



ABOUT US

Our main objective is to support the clock community in creating bridges between chronobiological research and real-world impact.

The mission of BioClocks UK is to consolidate, engage, and expand our research network in order to establish and nurture robust cycles of discovery and impact.



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EDITORIAL INSIGHTS



Prof. Antony Dodd
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Welcome to the second edition of the BioClocks UK newsletter. Since our last update, the new BBSRC responsive mode grant that supports BioClocks UK has started, and so I can introduce you to the new BioClocks UK coordinator, Lorena Rosen. Lorena will be leading on a variety of areas of impact delivery within the BioClocks UK programme.

In this issue, we also have an article from Russell Foster on impact and public engagement, a focus on chronobiology research at Aberystwyth University, and we celebrate three new BBSRC Discovery Fellows in the UK chronobiology community. We'd also like to draw your attention to the BioClocks UK Forum, and BioClocks UK Expertise Database, both of which are on www.bioclocks.uk.

I thank those that have spent time on contributions to this newsletter, including Russell Foster, Tyler Stevenson, Matt Jones, Hannah Rees, David Wilcockson, Nina Rzechorzek, Akanksha Bafna, Luisa Jabbur, James Ronald and Lorena Rosen.

Introducing the Coordinator

LORENA ROSEN



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Dear BioClocks UK Community,

It is a wonderful privilege to join you as coordinator of this network and I am excited to work with you on delivering impact and outreach. So, first of all, I would like to say thank you to those who have already met with me - you have demonstrated that chronobiology is inherently exciting: as fundamental as it is translational, and ever broadening to the point where it may soon touch every life science.

Coordinating such a broad network is, at first glance, an eclectic collection of tasks but at the heart of it is one goal: enabling connection. **Connection inwards, and connection outwards.**

Connecting inwards, meaning within the network itself, is something Clock Club has already been doing splendidly for decades. With over 400 clock club subscribers (and counting), community connection is now more important than ever. BioClocks UK facilitates connection online and in person; if you should need help navigating either, I'm here to help.

Connecting outwards, meaning to anyone not in the network, has often been the labour of impact-driven individuals who have sacrificed great chunks of time and effort to bring people together. The goal is that BioClocks UK may lessen that sacrifice by sharing, supporting and, where possible, facilitating larger impact projects. We're here to empower researchers who have an interest in delivering impact, and to make the process easier overall.

More than anything else, I am a central point of contact for support - the network is vast and the opportunities for collaboration and impact seemingly endless, but it need not be daunting.

I want to know what I can do for you, so please do get in touch with your outreach ambitions and projects - maybe you want to be involved in influencing policy, or you think your research could revolutionise an industry, perhaps you want to connect with other researchers working on complimentary projects or you may simply have an idea for how the network could support its members. You can reach me at: lar27@leicester.ac.uk

See you at Clock Club!

Background:

Lorena's chronobiology journey started with an undergraduate dissertation on the circadian rhythmicity of the human blood transcriptome in microgravity. She graduated with a Biomedical Science degree from the University of Surrey, a course she joined after spending a year in the NHS, training in nursing. Alongside her studies, she became an avid debater, coach and outreach ambassador. Driven by the goal of making a positive difference, she joined the TeachFirst programme after graduating and carried out projects centred on pedagogic practice and educational inequality. She has taught science in secondary schools and sixth forms around the Midlands with the twin goals of developing critical thinking and fostering a passion for science in her students. Out of hours, she keeps one foot in education by tutoring, and one in the voluntary sector as an emergency responder for the Red Cross.



29th April 2024

Glasgow Clock Club Review

TYLER STEVENSON AND MATT JONES

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It was one of those frequent drier Glasgow days to host the UK Clock club. Yet, the series of postgraduate and early career researcher-led presentations provided an excellent range of diversity in topics and scientific models. With a high volume of submissions that spanned a range of questions, three sessions were created to focus on bioclocks in mammalian, plant and invertebrate systems.

