THE GUY FOUNDATION

Quarterly Review

March 2025

Welcome to the 11th edition of the Quarterly Review, a digest of The Guy Foundation and quantum biology news.

Contents

2025 GRC on Quantum Biology

The 2025 Gordon Research Conference on Quantum Biology, held in Italy earlier this month, was a great success! It was enlightening to see how the conversations around quantum biology have developed since the inaugural GRC in 2023. It was wonderful to see familiar faces as well as the new generation of quantum biology researchers. The Guy Foundation team greatly enjoyed the conference, with Geoffrey Guy commenting:

> “The Gordon Research Conferences on QB are invaluable in highlighting quantum biology as an exciting and rapidly growing area of research and providing a forum for the community to come together in person. The Guy Foundation is proud to be both a sponsor of the conference, having donated US$10,000 towards the costs, as well as an active participant, presenting the exciting results from our research programme. We are already looking forward to the next GRC in 2027.”

Read more in the **Conferences and Meetings** section.

From left to right: Nathan Babcock, James Murray, Alistair Nunn, Hamza Patwa, Geoffrey Guy, Grace Pennelli, Ifigeneia Kalampouka, Stan Botchway, Philip Kurian, Aeron Tynes-Hammack, Betony Adams, Alasdair Mackenzie, Rhys Mould

2025 Spring Series on Water as a Quantum Biomolecule

The **2025 Spring Series** – which is focused on the role that water plays in supporting and facilitating the processes fundamental to life – commenced on 12 March with an excellent talk by **Philip Kurian**. Philip is principal investigator and founding director of the Quantum Biology Laboratory at Howard University which studies how collective and cooperative quantum behaviours can explain biological phenomena at the mesoscopic, organismal, and clinical scales, including in neurodegeneration, cancer, and human consciousness.

His presentation introduced the physics of water, and how this physics is important in biology. Water, for instance, has strong electrical properties, such as conductivity and polarity, making it an interesting medium in the context of bioelectricity. The structure of water and the way that it is organised and ordered in the biological environment of the cell differs from bulk water in ways that may be essential for life and, indeed, may have facilitated the origins of life.

The next session is on 26 March in which **Ali Hassanali**, who is based at The International Center for Theoretical Physics in Trieste, will look more closely at the behaviour of water at different interfaces and in different conditions. Ali will build on his research into the use of soap bubbles for artificial photosynthesis and the interesting properties - big electric fields, ordered water - associated with these 'model membranes'.

Despite its deceptively simple structure, water has some very unusual physical properties, many of which are still being discovered. This makes its interaction with biological materials such as proteins complex in ways that are as yet not well understood. Water appears to play a pivotal role in enabling chemical reactions integral to biological processes. This is particularly interesting from a quantum mechanical point of view.

In the third session on 23 April, Nathan Babcock, Howard University, will explore the quantum effects of water associated with proteins, in particular the importance of order in biological water.

On 7 May, the series will address the interaction of light and water in the biological context. Both light and water play pivotal roles in biology, though their synergistic effects are less well documented. Alistair Nunn, from The Guy Foundation and University of Westminster, will discuss whether this synergy may be essential for life and, indeed, may have facilitated the origins of life.

The series will conclude on 21 May with a recap of all the series talks and a roundtable discussion. Videos of the talks will be available on our **website** and **YouTube channel**. If you would be interested in joining the live sessions and aren't already registered, please contact **n.copping@theguyfoundation.org**.

Proceedings of the 2024 Autumn Series on Bioelectricity

We were delighted to publish the Proceedings of the 2024 Autumn Series 'Genes and metabolism: bioelectricity and the quantum spark of life' in January. The series explored the role that bioelectricity plays in living organisms and how this interacts with genetic information. The Proceedings, which are available on our **website**, include abstracts from each of the speakers as well as a closing note summarising our thoughts on the series themes. Thank you again to Michal Cifra, Greg Scholes, Johnjoe McFadden, Nick Lane and Michael Levin, for their excellent talks, all of which are available on our YouTube channel: **www.youtube.com/@theguyfoundation**.

