



THE GUY FOUNDATION

QUARTERLY REVIEW

September 2026

**Welcome to the 17th edition of the Quarterly Review,
a digest of The Guy Foundation and quantum biology news.**

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2026 AUTUMN SERIES ON BIOENERGETICS

We are very much looking forward to our 2026 Autumn Series on Bioenergetics, Health and the Quantum Environment which starts on 23 September. The series brings together internationally renowned researchers to explore one of the core questions in biology: how the energetic processes that sustain life influence health, disease, ageing, and cognition.

Running fortnightly to 2 December, the six-part series aims to bridge scales, from the quantum and molecular processes occurring within mitochondrial electron transport chains to whole-organism outcomes such as inflammation, neurological function, and chronic disease. The programme will examine how disruptions in bioenergetics propagate across biological systems and consider how the environments in which we live – including light exposure, modern technology, the built environment, and even the unique conditions encountered during space travel – may influence human health by acting on biology at its most fundamental level.



Professor Nick Lane

The series begins on Wednesday 23 September with a presentation by **Professor Nick Lane**, one of the world's leading authorities on the evolutionary origins of life and the role of mitochondria.



Professor Wayne Frasch

On 7 October, the focus shifts to electron transport chains, with **Professor Wayne Frasch** discussing the molecular machinery that underpins cellular energy production.



Professor Doug Wallace



Dr Lance Becker



Professor James Lee



Dr Nirosha Murugan



Professor Alistair Nunn

The third session, on 21 October, explores mitochondria and health. The session features **Professor Doug Wallace** whose pioneering work established mitochondrial genetics as a cornerstone of modern medicine, alongside **Dr Lance Becker**, whose research has transformed our understanding of mitochondrial function during critical illness.

On 4 November, the programme turns to mitochondria and brain energetics, featuring **Professor James W Lee** and **Dr Nirosha Murugan**, who will discuss emerging perspectives on the energetic basis of brain function and cognition.

The fifth session, on 18 November, features **Professor Alistair Nunn** who will explore ideas at the interface of quantum science and mitochondrial biology, examining how quantum phenomena may contribute to our understanding of cellular bioenergetics and how changes in the quantum environment could influence health.

The series concludes on Wednesday 2 December. **Dr Betony Adams** will provide a recap of the series talks and **Professor Alistair Nunn** will bring together the major themes of the programme and consider their implications for future biomedical research, clinical medicine, and public health. This will be followed by a roundtable discussion co-chaired by **Professor Geoffrey Guy** and **Dr Lance Becker**.

A central theme running throughout the series is the recognition that biology does not operate in isolation but within a broader quantum environment that has received relatively little attention in conventional approaches to bioenergetics. By bringing together expertise spanning quantum biology, mitochondrial science, medicine, and neuroscience, the series aims to foster interdisciplinary dialogue and develop a more integrated understanding of how the energetic foundations of life connect environment, physiology, and disease.

We look forward to welcoming researchers, clinicians, students, and those interested in the future of bioenergetics to what promises to be an exciting and thought-provoking series. We will share the recordings of the talks on our [website](#) and [YouTube channel](#). Attendance is by registration.

If you aren't already registered but would like to join us at the live sessions, please [contact us](#).

For more information, please see [Dates for your Diary](#).

QUANTUM BIOLOGY AND BIOENERGETICS LABORATORY UPDATE

It has been a busy and productive few months for **The Guy Foundation Quantum Biology and Bioenergetics Laboratory**, with exciting developments in research, collaboration, and strategic engagement.



The Guy Foundation team at the Summer Research Meeting with Lance Becker and Karin Rhodes

In June, the Laboratory held its Summer Research Meeting. We were delighted to welcome Lance Becker and Karin Rhodes, continuing the close relationship established through this year's Quantum Biology Forum.

The meeting provided an opportunity to present new findings, exchange ideas, and discuss future directions. Among the highlights were presentations from the recently completed **Fluorescent Light Energy (FLE) study**. Supported by The Guy Foundation in collaboration with Picchio International, the project explored how

fluorescent light modulates metabolism, inflammation, and angiogenesis. By combining expertise in mitochondrial biology and spectroscopy, the study sought to understand how photons influence biological function and whether light can be used to restore metabolic homeostasis.

In July we were delighted to see our Laboratory Head, Rhys Mould's pioneering research on biophotons and non-chemical communication between mitochondria featured in a recent Nature news piece **All living things emit a faint glow. Could this light be useful?** exploring new breakthroughs in the science of ultraweak photon emission. The article highlights Rhys's **experimental results** demonstrating that physically isolated mitochondria can influence one another through a mechanism consistent with light-based signalling, adding important evidence to the investigation of



Peter Bonfield, Geoffrey Guy and Martine Rothblatt

whether ultraweak photon emission may play a functional role in biology. While many fundamental questions remain, recognition by Nature reflects the increasing scientific interest in this once-overlooked area of research and underscores the importance of rigorous experimental work in advancing our understanding of mitochondrial communication and cellular signalling.