The morning session began with Dr Kim Last from the Scottish Association for Marine Sciences describing the importance of irradiance measurements in aquatic environments for modelling diel locomotor activity. Then Dr Calum Stewart from the University of Glasgow outlined the molecular architecture of a circannual interval timer in Siberian hamsters. Clock mechanisms then switched back to circadian timing with Dr Rebecca Hughes from the University of Manchester discussing the latest advances on the electrical properties of orexin neurons in the *Rhabdomyus pumilio* suprachiasmatic nucleus. The session concluded with a fascinating presentation by Dr Emma Leacy from the Royal College of Surgeons, Ireland. In Emma's talk, the daily and seasonal changes in human physiology and the impact of disruption due to alpha-1 antitrypsin deficiency were outlined.

After lunch, Dr Matt Jones from the University of Glasgow discussed the role of thermosensitive splicing of *REVEILLE2* for circadian timing in *Arabidopsis*. Then Dr Pirita Pajanen continued the theme of temperature in *Arabidopsis* but instead focused on the role of temporal gating on transcriptome dynamics. Next, Will Claydon from the University of York described how manipulations of photoperiod impact growth in vertical farming environments. Dr Jack Dorling wrapped up the session by explaining the complex clock properties in a soil-dwelling bacterium, the *Bacillus subtilis*.



During the breaks there was an opportunity to network and view research posters, such as the one presented here by Dr Sayantan Sur from the University of Glasgow.



29th April 2024

Glasgow Clock Club Review

TYLER STEVENSON AND MATT JONES

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After a short networking break, Dr Nicola Smyllie from MRC Laboratory of Molecular Biology comprehensively outlined the intracellular properties of clock proteins in the mouse suprachiasmatic nucleus. The presentations then switched to invertebrate models in which Adam Bradlaugh from the University of Manchester outlined the role of the C-terminus of cryptochrome in *Drosophila* for magnetoreception. Then, Sarah Doran from Manchester also outlined the importance of sensitive periods and especially circadian timing during *Drosophila* larval neuronal development. The presentations ended with an overview of how urban light impacts chronobiology across a wide range of animals by Dr Davide Dominoni. The meeting ended after a fantastic plenary lecture from Professor Kristin Tessmar-Raible from the University of Vienna. In this talk, the primary focus was how moonlight sets the phase of the monthly oscillator in the marine organism, the Bristle worm *Platynereis dumerillii*.

On this occasion, the meeting spanned two days with the subsequent day consisting of a Policy Workshop aimed at Early Career Researchers. The Policy Workshop was supported by the Royal Society of Edinburgh Network Grant to Andrew Millar, Tyler Stevenson and Daniel Smith.



The Graham Kerr Library provided an ideal environment to host a session. Professor Russell Foster and colleagues described a series of ways in which to improve science communication to inform policy decisions.

Overall, the Clock Club meeting was a success and contributed to the ongoing, high standards reflected by the community. The event was generously sponsored by the British Society for Neuroendocrinology, Thermofisher Scientific Ltd., MedChemExpress, Cairn Research and the University of Glasgow.

Meet the BBSRC Discovery Fellows

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Three prestigious BBSRC Discovery Fellowships were awarded in the field of chronobiology in the most recent round of fellowship announcements.



Dr Akanksha Bafna

is at the University of Oxford researching the genomic mechanisms in the suprachiasmatic nucleus in mammals.



Dr James Ronald

is at the University of York researching ELF3 nuclear localisation mechanisms in *Arabidopsis*.



Dr Luísa Jabbur

is at the John Innes Centre researching photoperiodism in cyanobacteria and other prokaryotes.

Dr Akanksha Bafna

I'm very grateful to BBSRC for giving me the opportunity to develop an independent research program as a Discovery Fellow that interfaces circadian biology and gene regulation. In my research so far, I have used various model organisms ranging from fruit fly to mouse to determine the molecular genetic basis of biological rhythms, addressing both circadian and seasonal timekeeping. My doctoral degree in Genetics Research at the University of Leicester provided me with a strong foundation to investigate the genetic basis of biological rhythms and instilled the idea to "look beyond genes". Subsequently my post-doctoral experiences at the University of Southampton (2015-2018) and Medical Research Council, Harwell (2019-2022) offered an excellent training on multi-layered principles of gene regulation in the context of circadian timekeeping. With my BBSRC fellowship at the University of Oxford, I aim to unravel the genomic mechanisms that govern daily timekeeping in the master pacemaker and render the SCN a 'powerful' central oscillator. I intend to adopt advanced Capture-C technology to produce the first ever diurnal chromosomal contact map of the SCN and spatial transcriptomics to understand enhancer-mediated temporal regulation of target genes at sub-cellular level.