Space Health Programme News

We are delighted to announce that we have appointed George Freeman MP as Advisor to The Guy Foundation to lead and coordinate our international Space Health Programme.

George, elected to the UK Parliament in 2010 after a 20 year career in science and technology venture finance, has been an influential shaper of UK science policy and diplomacy in the last 15 years, under four Prime Ministers, serving as Minister of State for Science, Technology and Innovation; Minister for Life Science, Digital Health and AgriTech; Minister of State for the future of Transport and Chair of the No 10 Policy Board. He is Chair of the All

Party Science in Parliament Committee and has been recently appointed a UK Trade Envoy by the Prime Minister.

With George's ministerial responsibilities having included Life Sciences, Space and Quantum, he is a tremendous advocate for our programme. George commented:

> "Quantum biology – how quantum mechanics may be integral to the function of biological systems – is rapidly becoming one of the new frontiers of human health and I am delighted to be supporting the Foundation in taking this important work forward. Without question, more work is needed to investigate the effects of space on health. It is urgently needed with respect to improving astronaut health, but it will also transform our ability to improve health for those of us on Earth."

George's appointment follows the publication of the Foundation's report '**The health hazards of space travel: novel insights from quantum biology**' in October 2024. George kindly provided the foreword, in which he wrote the report provides "a unifying and compelling rationale which highlights the pressing concerns about the capacity of humans to travel into space without suffering from significant or severe health problems. All this, as many are realising, has serious implications for the many organisations and individuals in the vanguard of the space economy. In parallel, it also offers serious opportunities to improve mankind's understanding of the underlying basis of disease and ageing.

The space life sciences may be opening up a whole new field of biology and medicine.

The Guy Foundation and the quantum biology community are keen to assist and to ensure that the safety of human travellers, whether on manned space flights or lunar or Mars bases, can be better assured and their health optimised."

With the support of the Space Health Working Group, we intend to hold discussions with space agencies and companies, facilitate and establish research collaborations (with an initial focus on magnetic fields and the altered light spectrum), and in time we will look to develop appropriate standards and protocols. This work will also help to deepen our understanding of quantum biology and further establish it as an important field of science.

The Foundation's Space Health Programme also comprises education aspects. Afshin Beheshti has been hard at work implementing the Global Certificate Program in Space Biomedicine, a new initiative aimed at providing training in space biomedicine research and methodologies. This training will be available to graduate, doctoral, and medical students, as well as clinical residents.

Afshin and Chris Mason have also recently announced a call for contributions to a new space-related paper package in collaboration with the editors at Cell Press. The package will focus on deep space biology and strategies for developing countermeasures for human spaceflight beyond low Earth orbit (LEO). If you are interested in submitting, please contact Afshin Beheshti at **beheshti@pitt.edu**.

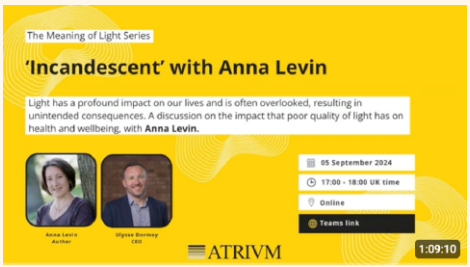
If you are interested in supporting the Space Health Programme please contact Nina Copping (**n.copping@theguyfoundation.org**).

New Talks on Quantum Biology

The team has had a busy start to the year with two new podcasts and a conference talk to share with you. The first is a podcast with Geoffrey Guy and Alistair Nunn by Max Gulhane for his Regenerative Health series: **Space Health, Magnetic Fields, Mitochondria & Quantum Biology**. It is a follow-up to the first interview **'Quantum Biology & the Future of Medicine'** which has been viewed over 25,000 times. The second podcast **Bioelectricity, Biophotons & Quantum Biology** is an interview with Alistair Nunn by Cameron Borg for the Ricci Flow Nutrition podcast series.