July also saw The Guy Foundation host Martine Rothblatt, founder and CEO of **United Therapeutics**, for a day of meetings to discuss the future of quantum biology and its potential role

in driving the next generation of medical innovation. The meetings which involved Professor Geoffrey Guy, Professor Peter Bonfield, George Freeman FRSA, Lord William Waldegrave and the Quantum Biology and Bioenergetics Laboratory team, explored opportunities for translating advances in bioenergetics and quantum biology into new approaches for understanding and treating disease.

With projects reaching exciting milestones and new partnerships continuing to emerge, the Laboratory looks forward to building its programme further, with a focus on four interconnected research priorities: ultra-weak photon emission (biophotons) and mitochondrial function; the effects of magnetic fields on muscle and mitochondria, expanding on our hypomagnetic field research; light, health and the built environment, investigating how different wavelengths affect mitochondrial activity and developing tools to characterise biologically relevant indoor light; and quantum optics, including two-photon absorption and entangled-photon experiments.

These priority areas take us further towards our long-term goal of understanding how fields influence living systems and how this knowledge might be translated into new approaches to health and human performance. If you or your organisation would be interested in helping to fund this work, please contact Nina Copping n.copping@theguyfoundation.org.

LIGHT AND HEALTH PROGRAMME



The Foundation continues to expand its **Light and Health Programme**, examining how the light environment shapes human physiology and how the modern built environment can better support health. We have prepared a major report, which sets out the implications for the built-environment and associated sectors, including architecture, glazing, lighting design and healthcare. This is accompanied by a scientific report, which sets out the underlying biological evidence and mechanisms. Together, the reports explore how the modern indoor environment has decoupled people from the natural light conditions under which life and thus human biology evolved, and consider how a more physiologically appropriate approach to light could contribute to healthspan, and ultimately, lifespan. The reports are due for release in October.

Our aim is to raise awareness of the emerging science, engage stakeholders across disciplines and sectors, and stimulate discussion and action on aligning buildings and lifestyle with human biology. As evidence grows, lighting and glazing should increasingly be viewed as public health interventions, with the potential to influence wellbeing, recovery, productivity and disease risk. The programme brings together an interdisciplinary international working group spanning quantum biology, photobiology, medicine, neuroscience, architecture, and lighting design to explore these questions and identify practical opportunities.

It is encouraging to see that these ideas are gaining wider attention internationally. Rowan Jacobsen's 'In Defense of Sunlight' book, with a Foreword by Richard Weller, has gained traction since its publication earlier in the summer and is raising the profile of the issues.



New Scientist, the well-respected popular science magazine, featured a **cover story** on how modern artificial lighting and the shift away from traditional incandescent bulbs may negatively impact human metabolism and health. Several members of our working group – including Bob Fosbury, Glen Jeffery, Roger Seheult and Scott Zimmerman – also recently took part in the discussion, **‘Editing the Sun: How Indoor Light**

Lost Touch With Biology’, which explored how the loss of natural daylight and near-infrared light indoors may influence mitochondrial function, metabolism and chronic disease. At the same time, the international **Light for Public Health** initiative has brought together experts to develop consensus statements on the health effects of light and to accelerate the translation of photobiology research into policy and practice.

Together, these initiatives reflect a growing return to the recognition – long-held by medical pioneers such as Florence Nightingale – that biologically appropriate light is not a luxury, but an essential environmental determinant of human health. If you are in a position to make a donation to support our work on this important topic, or able to assist in any other way, please contact Nina Copping n.copping@theguyfoundation.org.

SPACE HEALTH PROGRAMME

We are continuing to establish The Guy Foundation's International Space Health Research Collaboration (ISHRC) through discussions with key players, so we can expand our work on helping to advance our understanding of human health in extreme environments.



In July, Advisor to The Guy Foundation George Freeman FRSA was delighted to meet His Majesty the King and updated him on his work on space health and sustainability.



George Freeman FRSA with His Majesty the King

Rhys Mould has also been instrumental in establishing the University of Westminster's Space Health Hub, bringing together researchers from across disciplines to address the complex challenges of keeping humans healthy during long-duration spaceflight. The Hub recently held its first colloquium, bringing together expertise spanning life sciences, computer science, architecture, humanities, art and fashion. The event highlighted the breadth of space-health research at Westminster and the potential for space-inspired innovation to generate benefits well beyond spaceflight.



Photo credit University of Westminster

Attendees at the first colloquium of the University of Westminster's Space Health Hub.

Geoffrey Guy and Alistair Nunn were also featured in a **recent episode** of Max Gulhane's Regenerative Health Podcast where they discussed the connections between magnetism, mitochondria, and human health, including the potential effects of geomagnetic variation and the space environment on mitochondrial function, electron transport, reactive oxygen species, and cellular adaptation.