Meet the BBSRC Discovery Fellows

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Dr James Ronald

Looking forward, I'm interested in trying to utilise new technologies to understand the wider post-translational landscape of the Arabidopsis circadian clock. How and where do circadian proteins interact within the cell and what is the consequence of these interactions? I also want to investigate how the Arabidopsis clock proteome changes across tissue types and how these insights are applicable and differ in agronomically important plant species.

Dr Luisa Jabbur

I am very excited to be joining the UK clock community (after taking the long way here, by way of the US) and to have the opportunity to expand my PhD project into a research program through the fellowship I have been awarded by the BBSRC. During my PhD, which was done at Vanderbilt University, US, with Prof. Carl Johnson, I have discovered that bacteria also have photoperiodic responses, and that cyanobacteria exposed to short days survive cold temperatures much better than those exposed to long days. My main focus at the time was describing this response and characterizing its physiology, which as we have learned is surprisingly similar to what is seen in complex eukaryotes. Making a new discovery during one's PhD is incredibly exciting, but the most amazing thing has truthfully been realizing how many new questions we can now ask, which we had never even considered before. Now, I am looking forward to spending the next 3 years investigating the molecular bases of cyanobacterial photoperiodism, as well as trying to determine how widespread photoperiodism is amongst prokaryotes. Is it seen in other cyanobacterial species? In more distantly related bacteria? When would it have evolved? Did it evolve before or after circadian clocks? I am also very excited to potentially use cyanobacteria as a model to understand how photoperiodism might evolve in response to climate change, through long-term experimental evolution experiments, and hopefully use this knowledge to help mitigate the effects that climate change will have upon photoperiodic responses.

The BBSRC offers a number of fellowships, have a look on the [UKRI Website](#) to find open opportunities.

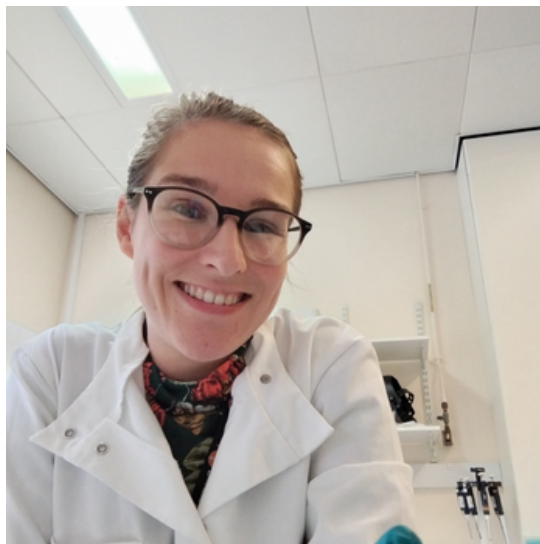


RESEARCH GROUPS

Hannah is Co-PI on the BioClocks UK grant (covered in the previous newsletter issue) aiming to deliver impact from circadian research to the UK, and is particularly passionate about ways in which our research can benefit the agricultural sector and our environment.

After seven years working with Prof Anthony Hall at the University of Liverpool and the Earlham Institute, Hannah recently returned to Wales to take the position of Strategic Research Fellow at the Institute of Biological, Environmental & Rural Sciences (IBERS), Aberystwyth University.

DR. HANNAH REES



Hannah is interested in circadian rhythms in wild and crop plants; particularly how they vary in nature and how rhythms can be manipulated to improve agricultural potential. She uses a mixture of molecular biology (eg: RT-qPCR, RNA-sequencing, metabolomics) and imaging-based approaches (e.g: delayed fluorescence, chlorophyll fluorescence and leaf movement imaging) to study circadian traits.

Her current research at IBERS is focused on translating fundamental circadian research to plants with agricultural, industrial and environmental relevance. Working with Germinal Horizon, Hannah is PI on a Royal society grant for quantifying and understanding circadian variation in red clovers; a protein-rich forage legume important for sustainable low-input agriculture.