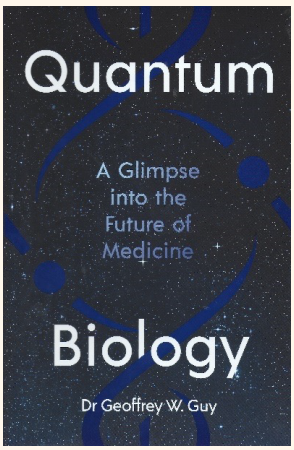
Geoffrey and Alistair were also pleased to deliver a talk to the first **Cannabinoid Translational Science Symposium** which took place in February. The symposium was aimed at fostering collaboration among researchers, healthcare professionals, and industry leaders in order to advance the understanding and application of cannabinoid research in the therapeutic context. Experts from across all phases of drug discovery engaged in debate as to how to maximise cannabinoid therapeutic potential. After an introduction by Geoffrey, Alistair gave a talk that offered a new perspective on the possible mechanism of phytocannabinoid mode of action, suggesting that these secondary metabolites, which the plant usually makes in response to stress, restore homeostasis by a thermodynamic mechanism based on self-organisation that tunes metabolism to maintain dissipation. The symposium was co-chaired by Alessia Ligresti, a long-time colleague of Geoffrey Guy, and we are looking forward to seeing how this endeavour gains future momentum.

Geoffrey and Alistair will also be giving a talk to **The Meaning of Light Series** on 1 May. Convened by Atrium, a company specialising in lighting design with a strong interest in healthy environments beyond



the purely aesthetic, The Meaning of Light talks are fascinating. They have ranged from a personal account of 'light sickness' that the journalist Anna Levin describes in her recent book ***Incandescent: We Need to Talk About Light***, to a closer look at the mechanisms by which light interacts with the circadian clocks that are so fundamental to biological function. A link to the talks is also available in the 'Light and life' section of our **Useful Resources** page - they are well worth a watch.

Quantum Biology Book



Geoffrey Guy's book ***Quantum Biology: A Glimpse into the Future of Medicine***, which was published in November, has had an excellent reception. The book outlines the different ways in which quantum biology might advance our understanding of physiology and the practise of medicine. It has a unique interactive quality as each chapter opens with a QR code that directs the reader to a website page on the Foundation's website, where the reader can access more information that expands on the themes of the chapter.

We are sorry to hear from some of you that the book has been in short supply in the US. The publisher is working hard to address the issue, so thank you for bearing with them if you are still waiting for your copy.

The Quantum Biology DAO Raises Record Sum

The Quantum Biology DAO is an entity founded by Clarice Aiello, Geoff Anders, and Alessandro Lodesani, aimed at engaging researchers, crypto enthusiasts, industry experts and the interested public towards accelerating quantum biology research. We were delighted to see the DAO raised over $6.8 million in an initial token auction. We asked Geoff Anders for his thoughts:

> “We believe this fundraise will make it possible to prove quantum biology’s central proposition: that quantum effects in biology are ubiquitous and tied to function. It’s a huge step forward for the entire field.”

The Quantum Biology DAO operates by publicly posting proposals for actions by the DAO, the potential actions are then discussed by the community, before being voted on by token holders. One vote is allowed per QBIO token, which is the DAO’s governance token.

To read more about the DAO visit the website **www.quantumbiology.xyz** or for more information on how it operates see the document **Quantum Biology DAO: our vision**. The DAO is also collating a new weekly digest, located **here**.

IYQ 2025 Opening Ceremony in Paris

On 4–5 February UNESCO's headquarters in Paris hosted the opening ceremony of the International Year of Quantum Science and Technology (IYQ). The event was a diverse gathering of scientists – including a number of Nobel Laureates – as well as policy-makers and industry experts. The IYQ is a global initiative celebrating a century of development in quantum mechanics and its application in technology and society, with the aim of fostering public awareness and engagement with quantum science.

