



THE GUY FOUNDATION

# QUARTERLY REVIEW

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September 2024

**Welcome to the 9<sup>th</sup> edition of the Quarterly Review,  
a digest of quantum biology and The Guy Foundation news.**

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## 2024 AUTUMN SERIES ON BIOELECTRICITY

The 2024 Autumn Series of online lectures ‘**Genes and metabolism: bioelectricity and the quantum spark of life**’, begins on 25 September. Michal Cifra, from the Institute of Photonics and Electronics of the Czech Academy of Sciences, kicks things off with a review of the historical precedent and current evidence for life being electric.



Michal Cifra

The series runs fortnightly, with speakers Gregory Scholes, Nick Lane, Johnjoe McFadden and Michael Levin building on Michal’s introduction to tease out the ways in which electromagnetism informs biological function and how this may intersect with genetic and epigenetic mechanisms. The final session of the series, on 4 December, will comprise a short summary of the different talks and the opportunity for roundtable discussion with all the speakers. This closing discussion has proved very fruitful in the past, helping to foster new collaborations between participants.



Gregory Scholes



Johnjoe McFadden



Nick Lane



Michael Levin

The series programme is available on our website [here](#) or see [Dates for your diary](#). Feel free to share it with colleagues. If they would like to attend the live sessions and aren’t already registered, please ask them to contact Nina Copping [n.copping@theguyfoundation.org](mailto:n.copping@theguyfoundation.org). Recordings of the talks will be available on our [website](#) and [YouTube channel](#).

## SPACE HEALTH REPORT

We will be launching our special report on the biological challenges of space flight in late October, and we would be most grateful if you could lend your support to this initiative.

The report provides a comprehensive summary of space health from a quantum biology perspective. In particular, it focuses on how several aspects of the space environment – radiation, gravitational and electromagnetic fields – may have harmful physiological effects upon astronauts. While some of these, such as high energy radiation and microgravity, are already documented, the report highlights less well understood areas such as infrared starvation and hypomagnetic fields. It outlines how mitochondrial dysfunction may be the mechanism by which these environmental effects manifest as the accelerated ageing phenotype that has been observed in astronauts. It suggests experiments of varying degrees of urgency, which we believe should be conducted before any conclusions as to the safety of space travel, particularly beyond low Earth orbit, can be drawn.



The aims of our space health programme and of the report are two-fold. First, we want to influence the space community to include quantum biology in its research so as to increase astronaut safety and improve their health. Second, by raising awareness we hope to attract funds to grow quantum biology research and improve both astronaut and terrestrial health. We plan to address a diverse group of audiences, including the space community (space agencies, companies, organisations, scientists and commentators) as well as scientific and health professional communities. We will also be engaging with the media.

Please help us when we launch by circulating the report to your contacts and sharing it on your social media. In advance of the launch we would welcome any contacts you have in the space community and any other suggestions. Please send these or any questions you have to Nina Copping - [n.copping@theguyfoundation.org](mailto:n.copping@theguyfoundation.org).

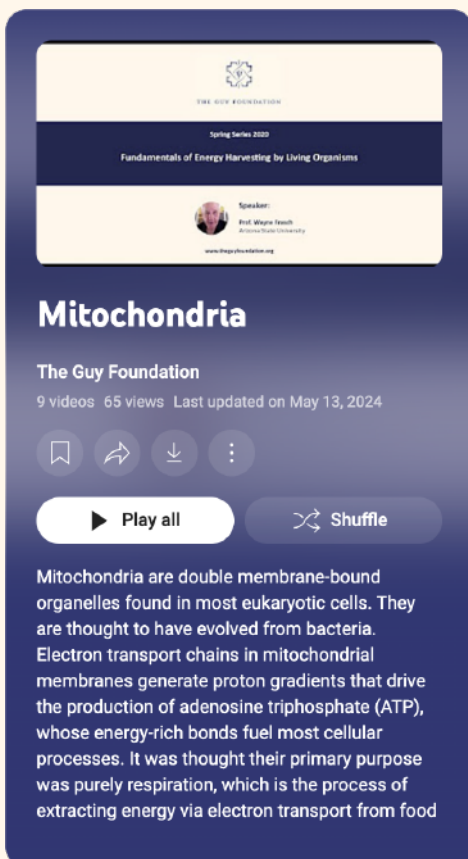
We believe that this initiative will raise vital questions and yield significant benefits not only for astronaut health, but also the health of those back on Earth. It will also help us to advance the field of quantum biology and benefit all those of us working in the QB community by attracting and engaging donors and the general public.