In collaboration with Dr David Wilcockson, she is also studying circadian and circatidal rhythms in seagrasses, with the aim of understanding the diurnal and annual patterns which influence the success of intertidal seagrass habitats along UK coastlines.

The Team:

Azadeh Amini

PhD student studying the interaction between the plant clock, aging and environmental stress.

Lewis Kavanagh

Research assistant working on comparative metabolomic fingerprinting of plant circadian rhythms.



RESEARCH GROUPS

David, who trained as a marine biologist, was fortunate to be introduced to the fascinating world of rhythms biology by Prof Bambos Kyriacou (Leicester) and Dr Michael Hastings (MRC-LMB, Cambs) and worked as a post-doc at Bangor University (Wales) on a project to investigate the neurogenetic basis of non-circadian clocks in marine organisms.

DR. DAVID WILCOCKSON



For the last 14 years or so he has continued this work at his own labs in the Department of Life Sciences, Aberystwyth University. Most life occurs in the marine realm and the intertidal zone is a rich and important source of biodiversity and productivity but subject to lunar-driven 12.4h tidal inundation cycles and 15d semilunar spring-neap tides as well as 24h circadian cycles. Understanding the temporal organisation of the biota within these habitats is relevant to many aspects of basic and applied science.

His work at Aberystwyth is mostly concerned with defining the mechanistic basis of 12.4h tidal clocks in marine crustaceans and utilises contemporary molecular and cellular approaches, together with measures of behavioural phenotypes in his study animals, such as locomotion (swimming) to examine these rhythms. David has received support for his work from UKRI (BBSRC, NERC) funding. He is now collaborating with Dr Hannah Rees, also at Aberystwyth, on a new adventure into seagrass chronobiology.

In 2018, David's expertise in marine chronobiology took him to Arctic to study the impacts of climate change. You can read all about it on the [**Aberystwyth website.**](#)

RUSSELL G. FOSTER

As research scientists we are increasingly aware of the importance of research *Impact*, and many of us are keen to understand how our research and expertise can contribute to the generation of *Impact*. In addition, and pragmatically, funders and the up-coming Research Excellence Framework (REF) regard *Impact* as a key and expected deliverable. But what is meant by *Impact*?

Impact can be defined simply as: "*A benefit or change beyond academia*". Academic publications or other activities aimed at academic audiences are not considered as impactful in themselves. So, what is *Impact*? A few examples to illustrate may help:

Improved Quality of Life:

- Improved services - quality, accessibility, cost-effectiveness or efficiency
- Improved public understanding of social and scientific issues
- Education via media – Newspapers, Radio, TV, Books, Websites
- Improved patient outcomes, public health or health services
- Raising public awareness of a health risk or benefit
- Citizen science projects and the participation in research
- Improvements to environment-related issues
- Animal health and welfare that has been enhanced by research

Increased Prosperity:

- Improved products, processes or services
- Jobs created or protected
- Raising funding for improved health

Policy:

- Changed Policy by Government, Funders, Higher Education
- Changes to Regulations and Guidelines
- Improved Public Services in both the UK and abroad

RUSSELL G. FOSTER

An important element of *Impact* can involve Public Engagement (PE), also referred to as the Public Understanding of Science and/or Public Outreach. A few years ago, and drawing from multiple PE activities, we developed the “Triangle of Public Engagement” as a framework and an approach to think about PE in general.