We were delighted to see that Francesco Petruccione, from Stellenbosch University, attended the ceremony in Paris. Francesco recently gave a talk, as part of the IYQ, on the history and future of quantum mechanics: **A Century of Quantum: From Foundations to the Future**. We asked Francesco for his thoughts:

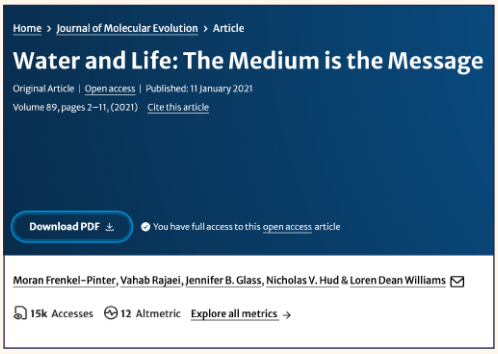
> "The birth of quantum mechanics and its first technological revolution introduced innovations such as the laser, transistor, and atomic clock. We now stand in the midst of the second quantum revolution, where quantum computing, quantum communication, and quantum sensing promise to redefine computation, security, and precision measurement. In addition to this, the emerging role of quantum effects in biology, hints at the broader implications of quantum science beyond physics. I am excited to see what the future of quantum science has in store."

Books & Papers

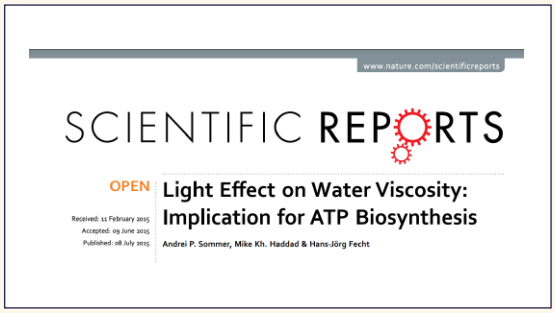
Journal club

For this issue's journal club, Alistair Nunn and Betony Adams have picked four thought-provoking papers on topics relating to the role that water plays in biological systems.

The papers chosen for this issue span more than half a century of research, and yet the structure and function of water in the biological context remains enigmatic. In our last issue we focused on the importance of bioelectricity, the fact that in the end, as Albert Szent-Györgyi put it, life is nothing but an electron looking for a place to rest. It thus seems fitting that Szent-Györgyi should have the first word on the importance of water in supporting and facilitating biological life forms. His 1956 paper **'Bioenergetics'** in the journal *Science* speculates on the role of water as it relates to the bioenergetics of muscle contraction. Szent-Györgyi first hypothesises that the energetic demands of myosin molecules, spread out over delocalised bonds, suggest electronic excitation rather than chemical intervention. He then goes on to describe how the problem of short-lived electronic excitations signalled by fluorescence can be addressed by producing longer-lived triplet states. While triplet states are a low probability occurrence, Szent-Györgyi outlines how structured water, which gains regularity by its interaction with biological materials, might make triplet excitation both probable and stable, suggesting that triplet excitations may play a major role in biology.

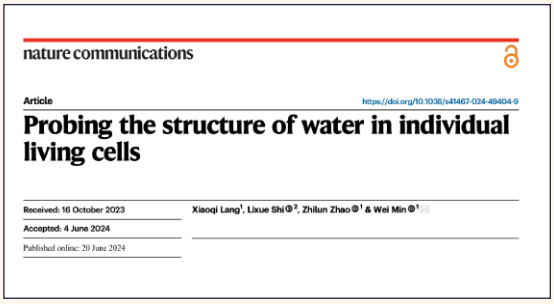


Water continues to intrigue both physicists and biologists. The paper **'Water and Life: The Medium is the Message'** published in the *Journal of Molecular Evolution*, investigates the role that water plays in integral biological processes such as metabolism. The authors argue that while water is accepted to be the medium in which biological life unfolds, it plays a far more active role than this. Indeed, water fuels the chemistry of metabolism. This is illustrated by the fact that a remarkable percentage of biochemical reactions either use or produce water. The authors conclude that, in the context of biology, water acts as reaction substrate, intermediate, cofactor, and product and this chemical participation in the reactions fundamental to life may also give some insight into how life began.