Finally, we would very much like to thank the members of the working group for reviewing drafts of the report over the spring and summer and for their helpful comments and suggestions.

## THE GUY FOUNDATION LECTURES AND YOUTUBE CHANNEL

It has been four years since the SARS-CoV-2 pandemic prompted our decision to organise online rather than in-person scientific meetings. Since then, the biannual Spring and Autumn Series have proved to be a great success. With 23 attendees attending the first series in Spring 2020 word then started to spread, to the extent that our vibrant community now comprises over 200 scientists from across the disciplines and across the globe. We have found this forum for open and constructive conversation and collaboration to be enormously satisfying. In particular, we know the sessions have helped attendees to spark ideas, advance thinking and form fruitful cooperations and we thank you all for your contributions.

What has also been a surprise, and very pleasing, is the collection of videos from these lectures has become a valuable resource for the



research community. We have just celebrated two years since The Guy Foundation launched its **YouTube channel** which has enabled us to make the resource so readily available. The channel continues to grow, with 55 videos of our online lecture talks, some of which have over 5,000 views, and more than 1,200 subscribers. We have recently curated some playlists, which include the different lecture series as well as topical subjects such as **space health** and **mitochondria**. Our videos showcase a cross section of quantum biology and bioenergetics

research, from fundamental physics questions about **quantum gravity** and **quantum criticality** to novel therapeutic uses of light in **Alzheimer's disease** and **COVID-19**.

It is also gratifying to revisit those presentations that we now know were instrumental in sparking new conversations and collaborations across disciplines. For instance, Masashi Aono gave a fascinating introduction to the **computational capabilities of slime moulds**. This piqued the interest of Philip Kurian and resulted in a collaboration between Philip and Michael Levin, to investigate light-sensitive agential behaviour in slime moulds. Wayne Frasch and Michael Levin also came together in our lectures and discovered common ground around the role that ATPase plays in membrane potential, which led to their latest research project, the progress of which they reported on in their **2023 Spring Series presentation**.

The response to our videos has been a great learning experience for us as to the value of platforms such as YouTube for fostering and growing public interest in scientific content. Short video summaries, such as **this one** of Michael Levin's research, seem an excellent way for scientists to introduce their work to a non-specialist audience. We're now listing such videos on our **Useful Resources** page so do let us know of any that you think are particularly useful, and equally we'd be pleased to hear of any suggestions for developing **The Guy Foundation YouTube channel**.



**Subscribe to our Channel [here](#) to receive a notification when new videos are launched.**

## **RAISING AWARENESS OF QUANTUM BIOLOGY**

The Foundation recognises that to achieve the downstream aims of quantum biology research, including its application in medical practice, audience engagement and public interest is necessary to shift mindsets towards unfamiliar ideas. To this end we have been very pleased with the response to recent talks given by the Foundation's Founder and Chairman, Geoffrey Guy, which were given to diverse audiences outside of our usual biannual lecture series.

Geoffrey's background has given him plenty of experience in how to facilitate a paradigm shift. Prior to The Guy Foundation, he founded GW Pharmaceuticals, the company that developed and licensed the first natural cannabis plant extract to gain worldwide medical market approval for the treatment of conditions such as multiple sclerosis and childhood epilepsy. This success was a hard earned one, which took over two decades to come to fruition and included not only the development of a new therapeutic, but the incremental introduction of a new idea. The rehabilitation of cannabis as a worthwhile medicine involved changing minds on a number of different levels from policy to public opinion. In many ways, the Foundation sees this as similar to the process that quantum biology will need to go through in order to be accepted as a mainstream subject of interest in the field of medical research and we are grateful for Geoffrey's invaluable insights into the matter.