We are currently inviting funding partners to participate in the collaboration. If you are interested in supporting ISHRC, please contact **Nina Copping** for further information.

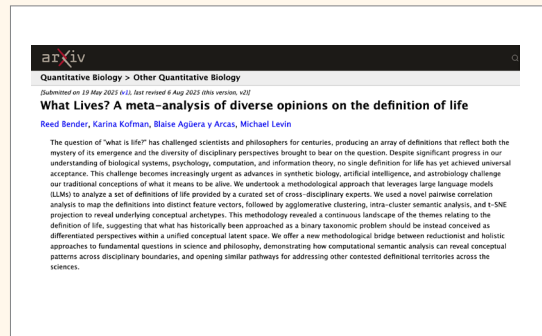
WHAT IS LIFE? A NEW PAPER

It is one of the oldest and most fundamental questions in science. Indeed, it is a question that helped give rise to the field of quantum biology itself through Erwin Schrödinger's influential 1944 book, *What Is Life?* Schrödinger explored how the laws of physics might explain the remarkable order, stability, and information-processing capabilities of living systems, inspiring generations of scientists to look beyond the traditional boundaries of biology. More than 80 years later, the question remains unresolved. We were therefore delighted to see Alistair Nunn contribute to a fascinating initiative led by Michael Levin that has resulted in two complementary publications approaching this enduring question from very different perspectives.



The first paper, '**Defining Life: A Conversation**', published in the special *What Is Life?* issue of *Organisms. Journal of Biological Sciences*, brings together a group of researchers from disciplines spanning biology, physics, philosophy, neuroscience, complexity science, and computation. Rather than seeking consensus, the paper presents an open scholarly dialogue that captures the remarkable diversity of ideas surrounding the nature of life.

The second paper, **‘What Lives? A Meta-analysis of Diverse Opinions on the Definition of Life’**, takes a distinctly modern approach. Using artificial intelligence to analyse the discussion presented in the first paper, the authors identify common conceptual themes and map relationships between competing definitions.

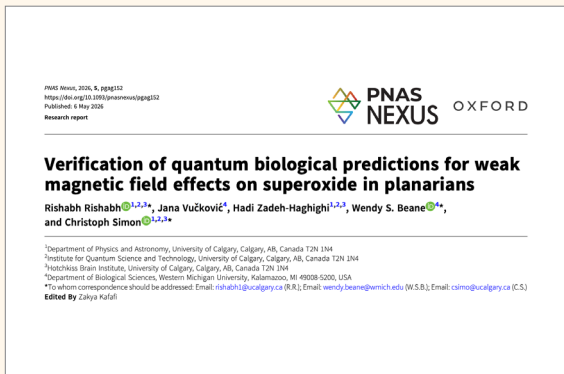


One of the most interesting conclusions is that the search for a single, universal definition of life may itself be misguided. Instead, different definitions may simply reflect different perspectives on a shared conceptual landscape. Together, these papers demonstrate how combining traditional scientific discourse with computational methods can generate fresh insights into one of biology’s most profound questions. They also remind us that the question posed by Schrödinger more than eight decades ago continues to shape not only biology, but also fields as diverse as artificial intelligence, complexity science, and quantum biology.

To view all publications from The Guy Foundation team visit the [Publications](#) page on our website.

BOOKS & PAPERS

JOURNAL CLUB



Following our Spring Series on Magnetic Fields in Biology, it has been interesting to see a number of new papers emerging on the subject from a range of perspectives. Wendy Beane, one of the series speakers, has a

paper out in collaboration with Christoph Simon and colleagues. Published in the journal *PNAS Nexus*, the paper **Verification of quantum biological predictions for weak magnetic field effects on superoxide in planarians**, provides experimental support for a simple radical pair model describing how magnetic fields may modulate superoxide levels during planarian regeneration. The researchers found that superoxide concentration varies non-monotonically with magnetic field strength and that the observed effects were consistent with predictions from the radical pair model. In her Guy Foundation presentation, Wendy discussed previous research showing the different effects of 200 and 500 μT magnetic fields on stem cell behaviour. The new study extends this work by examining the relationship between magnetic field strength and superoxide levels across a broader range of fields.

While the radical pair mechanism remains a compelling model for explaining how weak magnetic fields can influence biological systems, if our Spring Series on Magnetic Fields in Biology taught us anything, it is that biology rarely offers a single, simple mechanism.