While biological water is chemically active, it appears it is also responsive to electromagnetic stimuli. The paper **'Light Effect on Water Viscosity: Implication for ATP Biosynthesis'** published in *Scientific Reports*, outlines shortcomings in theoretical calculations of the efficiency of ATP synthase and concomitant ATP synthesis. These calculations depend on the assumption that water viscosity inside mitochondria can be approximated as the constant viscosity of bulk water. The authors suggest that this assumption neglects to take into account the more complex environment of mitochondrial water, particularly its interfacial quality. They suggest that intramitochondrial water would be better described using viscosity gradients. This would in turn allow for a consistent explanation of

the response of ATP synthesis to stimuli such as reactive oxygen species and near-infrared light.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Article

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Probing the structure of water in individual living cells

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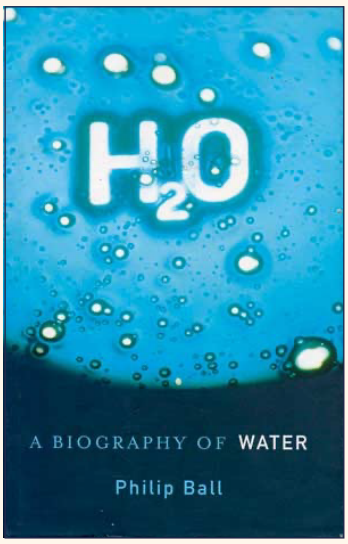
Xiaoqi Lang[1], Lixue Shi[2], Zhilun Zhao[1] & Wei Min[1]

Intracellular water is the subject of another paper, **'Probing the structure of water in individual living cells'**, published in *Nature Communications*. The authors use Raman micro-spectroscopy techniques to investigate the properties of water inside three different types of living cells. Their results show that a small percentage of water within living cells behaves unlike bulk water, leading them to conclude that this may be due to the interfacial nature of water surrounding biomolecules. Raman spectroscopy is a robust and well-developed experimental tool well suited to probing the nature of biological water in vivo and unravelling some of the many mysteries that remain around this most quotidian liquid.

Book corner



For this issue's book corner Betony Adams has written a review of Philip Ball's book *H2O: A Biography of Water*, first published in 1999 by Weidenfeld & Nicolson. While we usually review recently published books, we thought this would be an interesting counterpoint to the Spring Series on water, illustrating just how far research has progressed in the last two decades, and how far it has yet to go.

H2O: A Biography of Water by Philip Ball

Philip Ball's book H2O: A Biography of Water was published over two decades ago and yet this sentence still holds true: 'At first glance a simple molecule, water still offers up profound challenges to science'. Indeed, the more deeply water is investigated the more complex its properties appear. The book blends physics, chemistry, biology, and history, reaching as far back as the Big Bang and the very first physics of the Universe as it gave birth to the hydrogen so central to each molecule of water.

The book traces the cosmic and geological legacy of water on Earth before returning to the peculiarities of hydrogen, in particular the hydrogen bonding that lends water some of its interesting chemical properties. It is this element of the book that felt most relevant to our purposes, as the author examines the role that water plays in biology, and how the novel chemical properties of water may have facilitated the development and function of biological life.

The book is rigorously scientific, turning a clear eye on some of the pseudoscience that the study of water elicits. But, while I found the science fascinating, I also appreciated how the author was sensitive to the rich symbolic resonance of 'life's matrix', the liquid that gives us our singular blue planet. In his own words: 'We call our home Earth – but Water would be more apt'.

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 conferences or meetings to add, please let us know.