In recognition of his work developing cannabis-based pharmaceuticals, Geoffrey was the plenary speaker at the 34th Annual International Cannabinoid Research Society (ICRS) Symposium which took place in July in Salamanca, Spain, at which he received the ICRS Lifetime Achievement Award for 2023.

Geoffrey commented:

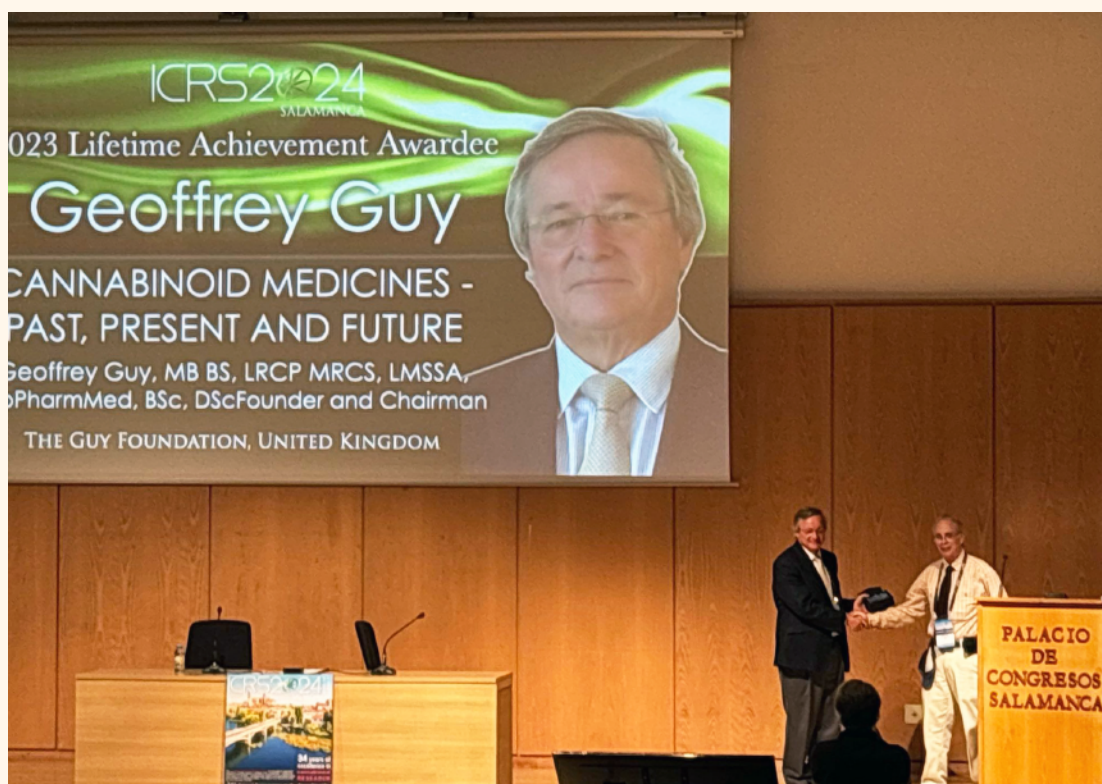
“ It has been very interesting to note the growing enthusiasm for quantum biology and how it might revolutionise medical research and new therapeutics. My presentation at ICRS had an audience that consisted primarily of pharmacologists who were fascinated to learn about how our conventional knowledge of ‘ball-and-stick’ chemistry can be augmented by the electromagnetic field-based ideas of quantum theory. One audience member commented that it had ‘blown his mind’! ”

At the scientific level, while cannabinoid research may seem unrelated to the current research the Foundation is undertaking, it has played an essential role in the Foundation’s research trajectory. The Foundation’s deep interest in the interaction of light with biological systems grew out of this history. This was driven by a long previous collaboration between Geoffrey and the Foundation’s Director of Science, Alistair Nunn, to investigate the link between natural products, bioenergetics and health. Alistair’s research into whether the fluorescent properties of phytocannabinoids could be used to study their actions on mitochondrial function led to further collaboration with Jimmy Bell and Stan Botchway at Westminster and Harwell, respectively. Their examination of the effects of cannabidiol on mitochondrial dynamics using NAD(P)H autofluorescence resulted in a **publication** and got them thinking about how and why light interacts with mitochondrial electron transport chains, ultimately leading them to the field of quantum biology. It is gratifying to see this history reflected by a lifetime achievement award.