Disruption of magnetic orientation in migratory songbirds by radiofrequency magnetic fields is mediated by a specialized sensory system

Kirill Kavokin^{1,4}, Julia Bojarinova⁴, Dmitriy Sannikov⁴, Roman Cherbunin^{2,4}, Alexander Pakhomov⁵, Alexandra Fedorishcheva⁶ and Nikita Chernetsov^{3,5}

We were therefore intrigued to see a new paper from Kirill Kavokin and co-authors proposing a different explanation for how electromagnetic fields may influence avian magnetoreception. Published in

Journal of the Royal Society Interface the paper, **Disruption of magnetic orientation in migratory songbirds by radiofrequency magnetic fields is mediated by a specialized sensory system**, examines the effects of radiofrequency magnetic fields on migratory pied flycatchers. Rather than the conventional photochemical radical pair model, in which radiofrequency fields are proposed to disrupt the spin dynamics of cryptochrome, the authors suggest that the birds may possess a separate sensory system, potentially based on electromagnetic induction. The findings raise an intriguing question: could avian magnetoreception involve multiple complementary sensing mechanisms rather than a single magnetic compass?

PNAS

RESEARCH ARTICLE | BIOPHYSICS AND COMPUTATIONAL BIOLOGY | 8

A hybrid compass mechanism combining radical pairs and magnetite crystals

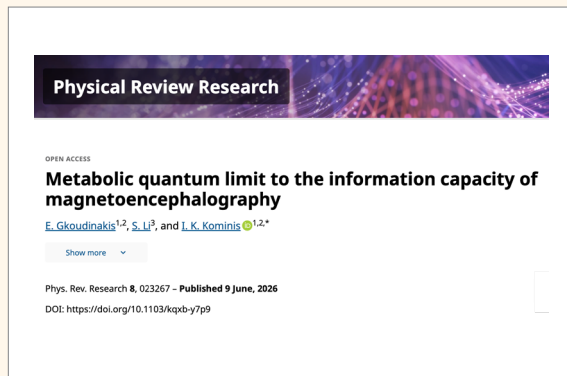
P. J. Hore  [Authors Info & Affiliations](#)

Edited by Steven Boxer, Stanford University, Stanford, CA; received August 29, 2025; accepted January 26, 2026

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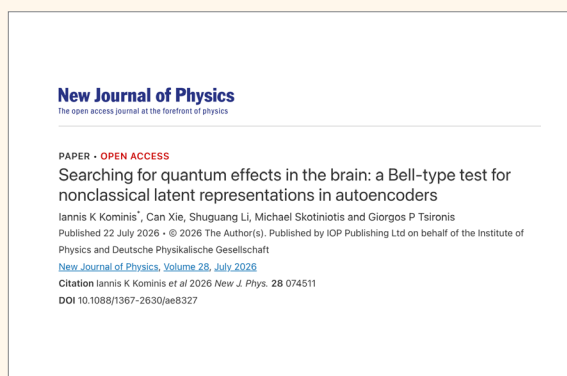
It is a question posed by another recent paper by Peter Hore, published in *PNAS*. The paper, **A hybrid compass mechanism combining radical pairs and magnetite crystals**, proposes a hybrid magnetoreceptor

combining cryptochrome radical pairs with magnetite nanoparticles, where the magnetite amplifies the Earth's weak magnetic field, potentially providing an increased magnetic sensitivity.



Magnetic fields are also the subject of the first of two new papers published by Iannis Kominis and colleagues, some of which Iannis presented at the recent QuEBS conference in Budapest. The paper, **Metabolic**

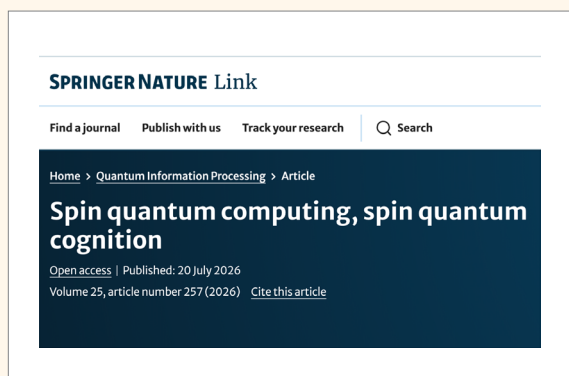
quantum limit to the information capacity of magnetoencephalography, published in *Physical Review Research*, derives a bound on the information capacity of magnetoencephalography (MEG) – where MEG uses quantum sensors to measure the magnetic fields generated by neural currents. This limit follows from the metabolic power available to these currents as well as the energy resolution of magnetic sensing.



In a second paper, Iannis and colleagues investigate just how quantum neural processing might be. The paper, **Searching for quantum effects in the brain: a Bell-type test for nonclassical latent representations in**

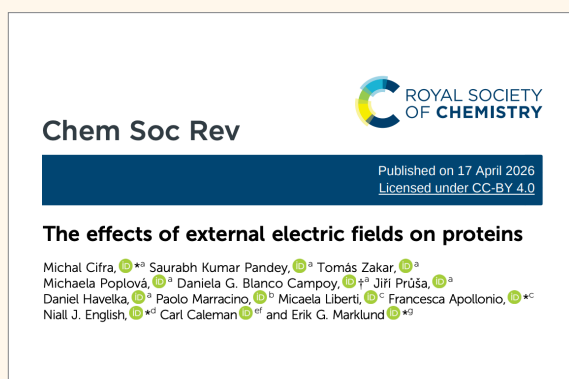
autoencoders, published in the New Journal of Physics, takes a model-independent approach, instead proposing to move the focus from microscopic dynamics to experimentally tractable limits on information processing.