GRC 2025 Meeting in Tuscany

The Guy Foundation is pleased to have once again been able to contribute a donation to the Gordon Research Conference on quantum biology which took place from 2 – 7 March 2025, near Lucca, Italy. The GRC was preceded by the inaugural **Quantum Biology Gordon Research Seminar (GRS)**, from 1 – 2 March 2025, which was attended by early career researchers who presented on an exciting variety of quantum biology research. The GRS concluded with a session on mentorship and how to navigate a career in quantum biology, with established research scientists Lauren Jarocha, from Furman University, and Youngchan Kim, from the University of Surrey, sharing their insights and advice. The Foundation's team member, Betony Adams, who chaired the session commented:

> "I really enjoyed the mentorship session and thought it was a valuable addition to the more conventional sessions, generating an excellent discussion around the difficulties and rewards of pursuing a career in quantum biology. I think the GRS is a great complement to the GRC and it was inspiring to see the enthusiasm with which this new generation presented their research."

The GRC venue, near Lucca, Italy

Ifi Kalampouka presents her research on cellular senescence

Rhys Mould and Viktoria Thöni at the Poster session

A very well done to this year's GRS chairs Louie Slocombe and Jana Vuckovic, who made the inaugural event such a success. And congratulations to the chairs of the 2027 event, Manisha Patel and Federico Bertagna.

The GRC built on this successful beginning with a packed schedule of presentations. Stan Botchway, from the Foundation's research programme, chaired a fascinating session on photons in biology which featured a number of familiar faces including Philip Kurian, Aeron Tynes Hammack and Nathan Babcock, who gave an illuminating overview of the history and future of photons in biology and physiology. The Foundation's postdoctoral researcher Ifi Kalampouka also presented her research on cellular senescence in this session. Other sessions included a focus on tunnelling; energy transfer; magnetoreception; radicals and spin effects; and quantum sensing. It was also encouraging to see sessions dedicated to biomedicine, as well as a focus on expanding the domain of quantum biology.

We asked the Foundation's Director of Science, Alistair Nunn, for his thoughts on how the GRC has progressed from its inaugural edition in 2023:

"This year's QB conference in Italy was a step change up from the previous one in Texas, both in location (stunning) and overall feel. There was a much greater family feeling, with everyone being very friendly and happy to talk, and the scientific programme was also broader and seemed to integrate the physics and the biology better. What is clear is that the research is moving forward, and the field seems to be a lot stronger and better accepted than it was even a few years ago; this is being helped as we begin to understand more of the underlying mechanisms. This is being driven, in part, by increasing amounts of solid data. For instance, the case for a role of magnetic fields and photons in biology is now even stronger. In terms of the Foundation, we are now playing our part by providing some of this data, which is enabling us to expand our collaborative horizons, for instance, in space health. Overall, I do get the sense that we are at a tipping point, and look forward to the next GRC to see how far we could have leapt ahead. However, it will be important to ensure the field garners funding to keep the momentum; there are concerns among some of the scientists about this, which highlight the importance of entities such as The Guy Foundation in keeping the ball rolling."

The poster sessions added scope for further discussion on a broad range of topics, including early cancer detection and other diagnostic tools, magnetic field manipulation of cell fate, biophotons, mitochondria, microtubules and much more

In the spirit of the GRC, discussion was rigorously scientific and constructive and a number of attendees remarked that the conference was the highlight of their calendar. We asked this year's chair Jonny Woodward for his thoughts on the expanding quantum biology community and what made the GRC so special:

"I think what has impressed me the most this week is the openness with which scientists from quite different fields and disciplines have come together with patience and willingness to share their knowledge with one another. There has been much friendly and respectful discussion between senior experts and students and young researchers across a very diverse range of subjects. I believe that the quantum biology community is maturing into a very scientifically curious and self-supporting one. The incredible location and the glorious sunshine have been a nice bonus!"

View from the GRC venue

As the week drew to a close, we were sad to say goodbye to new friends and potential collaborators and the beautiful Tuscan landscape. A big thank you to the organisers Jonny Woodward and Wendy Beane for making this year's meeting such a success. We also congratulate the newly elected co-chairs for 2029, Melissa Mather and Christine Merlin. And finally, we look forward to meeting again in America in 2027, and wish the next chairs, Alex Jones and Alexandra Olaya-Castro the best of luck with this period of preparation.