In our June Review we also reported on Geoffrey’s keynote speech for the Rothschild & Co Wealth Management UK’s Spring Conference, if you missed it you can watch the video on our [YouTube channel](#). The 25-minute talk highlighted the incredible potential of reimagining biology and health through the lens of quantum biology and electromagnetism. Geoffrey has also recently received an honorary DSc from the University of Westminster and was invited to give a short address, see our [Community News](#) for more details.

We have to agree with Lise Hebert from Picchio International, who commented that “Geoffrey is fantastic at opening minds to a paradigm shift”.



Geoffrey Guy receiving his Lifetime Achievement Award at the ICRS conference in Spain

## THE WAVE PARTICLE DEBATE

Last year we celebrated a century of biophotons with The Guy Foundation Onion Prize to mark 100 years since Alexander Gurwitsch's famous experiment. This year marks another important centenary with relevance to quantum biology. In 1924, the French physicist Louis de Broglie, hypothesised that electrons, which up to then had been considered to be discrete particles, could also display wave properties. This was fundamental to the development of quantum theory, which began with Einstein's postulation that the opposite was true: that light, which was considered to be a wave, could also act like a particle. Experimental evidence for de Broglie's hypothesis first emerged in 1927 and in 1929 he won the Nobel Prize for Physics. This wave-particle duality sits at the heart of quantum mechanics, and confounds our understanding of the physical world, which presents itself to our eyes as either wave or particle.

A recent Chemistry World [article](#) by Philip Ball addresses itself to this confusion. The piece emphasises that misunderstanding can arise when we imagine matter quite literally as a shape shifter, sometimes particulate, sometimes smeared out like a wave. Instead, Ball suggests, it might be better to think about certain properties of matter as being best described with the mathematics of probability distributions, which we can represent using the wave-analogous Schrodinger equation. The article is an informative read for anyone trying to get to grips with one of the more non-intuitive tenets of quantum theory.

## INTERNATIONAL YEAR OF QUANTUM SCIENCE AND TECHNOLOGY

We were excited to hear the United Nations has designated 2025 as the International Year of Quantum Science and Technology (IYQ). While the ideas behind quantum mechanics emerged out of experimental results related to blackbody radiation and the photoelectric effect, quantum theory was formalised by the development of matrix mechanics and Schrödinger's wave equation in 1925. The IYQ aims to celebrate this centenary with worldwide events raising awareness and interest in quantum mechanics and its applications.

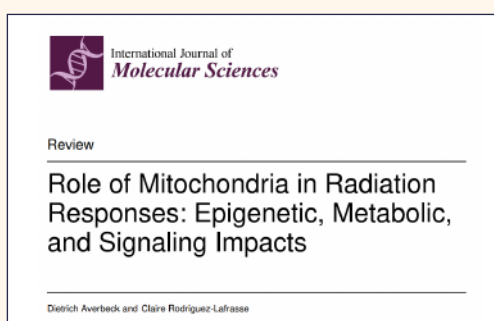
For those of us interested in quantum biology, the IYQ includes a focus on how quantum science may contribute to new technologies and interventions in human health.

Individuals, groups, organisations, institutions, or governments are encouraged to support this initiative through events or resources that will be featured on the official IYQ site in 2025, or by becoming official sponsors. For more details see the [website](#) or contact [info@quantum2025.org](mailto:info@quantum2025.org).