Information processing is the focus of a recent paper by Betony Adams and Francesco Petruccione, this time from the point of view of interesting quantum materials. The paper, **Spin quantum computing, spin quantum cognition**, published in the journal



Quantum Information Processing, outlines the similarities between the Kane quantum computer and the Posner model of cognition, both of which use phosphorus nuclear spin as a means to store quantum information. The paper

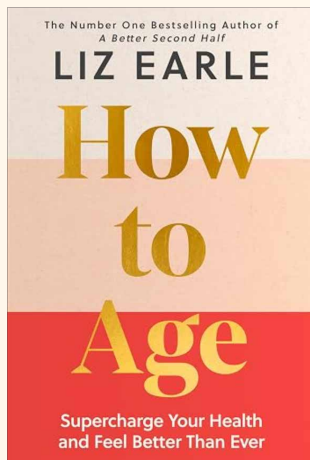
also examines the ways in which these different paradigms of quantum science might inform and inspire each other.



And finally, we were delighted to see a comprehensive review by Michal Cifra and colleagues, **The effects of external electric fields on proteins**, published in *Chemical Society Reviews*. The paper brings together

experimental and computational evidence on how external electric fields interact with proteins and influence their motion, structure, conformation, interactions, and function. The review is an excellent resource for the bioelectromagnetism community, bringing together a substantial body of literature. The Guy Foundation has been fortunate to benefit from Michal's expertise through several of our online lecture series, where his contributions have helped enrich our discussions around electromagnetic fields and biology.

Book corner



For this issue's book corner, Liz Earle's ***How to Age***, published by Yellow Kite in 2026, is reviewed by Andrea Nunn.

HOW TO AGE, BY LIZ EARLE

“Liz Earle's *How to Age* is a balanced and easy to read guide for women, and indeed all past their “mid-point”, who are seeking to make the most of their later years and live life with health and vitality, purpose and joy. Liz Earle challenges conventional wisdom that as women age they should fade silently into the background and accept without challenge the inevitable decline in health and wellbeing. She particularly highlights the lack of research and funding into women's health, emphasising “pro-ageing is not a gendered concept” and states it's never too early or late for women to take charge of the narrative to reshape their lives and learn to age well.

As scientific research continues to hunt for the longevity holy grail and with a plethora of health and wellbeing books available on how to remain healthy and look younger, it can be a minefield to know where to start, let alone what to believe. Having become aware of Liz Earle in the 1990s, used her skincare brand and followed her writings on health and wellness, I knew this was a book I must read.

The book didn't disappoint. For me, both personally and as a therapist, the author has brought together recent scientific research, together with her own life experiences, in an easy-to-understand approach on how to live and age well and how us women can take back control of our lives and biological clock.

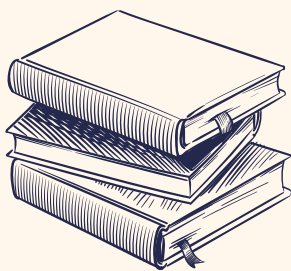
Right from the start, the book introduces what Liz calls the one "crucial piece of the ageing puzzle that is often overlooked" – our mitochondria – the tiny powerhouses in our cells that fuel healthy ageing and vitality. She shares how we can "hack" our mitochondrial function in order to improve how we age so that when our mitochondria thrive so do we. The author shares a variety of ways for improving mitochondrial health with one of the most profound ideas being that sunlight is now seen as one of the most powerful tools for healthy ageing, thus dispelling the thinking that sunlight is bad for us. Liz shares how modern artificial light has disrupted our biological needs but cites current scientific research on how exposure to the right light spectrum can be treated as daily nutrition and medicine for the body, aiding our sleep, hormone balance and metabolism and more.

The book also explores lifestyle hacks, including healthy nutrition and the use of supplements to support pro-ageing, as well as the importance of water and not simply how much is the right amount to drink but also the type of water. In honesty, I struggled with some of the concepts on water, including stirring with a "positive frequency" wand, but it can be viewed as the author exploring more outlandish ideas that are yet to be tried and tested together with bringing together age-old wisdom and up-to-date scientific research.

Although the book is aimed at women, I would recommend this book to anyone who refuses to accept the ageing process as being an inevitable headlong fall into a state of illness and decline. Liz Earle has challenged conventional thinking on ageing and offered useful practical steps for anyone wishing to age well and wanting to remain healthy and active long into their later years. I consider this book as my new manifesto! ”

Andrea Nunn

If you have a book recommendation, we would be glad to hear from you - please contact [Betony Adams](#).



For more book reviews, see the [Useful Resources](#) section on our website where we have reviews of a number of books that we have enjoyed in recent years.