Recent Conferences

The **Quantum Bioscience Workshop** organised by the Institute of Physics (IOP) took place in London in December 2024. The meeting featured a number of well-known speakers in the field and was aimed at UK community-building in the quantum physics and physics of life disciplines. The Foundation's team members Alistair Nunn and Alix Bailie (UKRI-STFC) attended the event. Alix commented:

> "It was a hugely engaging event, covering everything from animal magnetoreception to quantum inspired computing. What really stood out was the positive atmosphere, aiming to spark conversation and collaboration with the early career attendees. We had many fruitful discussions in the Q&A as well as the networking session. Definitely an event I will keep on my radar in future."

The annual **SPIE Photonics West** conference was held in San Francisco in January. We were particularly interested in the biomedical optics and photonics element of this major showcase event, with topics including therapeutics and diagnostics, biophotonics, new imaging modalities, optical coherence tomography, neurophotonics, optogenetics, tissue optics, and nanophotonics. It is wonderful to see the growing quantum biology presence at such a well-established conference.

Following the success of the Foundation's **2024 Spring Series on Ageing**, we were interested to read about the **Global Conference on Gerophysics**, which took place in March in Singapore. The conference was aimed at integrating physics techniques with new research in molecular gerontology, as well as building a strong

global community united towards the aim of extending human healthspan and lifespan.

And finally, the American Physical Society's **2025 March Meeting** is happening this week in Anaheim, California. Last year was the first time that the meeting featured a dedicated quantum biology focus session. We hope that the interest in quantum biology has been sustained at this year's event!

Forthcoming Conferences

MitOX Meeting in April 2025

The annual MitOX meeting will take place on the 3 April at the John Radcliffe Hospital, Oxford, UK. The mitochondria-focused meeting will include a number of short talks and posters on cancer metabolism, neuroscience, diabetes, mitochondrial disorders and general mitochondrial biology. For more information and to register for in-person or online attendance see the **website**.

The Bioelectricity Cluster 2025 Meeting in April 2025

The inaugural meeting of the Bioelectricity Cluster will take place from 8 – 11 April at the University of Oxford, UK. We were interested to see that Sally Adee, author of the book We Are Electric – reviewed by Alistair Nunn in a previous **Quarterly Review** – is an invited speaker, along with other pivotal researchers in the field such as Mike Levin. For more details see the **website**.

Conference abstracts will be published in the focused issue Bioelectricity in Healthcare in the journal Bioelectricity. This issue is also open to external submissions of articles reporting on recent advances in bioelectricity in health and disease. For more details see the **website**.

Upcoming Bioelectricity Meetings

For those of you interested in bioelectricity and related topics, Michal Cifra shared this list of conferences and meetings coming up this year:

BioEM 2025, the largest and most significant international conference worldwide in the area of bioelectromagnetics, will take place from June 22 – 27 in Rennes, France. For more information see the **website**.

The **Asia-Pacific Radio Science Conference** (AP-RASC) 2025 will take place from 17 – 22 August in Sydney, Australia. For more information see the **website**.

The **International Conference on Infrared, Millimeter, and Terahertz Waves** (IRMMW-THz) 2025 will take place from 17 – 22 August at Aalto University, Espoo, Finland. For more information see the **website**.

The **Nineteenth International Congress on Artificial Materials for Novel Wave Phenomena – Metamaterials 2025**, will take place from 1 – 6 September in Amsterdam, the Netherlands. For more information see the **website**.

The **European Microwave Week** (EuMW) 2025 will take place from 21 – 26 September in Utrecht, the Netherlands. For more information see the **website**.

Quantum Biology Seminars

The Big Quantum Bio meetings

Clarice Aiello of the **Quantum Biology Ecosystem** organises these meetings which take place online every Thursday and are free to attend.

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. There is an upcoming talk on 31 March 2025 by Ezekiel Johnston-Halperin, from Ohio State University. For more information visit the **website**.