## BOOKS & PAPERS

### JOURNAL CLUB

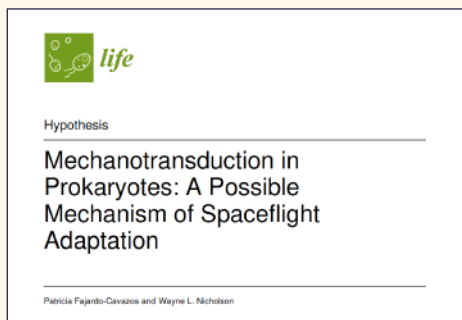
For this issue's journal club, Alistair Nunn and Betony Adams have picked four thought-provoking papers on topics relating to space health.



Life on Earth is mostly protected from high energy radiation by the magnetosphere and it is widely accepted that radiation is one of the primary ways in which the space environment will have an impact on

health. The focus of research into these radiation effects has mainly been on how high energy ionising radiation can damage DNA and the extent and repair of this damage. We are thus interested to see a shift in focus to how ionising radiation interacts with mitochondrial function in the paper, '**Role of Mitochondria in Radiation Responses: Epigenetic, Metabolic, and Signaling Impacts**', published in the *International Journal of Molecular Sciences*. In addition to DNA repair, the outcomes of radiation exposure also depend on mitochondria-mediated processes of cell survival and proliferation. The paper reviews how high and low dose ionising radiation has different effects on mitochondrial function and subsequent cell fate, and how this increases oxidative stress.

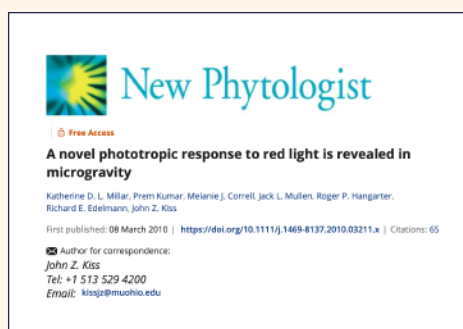
Along with ionising radiation, gravitational perturbation is considered one of the driving factors behind the physiological



effects of space travel. The paper **‘Mechanotransduction in Prokaryotes: A Possible Mechanism of Spaceflight Adaptation’** published in the journal *Life*, outlines how insights drawn from studies into microgravity responses

in prokaryotic organisms might be extrapolated towards understanding eukaryotes. The paper reviews how eukaryotic cells use mechanical cues in response to microgravity, and the structures involved in this mechanical sensing. It also looks at the downstream effects of mechanosensing and transduction, by investigating links to genetic and epigenetic parameters.

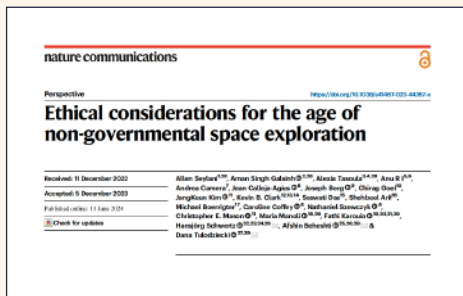
One of the focus points in the Foundation’s response to space health concerns, is the role that lower energy radiation such as visible and near infrared light may play in physiological processes. We were thus interested to read about a study in the journal *New Phytologist* that examined phototropism in the microgravity environment of the International Space Station (ISS). The paper



**‘A novel phototropic response to red light is revealed in microgravity’** examined phototropism - the orientation of plant growth towards a light source – in both red and blue light conditions, without the confounding influence of gravity. By analysing the

curvature of *Arabidopsis thaliana* plants grown from seed in the space environment, the authors of the study observed a new phototropic response to red light in microgravity conditions, that was absent in Earth-grown and control plants. Microgravity conditions also increased blue-light based phototropism.

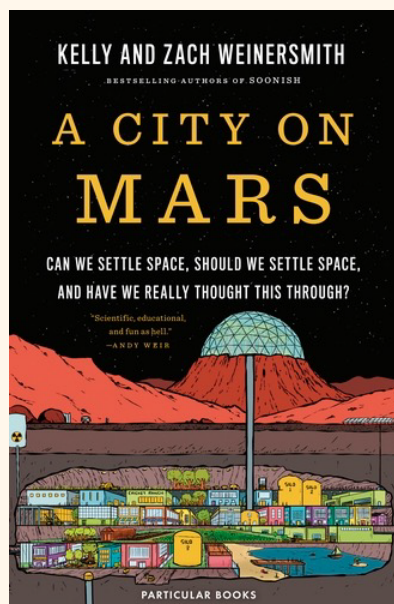
This is a fascinating result, suggesting that in addition to teasing out the individual roles played by environmental cues in biology, we need to understand how they interact to form the specific metabolic envelope in which all terrestrial life evolved.