CONFERENCES & MEETINGS

The Guy Foundation [website](#) includes a page dedicated to quantum biology-related conferences and meetings, both online and in person. If you have any to add, please let us know.

MOLECULAR BIOPHYSICS WORKSHOP, SEPTEMBER 2026

The Molecular Biophysics Workshop (MBW26) will take place from 27 September–1 October 2026 in Matsushima, Japan. Rhys Mould, from The Guy Foundation Quantum Biology and Bioenergetics Laboratory, has been invited to present. For more information visit their [website](#).

MITOCHONDRIAL HEALTH, HEALTHSPAN AND BIOENERGETICS SUMMIT, NOVEMBER 2026

The 2nd Annual Mitochondrial Health, Healthspan and Bioenergetics Summit will take place on 11 November 2026, online and in person, New York. For more information see their [website](#).

GORDON RESEARCH CONFERENCE, MARCH 2027

The 2027 Gordon Research Conference (GRC) on Quantum Biology will take place 7–12 March, 2027, at the Holiday Inn Oxnard - Ventura, USA, with an application deadline of 7 February 2027. Abstract submission is now open. For more details see their [website](#).

PHYSICS OF LIFE CONFERENCE, MARCH 2027

The third edition of Physics of Life will take place from 22–25 March 2027 in Edinburgh, UK. Abstract submissions open this month. For more information see their [website](#).

DATES FOR YOUR DIARY



THE GUY FOUNDATION

2026 AUTUMN SERIES PROGRAMME BIOENERGETICS, HEALTH AND THE QUANTUM ENVIRONMENT

The 2026 Autumn Series aims to bridge scales: from quantum and molecular processes within mitochondrial electron transport chains, to whole-organism outcomes such as disease, cognition, and ageing. By exploring how disruptions in bioenergetics give rise to systemic dysfunction, the series links microscopic mechanisms to macroscopic health. We will also explore how changes in the quantum environment – light exposure, lifestyle, technology, the built environment, and even space travel – affect human health by acting on biology at its most fundamental level.

Session 1

Mitochondrial origins

Wednesday 23 September

Professor Nick Lane, UCL

Session 2

The electron transport chain

Wednesday 7 October

Professor Wayne Frasch, Arizona State University

Programme continued on next page



THE GUY FOUNDATION

2026 AUTUMN SERIES PROGRAMME
BIOENERGETICS, HEALTH AND THE
QUANTUM ENVIRONMENT

Session 3

Mitochondria and health

Wednesday 21 October

Professor Doug Wallace, The Children's Hospital of Philadelphia and
The University of Pennsylvania
Dr Lance Becker, Northwell Health

Session 4

Mitochondria and brain energetics

Wednesday 4 November

Professor James W Lee, Old Dominion University
Dr Nirosha Murugan, Wilfrid Laurier University

Session 5

The quantum mitochondrion

Wednesday 18 November

Professor Alistair Nunn, The Guy Foundation
and University of Westminster

Session 6

Implications for health and disease – roundtable session

Wednesday 2 December

Dr Betony Adams, The Guy Foundation and Stellenbosch University
Professor Alistair Nunn, The Guy Foundation
and University of Westminster
Followed by roundtable discussion

All sessions 15:00hrs – 17:00hrs UK-time on Zoom
Please contact n.copping@theguyfoundation.org to register

COMMUNITY NEWS

PHYSICAL PRINCIPLES OF QUANTUM BIOLOGY IN PRINT



Nathan and Brandy Babcock celebrate the publication of their book by World Scientific

We were thrilled to see that Nathan and Brandy Babcock's book, *Physical Principles of Quantum Biology*, was recently published in hardcover by World Scientific. The book, also available [online](#), provides a comprehensive introduction to the

physical principles underpinning quantum effects in living systems and is an important resource for students and researchers entering the field. Nathan is a key part of The Guy Foundation community, having received The Guy Foundation Onion Prize for his modern reinterpretation of Alexander Gurwitsch's seminal onion root experiment, and has been a valued supporter of the Foundation's activities.

We were also interested to watch Nathan's recent interview with the [Quantum Biology DAO, 'It's Time to Pay Attention to Quantum Biology'](#) in which he discusses the current state of quantum biology, the challenges facing the field, and why now is an exciting time for scientists and newcomers alike to get involved.

To read more about Nathan's research see his [website](#).

QUANTUM BIOLOGY SCHOOLS

It is encouraging to see members of the quantum biology community sharing their expertise through a growing number of dedicated schools and training programmes, helping to inspire and equip the next generation of researchers.

Aarat Kalra, at The Indian Institute of Technology Delhi, launched **Quantum Biology: From Molecules to Medicine**, described as India's first course at the intersection of quantum science and medicine. The three-day programme, which was extremely well attended with 241 participants, explored how quantum mechanics, physical chemistry, and biology converge to explain ageing, disease, and emerging therapeutic approaches.