Bioelectrodynamics seminars

These meetings are hosted by the Bioelectrodynamics group at The Czech Academy of Sciences. For more information visit the **website**. Video recordings of previous presentations can be viewed on **YouTube**.

Job Opportunities

Fay Group

Postdoctoral, PhD and undergraduate research positions will be available from July 2025 in the Fay group – a new research group in theoretical and computational chemistry at UCLA led by Dr Thomas Fay. For more information see the **website**.

Dates for your Diary

THE GUY FOUNDATION

2025 Spring Series Programme

Water as a quantum biomolecule

Session 1
The physics of water in biology
Wednesday 12 March
Dr Philip Kurian, Howard University

Session 2
The physics of water: charge, membranes and interactions with light
Wednesday 26 March
Dr Ali Hassanali, The International Center for Theoretical Physics, Trieste

Session 3
Quantum effects of water associated with proteins - the importance of order
Wednesday 23 April
Dr Nathan Babcock, Howard University

Session 4
Origins of life: water, lights, action
Wednesday 7 May
Professor Alistair Nunn, The Guy Foundation and University of Westminster

Session 5
Implications of water as a quantum biomolecule for quantum biology research
Wednesday 21 May
Summary and roundtable discussion

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

Community News

Dr Viktoria Thöni Wins Research Prize

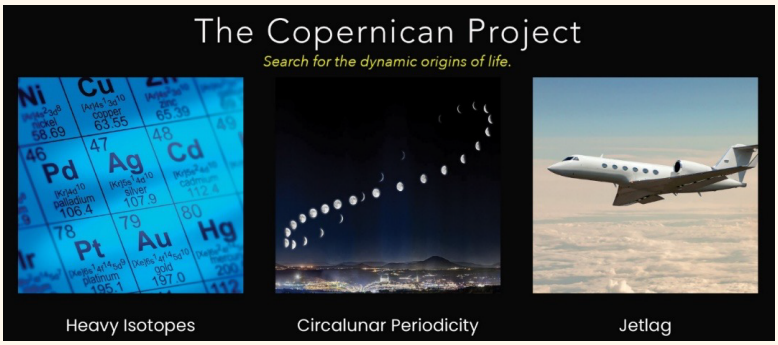
Viktoria receives the 2024 Research Prize from the Tiroler Wirtschaftskammer for her doctoral research

Viktoria Thöni (centre) at the award ceremony with her supervisor Margit Egg (right) and her mother Martina Thöni (left)

We were delighted to see that Dr Viktoria Thöni has been awarded the 2024 Research Prize from the Tiroler Wirtschaftskammer for her doctoral thesis. Viktoria's research, supervised by Dr Margit Egg at Innsbruck University, investigated how nuclear magnetic resonance (NMR), which involves the application of tailored magnetic fields, can be used in a therapeutic context. Her thesis focused particularly on the effects of therapeutic nuclear magnetic resonance on the cellular circadian clock and the hypoxic signalling pathway. You can read about Margit and Viktoria's research, and how it is related to the radical pair mechanism – which is a central topic in quantum biology – in their recent **paper**. Viktoria is a familiar face in the Foundation's online lectures and we are excited to see where her future research takes her.

Congratulations Viktoria!

The Copernican Project Launches Experimental Programme



Another familiar face in the Foundation's online lectures is Steve Thorne from the Copernican Project. The Copernican Project, based in Berkeley, CA, is working to identify how gravitational, electromagnetic, and nuclear dynamics are united within cell environments. They recently launched their experimental programme, with an initial project investigating the effects of heavy isotopes and circalunar periodicity. This year they plan to expand the programme to explore alternative mechanisms for jetlag. To read more about their ideas, or participate in their experiments, see their **Quarterly Report**.

The Guy Foundation Joins LinkedIn

And finally, the Foundation is enjoying being a part of the growing quantum biology community on LinkedIn. You can find us **here**.

If you'd like to see our news and updates do follow our page.

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

Sunset at the GRC, near Lucca, Italy

www.theguyfoundation.org