And finally, on a more policy-based note, we found the recent paper **‘Ethical considerations for the age of non-governmental space exploration’** to be an interesting and relevant read. Published in *Nature Communications* as

part of the space package coordinated by Afshin Beheshti and colleagues, the paper is less focused on the science of space health than the ethics of it. As engineering advances and commercial space development allow for a wider selection and more diverse population of space travellers and space tourists, we will have to consider more carefully the ethical implications of exposing humans to the as yet unquantified medical risks of the space environment.

## Book corner



For this issue's book corner, Alistair Nunn has written a review of *A City on Mars: Can we settle space, should we settle space, and have we really thought this through?*, published in 2023 by Penguin.

### **A CITY ON MARS BY KELLY AND ZACH WEINERSMITH**

The authors of the recent book *A City on Mars: Can we settle space, should we settle space, and have we really thought this through?* are a scientist and an illustrator, and this is a book you should read to cure you of any thought of trying to build a city on Mars, or even going there in the short term. It is well-researched and written, easy to read, and very funny in places, but with a serious message: mankind is not ready to build any kind of long-lasting outpost on Mars, especially if the reason is to try and save humanity.

It is a dream, and perhaps in the very long term, is feasible, but we are nowhere near ready for it at the moment. Something that perhaps Elon Musk has not quite understood. Even the authors, who are self-confessed space geeks, had to have a bit of rethink

after they started doing the research. The reasons are multiple, ranging from our understanding of the health risks in space, which we know ourselves are far from complete, not helped because astronauts tend to be guarded about their health, the reliability of the technology, the importance of reproduction, the incomplete laws about who might own what in space – but perhaps the biggest, is that socially we, that is humans, have not learnt to even get along on Earth.

One of the big drivers of the colonisation idea is to protect our species in case of a catastrophe on Earth, but at the moment, until we learn to live in peace, it is entirely possible that trying to colonise space will increase the chances of such an event. History teaches us this. The other problem is that any colony will have to be entirely self-dependent, which means it will have to be very large, with well thought out laws, which of course, will have to evolve from those less effective ones that exist at the moment. In short, the consensus of the book is that until we have sorted out the laws, socially evolved, and have the technology to move a lot of people very quickly to Mars, safely, we have a long way to go.

Should we explore space? Certainly, as it is in our nature, but we need to do a lot more research and development, for instance, building a permanent base on the moon is a good idea, as it will give us time not just to work out the laws, politics and social side of things, but also the technology, and critically, how to keep people healthy. In summary, this is a thought provoking and entertaining read, and I would thoroughly recommend it to anyone interested in humanity's future in space.



## CONFERENCES & MEETINGS

### GRC 2025 MEETING IN TUSCANY

The second Gordon Research Conference on quantum biology is fast approaching. The conference will take place from **2 – 7 March 2025**, near Lucca, Italy. The programme is available on the [Quantum Biology GRC website](#). We asked Jonny Woodward, who will be co-chairing the conference with Wendy Beane, for his thoughts:

“ The 2025 Gordon Research Conference in Quantum Biology follows the inaugural meeting held in 2023 which was a fantastic forum for scientists from across the world to explore the rapidly growing and truly exciting field of quantum biology. The 2025 meeting will be held in beautiful Tuscany and will build on some of the key themes developed in 2023. The 2025 meeting will be defined by presentations from many of the world’s leading researchers in the field delivered in a friendly and convivial environment with a key aim being to break down communication barriers between the different disciplines and themes that comprise this remarkable research field. In particular we wish to encourage early career scientists to join us and we will provide opportunities for short oral presentations and guaranteed question time for them after each presentation, along with ample opportunities to interact with all attendees.