Onur Pusuluk returned to Zhejiang University in Hangzhou for a second time as a lecturer at the **Quantum Biological Information and Computation summer school**. The programme introduced students to quantum computation and quantum effects in living systems, providing an interdisciplinary foundation at the interface of quantum science and biology.

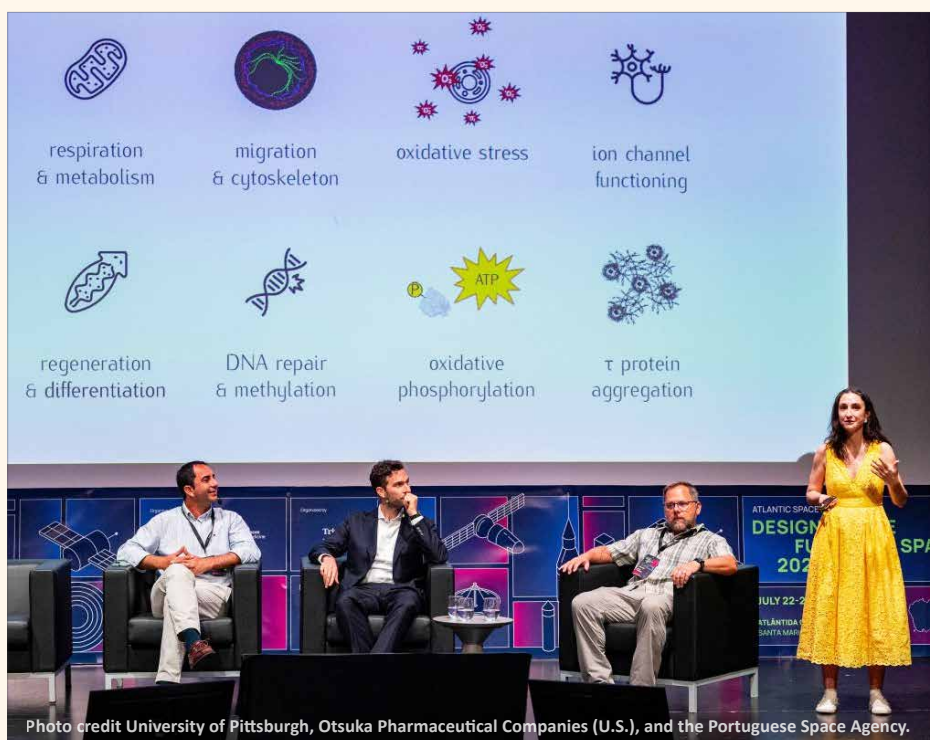
The **Quantum Biology Institute (QBI)** also delivered a three-part virtual lecture series, with community members Alessandro Lodesani, Brian Ross, and Michael Montague introducing audiences to radical pair mechanisms, quantum biology in proteins, and the use of omics and evolutionary analysis to identify promising quantum biological systems. You can view the presentations on their newly launched **YouTube channel**.

As the field continues to grow, it is wonderful to see researchers not only advancing quantum biology through their own work, but also investing in the education of the next generation.

DESIGNING THE FUTURE OF SPACE

We were delighted to see Afshin Beheshti, a valued friend to The Guy Foundation on space health, chair the Scientific Committee of the 'Atlantic Space Hub: Designing the Future of Space' [meeting](#), held in the Azores in July. Hosted by the Portuguese Space Agency and organised by the University of Pittsburgh, the conference brought together more than 50 international experts, alongside representatives from ESA, NASA, and commercial space companies, to discuss the future of space exploration and biomedicine.

Sessions explored the effects of spaceflight on human health, space biotechnology, biosignatures beyond Earth and the development of commercial space infrastructure. Quantum biology was on the programme with Clarice Aiello from the Quantum Biology Institute presenting in a session on 'Life at the Frontier: Quantum Biology, Biosignatures, Extremophiles, and the Art of Space'.



Clarice Aiello participating in a panel discussion on extremophiles and human adaptation at the 'Designing the Future of Space' conference.

REMEMBERING CHRIS PORADA



We were very saddened to learn that Chris Porada passed away in June. Chris was a much-valued member of The Guy Foundation Faculty and will be greatly missed by all of us who had the opportunity to know and work with him.

Professor Christopher D Porada first joined us in our 2023 Guy Foundation series on Quantum Biology and Space Health, where he shared his expertise on the biological effects of the space environment and the challenges of maintaining human health beyond Earth. His work, spanning regenerative medicine, stem cell biology and space biology, brought an important perspective to our discussions about how biology responds and adapts to extreme environments.

We are grateful for Chris's contribution to the Foundation and to our community, and for the generosity with which he shared his knowledge and enthusiasm. His work and enduring scientific contributions will remain part of the research landscape he helped to shape.

