Switzerland. “We go scouting for the most interesting scientific possibilities and opportunities. We look at about 150 projects a year and typically invest in two to three of them. What we’re looking for is people whose technology is game-changing and who have enough intellectual capability to see the project through from academia all the way to a realisable commercial product that can be brought into the real world.” The filter therefore demands innovation plus long-term vision.

“Our most successful biotech investments take eight to 10 years to reach fruition, sometimes longer,” he acknowledges. “Really advanced technology can take 15 years before commercial availability. As an investor, you need deep pockets and tremendous faith.”

That faith grounds itself in cross-generational engineering principles. Fascinatingly, his geospatial work taught him that guiding aircraft to runways



requires the same precision as guiding needles into brains. “Instead of working in metres, you’re working in micrometers, but the technology is identical.”

From the Bernese Oberland, where his wife’s grandparents built a hotel in the 1930s, Patrick identifies technologies at the intersection of impossible and inevitable. “I can walk outside into the mountains surrounded by total silence,” he muses. “Even for just minutes daily, I think it’s highly valuable as the world gets faster and people lose sight of the value of peace and tranquillity.”

Patrick’s insights into medical technology investment reveal how generational thinking and patient capital are driving a new future for healthcare. His work at Kinled demonstrates that the most transformative innovations require not just funding, but faith in ideas that seem impossible today yet inevitable tomorrow. As electronic devices evolve from monitoring our bodies to actively participating in their function, investors like Patrick are writing the next chapter of human enhancement – one measured not in quarters, but in generations. **HW**

Key Things to Know

The Kinled Legacy

- Fifth-generation family business with roots in construction and invention
- 22 successful IPOs, with 19 in US markets
- Investment philosophy: “Why not?” over “Why?”

The Brain-Computer Revolution

- Swiss company using thin film technology for brain electrodes
- Technology helps Parkinson’s patients control tremors
- About two dozen patients currently using brain implants
- Current applications include Parkinson’s and epilepsy treatment

The Investment Reality Check

- First biotech investment achieved 32x return in 36 months
- Most successful investments take eight to 15 years to reach fruition
- Of 150 projects reviewed annually, only two to three receive investment
- Success requires “deep pockets and tremendous faith”

The Swiss Innovation Ecosystem

- Two incubators established in Switzerland and Austria
- Connection to EPFL Lausanne innovation ecosystem
- Investment philosophy focuses on long-term vision and coachable founders
- Focus on technologies that solve real-world problems

The Future of Human Enhancement

- Predicts implants will become as common as contact lenses and hip replacements
- Sees a shift from pharmaceutical to electronic solutions for chronic conditions
- Examples include devices for blood pressure, sexual health and neurological conditions
- Vision of technology stepping up its game in healthcare



“Our most successful biotech investments take eight to 10 years to reach fruition, sometimes longer”

FROM PATRICK’S PORTFOLIO: TECHNOLOGIES CHANGING LIVES TODAY

The Artist’s Tremor

- *Patient:* Professional painter with Parkinson’s disease
- *Problem:* Couldn’t hold a paintbrush due to tremors
- *Solution:* Brain implant with adjustable electrical signals
- *Result:* “Now paints and draws perfectly well”

The Sceptical Surgeon

- *15 years ago:* Leading spinal expert said “no doctor will ever use a robot”
- *The technology:* Robotic spinal surgery assistance
- *Today:* Same expert owns six surgical robots
- *Patrick’s lesson:* Barriers to innovation always exist

The Three-Person Startup

- *Team:* One scientist, three employees
- *Target:* RSV (respiratory virus affecting children’s lungs)
- *Timeline:* FDA approval in three years
- *Exit:* Licensed to AstraZeneca

The Sexual Health Revolution

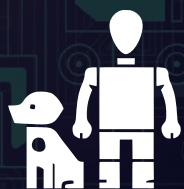
- *Origin:* EPFL Lausanne spin-off
- *Innovation:* Implant replacing pharmaceutical solutions
- *Patrick’s initial reaction:* “That doesn’t sound very likely”
- *Status:* Highly possible and now being regulated



At the time of going to print, Patrick Aisher’s full interview was scheduled to appear on **The HumanWare Project** in September/October 2025. To experience the full conversation and explore more pioneering perspectives on human enhancement, visit The HumanWare Project online, and learn more about Patrick’s work at kinled.com