Jonny Woodward

We expect highly energetic poster sessions with insight and perspective from scientists with a very wide range of specialist expertise.

We strongly encourage you to register and submit abstracts as early as possible, not least as this will increase the chance of you being considered for an oral presentation. We look forward to enjoying a week of exhilarating science and fellowship with you in Italy next March! ”

We are pleased that our Scientific Advisor Stan Botchway will be a discussion leader at the main conference while the Foundation’s Betony Adams will be a discussion leader for the preceding Quantum Biology Gordon Research Seminar (GRS), taking place from **1 – 2 March 2025**. Visit the [Quantum Biology GRS website](#) for more information.

## APS MARCH 2025 MEETING



The American Physical Society’s **2025 March Meeting** will take place from **16 – 21 March** in Anaheim, California. In 2024 the meeting featured a dedicated quantum biology session for the first time in its long history.

Wendy Beane was the invited speaker for the in-person session, which was chaired by Clarice Aiello. The 2025 meeting will also feature a quantum biology focus session, organised by Ramakrishna Podila from the Laboratory of Nano-biophysics at Clemson University. Registration and abstract submission will open soon, keep an eye on the [APS website](#) for more details.

## QUANTUM BIOLOGY SEMINARS ROUND-UP

### The Big Quantum meetings

The Big Quantum meetings resumed again this month after the summer break. These meetings take place online every Thursday and are free to attend. They include presentations on diverse topics relevant to quantum biology. To sign up to these meetings contact Dr Youngchan Kim at University of Surrey - [youngchan.kim@surrey.ac.uk](mailto:youngchan.kim@surrey.ac.uk).

### QIS and Quantum Sensing in Biology Interest Group

The National Institutes of Health's QIS and Quantum Sensing in Biology Interest Group hosts online meetings that would be of interest to data/information scientists, bioengineers, chemists, biologists, physicists, and clinicians at NIH. Upcoming speakers include Allison Nugent from the NIMH Magnetoencephalography (MEG) Core Facility, who will be presenting on 30 September. For more information visit the [NIH website](#).

### Bioelectrodynamics seminars

These meetings are hosted by the Bioelectrodynamics group at The Czech Academy of Sciences. For more information visit their [website](#).

Please also visit the [Quantum biology meetings](#) page on our website for an up to date list of quantum biology related conferences and meetings. If you have any to add, please send us the details.

## DATES FOR YOUR DIARY



THE GUY FOUNDATION

### 2024 AUTUMN SERIES PROGRAMME

GENES AND METABOLISM: BIOELECTRICITY AND THE QUANTUM SPARK OF LIFE

#### Session 1

**The life electric: the evidence**

Wednesday 25 September

**Dr Michal Cifra**, The Czech Academy of Sciences

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#### Session 2

**Electrical circuits in biology – quantum or classical?**

Wednesday 9 October

**Professor Gregory Scholes**, Princeton University

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#### Session 3

**Putting the quantum into DNA and genetics**

Wednesday 23 October

**Professor Johnjoe McFadden**, University of Surrey

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#### Session 4

**Why life is electrical – the flux capacitor**

Wednesday 6 November

**Professor Nick Lane**, University College London (UCL)

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#### Session 5

**Bioelectricity and genetics**

Wednesday 20 November

**Professor Michael Levin**, Allen Discovery Center at Tufts University

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#### Session 6

**Roundtable meeting**

Wednesday 4 December

All sessions 15:00hrs – 17:00hrs UK-time on Zoom

Please contact [n.copping@theguyfoundation.org](mailto:n.copping@theguyfoundation.org) to register

## JOB OPPORTUNITIES

### **INSTITUTE OF PHOTONICS AND ELECTRONICS OF THE CZECH ACADEMY OF SCIENCES**

The Institute of Photonics and Electronics of the Czech Academy of Sciences has an open call for motivated individuals – undergraduate and postgraduate students, postdoctoral researchers – with fresh ideas to **join their team**. Prior experience in biophysics, electromagnetics, optics, or lab practice is helpful but not necessarily required. Postdoctoral applicants should send a cover letter, a CV, and three letters of reference by email - [cifra@ufe.cz](mailto:cifra@ufe.cz).