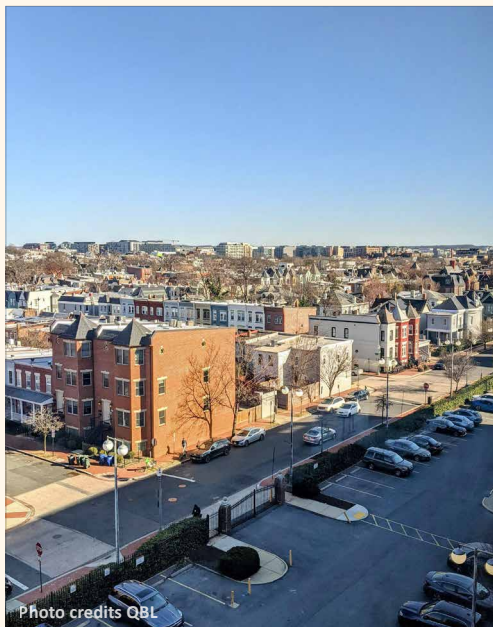
Our thoughts are with Graça and Daniel, and with all of Chris's family, friends and colleagues.

You can read a tribute to Chris [here](#).

VIEW FROM THE LAB

We enjoy, in what is an increasingly online world, taking a peek at the landscapes of our quantum biology community – a glimpse out of your laboratory windows. We asked Philip Kurian for the view from the **Quantum Biology Laboratory (QBL) at Howard University** and to hear an update from the team.

The QBL is an interdisciplinary research group – comprising ~60% physicists, and with trainees recruited from across the biological, chemical, computational, and mathematical sciences – that investigates how quantum phenomena influence living systems and their information-processing modalities over multiple scales.



Above left: A blue-sky view from the Quantum Biology Laboratory’s “penthouse” office suite on the sixth floor of the Howard University Cancer Center

Above right: Another view from the QBL. At the far-right of the frame is the US Capitol building, with the historic LeDroit Park / Shaw neighbourhood of Washington, DC, in the foreground

The laboratory is particularly interested in the role of quantum optics and related electromagnetic interactions in biology, bridging research in quantum foundations, state-of-the-art spectroscopies, and whole-organism experimental biology. The group's latest advances have included building slime-machine interfaces with the unicellular *Physarum polycephalum*, to develop better heuristics for solving the travelling salesperson problem.

Philip tells us:

“ It is an exciting time to be a part of the QBL at Howard University, where I have the privilege of leading the most outstanding group of scientists in the world. Not only do we have in press what may be the most comprehensive and sweeping yet integrative quantum biology review to date, but we also have several high-impact papers in development that serve as key milestones on our determined trek toward realizing the long-term vision: to rigorously prove how living systems harness quantum principles for exploratory advantage. ”



In the last two years, the QBL has also published fascinating research on the potential role of quantum-enhanced photoprotection in neurodegenerative diseases such as Alzheimer's. Their 2024 study explored the intriguing possibility that quantum optical processes in amyloid fibrils and in other neuroproteins may actually protect neural tissue from oxidative stress, by enhancing the rate of spontaneous emission from electronically excited states. The work provides a novel perspective on how photophysical mechanisms could contribute to resilience against dementia and exemplifies the QBL's broader mission of applying the principles of quantum physics to understand the etiology of complex diseases.

As part of The Guy Foundation's **collaborative research programme**, the QBL worked with the Foundation from 2020 – 2023 on a major project reflecting our shared interest in how light interacts with biological systems. The QBL team investigated whether networks of light-reactive biomolecules can exhibit superradiance – a collective quantum effect that enhances light emission even in the ultraweak or single-photon regime. Using advanced spectroscopy, the QBL and coworkers experimentally demonstrated this phenomenon in polymerised microtubules, while simulations predicted even greater effects in larger assemblies and in amyloid fibrils. The work provides important evidence that collective quantum optical phenomena occur in living systems, even at thermal equilibrium, and introduces new theoretical and computational tools for studying light-matter interactions in biology. Philip presented some of this research at the recent QuEBS conference in Budapest, as part of The Guy Foundation Keynote Lecture series.



Philip Kurian presenting one of The Guy Foundation Keynote Lectures at QuEBS 2026

With projects spanning neuroscience, slime mould biocomputing, quantum information, photobiology, and quantum optics, the QBL continues to establish itself as one of the leading centres advancing the emerging field of quantum biology. We look forward to following the team's future discoveries.



A selfie of the QBL group at the base of Casper Mountain in Wyoming, with Garden Creek Falls in the backdrop.

You can learn more about the Quantum Biology Laboratory and its research on the [QBL website](#).



For a directory of **Quantum Biology Centres** across the world visit our website. If you would like to add your centre please contact **Nina Copping**.

We hope you have enjoyed reading the Quarterly Review.
Please feel free to get in touch with any suggestions for future
editions - n.copping@theguyfoundation.org.

The Guy Foundation team



Peter Bonfield (Vice Chancellor University of Westminster), Lance Becker, and Geoffrey Guy at The Guy Foundation Summer Research Meeting in London in June

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