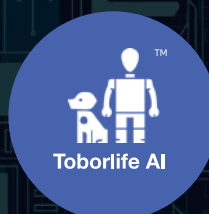


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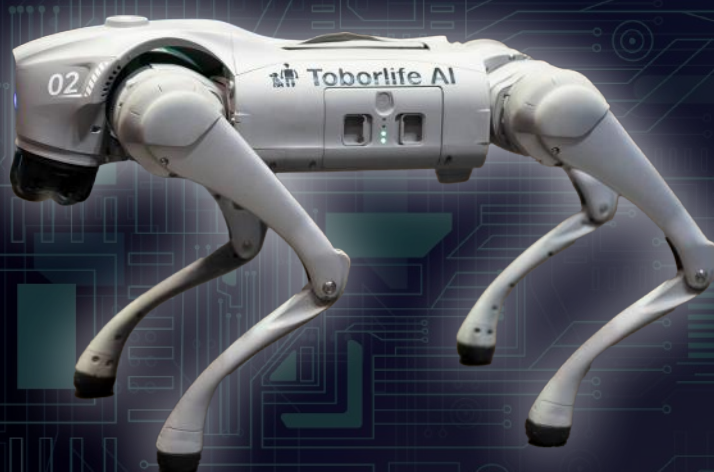
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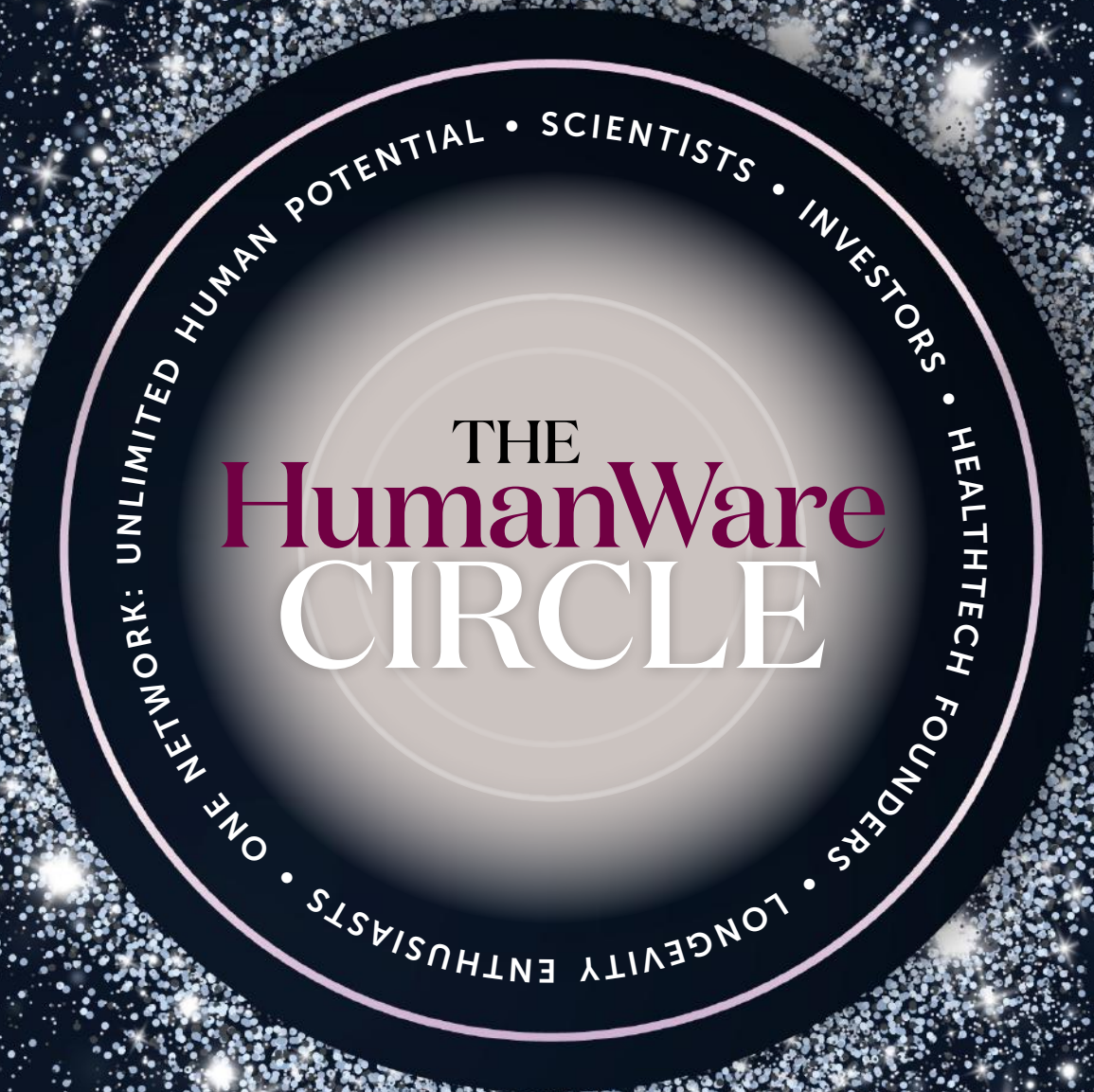
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