### **HERIOT-WATT UNIVERSITY**

The quantum theory team led by Prof Erik Gauger at Heriot-Watt University is always looking for enthusiastic and talented people to join their group. The group has published a variety of exciting research papers in the field of quantum biology, see their website for a selection of publications. There are a number of possible opportunities including fully funded PhD studentships for UK as well as postdoctoral openings and fellowship applications. For more details keep an eye on the **Heriot-Watt University website**.

## COMMUNITY NEWS

### GEOFFREY GUY RECEIVES AN HONORARY DSC

The Foundation's Founder and Chairman Geoffrey Guy was awarded an Honorary Doctorate of Science by the University of Westminster in July. The ceremony was held at the Royal Festival Hall in London, and Geoffrey was asked to give an address.

Geoffrey said: “It is an honour to have received this recognition from the University of Westminster, especially given the pivotal role the University has played in The Guy Foundation's research programme. Together with Jimmy Bell and his team at the Research Centre for Optimal Health we have made a number of experimental breakthroughs and I am very excited to see what the future holds.”



Geoffrey Guy receiving his Honorary Doctorate of Science, pictured with from left to right: Professor Peter Bonfield (University Vice-Chancellor), Professor Geoffrey Guy, Dr Thomas Moore (Head of the College of Liberal Arts and Sciences) and Natalie Campbell MBE (University Chancellor). Photograph by Tempest Photography.

The award was a wonderful early birthday present for Geoffrey, who turns 70 this month. Wishing you a very happy birthday Geoffrey!

## QUANTUM BIOLOGY COURSES

We were interested to see that Jonny Woodward, who leads the spin chemistry research group at the University of Tokyo, offered a dedicated [quantum biology course](#) that ran in July. The strongly interdisciplinary nature of quantum biology can be a double-edged sword. While the intersection of disciplines generates new ideas and exciting research, quantum biology researchers sometimes struggle with a lack of common vocabulary and training across these disciplines.

We are excited to see this being addressed by dedicated quantum biology training courses. Watch Jonny talk about his motivation in this short [YouTube video](#). While the course is finished for this year, Jonny reported that it went very well and he intends to run it again next year and we look forward to sharing the details with you in due course. The course is open to students from around the world who wish to attend in person, if you are interested you can have a look at the [syllabus](#).

Jonny is a true educator, he gave an excellent tutorial presentation on radical pair spin dynamics for the Foundation's [2023 Autumn Series](#) which focused on quantum biology and space health, which you can watch on our [YouTube channel](#).

## THREE MINUTE THESIS COMPETITION

We are proud of PhD student Ifigeneia Kalampouka, who won both the audience and judges' choice awards at the University of Westminster round of the Three Minute Thesis Competition.



Ifigeneia Kalampouka with her audience and judges' choice awards at the University of Westminster round of the Three Minute Thesis Competition

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The Three Minute Thesis award was founded by the University of Queensland in Australia to foster communication skills in emerging researchers. Contestants must condense the salient points of their thesis into three minutes, using a single slide.

Ifigeneia's research, which took place at the Research Centre for Optimal Health at the University of Westminster and was funded by the Foundation, focused on the potential role of electromagnetic radiation in cellular senescence.

Of particular interest are her results that demonstrate the effects of near infrared light on cancer cells. These results led to the recent publication '**Selective induction of senescence in cancer cells through near-infrared light treatment via mitochondrial modulation**' in the *Journal of Biophotonics*. The Westminster group, led by Jimmy Bell, plays a central role in The Guy Foundation's Research programme, you can read about their current projects on our [website](#).



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](mailto:n.copping@theguyfoundation.org)

### The Guy Foundation team



Geoffrey and Kate Guy at the University of Westminster's graduation ceremony, where Geoffrey was awarded an Honorary Doctorate of Science.

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[www.theguyfoundation.org](http://www.theguyfoundation.org)



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