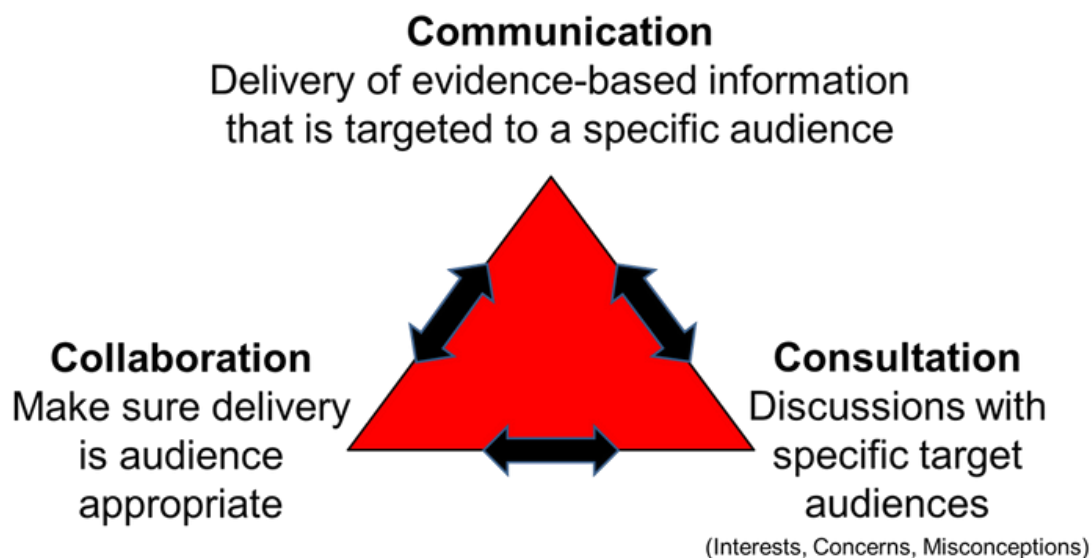


Figure 1 The “Public Engagement Triangle”.

At a fundamental level Public Engagement (PE) involves **Communication** to non-specialists using a variety of different approaches, from lectures, newspaper articles, radio/TV, discussion groups and books. There is no single approach. The key point is that the delivery is tailored to the audience. And to achieve this you need **Consultation** with your target audience to understand the interests, misconceptions and expectations of the group. If you can’t speak directly, then consult with colleagues in advance who know your intended audience. Some 20 years ago I was told, just prior to delivering a 60-minute lecture at a Science Festival, that I was expected to deliver a 20-minute presentation followed by an interactive question and answer session for 40 min. I had failed to consult! The final element should also involve **Collaboration** with individuals who can advise you on how best to deliver the science. This may involve the development of teaching tools or other materials. For example, our work on sleep and circadian education for early teens involved working with teachers, students and parents to produce the content that worked best for this demographic.

Impact and Public Engagement

RUSSELL G. FOSTER

Engagement with non-scientists, policy makers and key opinion leaders places our research into the broader context of the knowledge landscape and makes it more accessible and accountable to the public who, in large part, pay our salaries. But there are bi-directional benefits to PE, as illustrated in Figure 2:

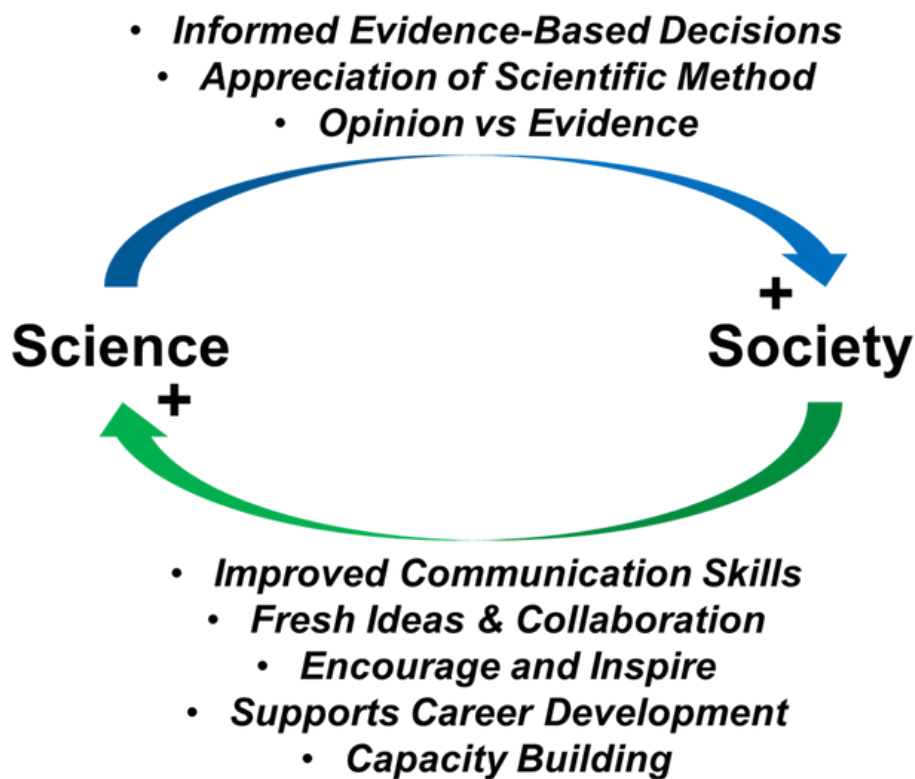


Figure 2. The bi-directional nature of public engagement. Communicating science enables us to deliver an understanding of science in a more meaningful way and prevents misconceptions and misunderstandings. We can convey the fact that science involves informed and evidence-based decisions; that the scientific method involves the process of observing, asking questions, and seeking answers through tests and experiments; and that opinions are not the same as evidence. But we also gain hugely. PE helps us improve our communication skills; makes us think differently and can promote collaborations, such as citizen science projects; it is very useful to get feedback from outside the academic world, which can encourage and inspire what we do; all these activities are now regarded as important for career development; and finally the communication of what we do can lead to the development of capacity. For example, the promotion of the importance of sleep and circadian health by our community over the past few years has led to several recent and major funding initiatives by UKRI, The Wellcome Trust and other charities. We have raised the profile of our field, and all have benefitted.

RUSSELL G. FOSTER

Clearly, we all have our own approaches to PE, but the Triangle of Public Engagement has provided a useful way for many of us to think about how best to engage, and how we can benefit from such activities. I started in PE by giving talks in local schools, then local science societies, and science festivals. One long-term project has been to work with the Orchestra of the Age of Enlightenment (OAE) to combine science and music teaching in state sector schools. All this type of activity led to requests by journalists for interviews, and to write articles for newspapers and magazines. Media appearances followed. I became more experienced in science communication generally and felt able to write popular science books. This increased public profile led to invitations to become involved in various policy activities, including being asked to be the Specialist Advisor for a House of Lords Science and Technology Select Committee that considered The Effects of Light and Noise Pollution on Human Health (1). This was neither my aim or intention, it just happened.

What have I gained? Essentially all the benefits illustrated in Figure 2. Yes, it does take time and sometimes too much time away from the “day job”. But I can say with confidence that I am a better scientist and teacher because of these activities. It is also good to be taken out of your comfort zone and made to “think on your feet”. One project with the OAE involved describing the nature of cells. I turned up at the Henry Wood Hall in South London ready to explain to over a hundred young eight- and nine-year olds what a cell is made of. Only to be informed that there was no projector and that I would “have to improvise”. After a burst of intense irritation, and muttered expletives, sheer terror delivered a solution – the children became the parts of a cell. The children held hands to form a large ring, this was the plasma membrane, a smaller ring the nuclear membrane, children standing as an X were the chromosomes, and the cytoplasm involved children running around between the plasma and nuclear membranes. A much better illustration of the cell than using PowerPoint images! This taught me that although it is great to be prepared, it is often better to be spontaneous and use your imagination. Not something we routinely do in science!

1. <https://committees.parliament.uk/publications/40937/documents/199438/default/>

BioClocks UK Forum

built by our community, for our community

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NINA RZETCHORZEK

Some of you have been making great use of it already, but we wanted to shine a spotlight on our [BioClocks UK Community Forum](#); an interactive space designed for chronobiology researchers and enthusiasts. This is your go-to hub for sharing knowledge, finding opportunities, and fostering collaboration. Explore the 'Jobs' section to discover exciting career opportunities and post your own vacancies. Got a clocks challenge to solve, or perhaps you can help a colleague with theirs? Head to the 'Questions and Answers' category. Enhance your transferable skills through 'Training' events and resources, connect with fellow researchers in 'Collaborations', and start networking at the touch of a button.

Top tips for creating engaging posts:

- Become a BioClocks UK site member (it's free!)
- Navigate to the most suitable category for your post
- Keep the title short and snappy
- Files can be uploaded and links added to provide more information if needed
- Add an image, video, or gif to jazz things up!
- Add a poll to seek community feedback
- Follow the Forum rules to ensure your post gets fast-tracked by our moderator who will also check for duplicate or resolved content before approving your post.

Forum rules are simple:

- Respect each other
- Keep posts relevant to the forum topic
- No spamming

The Forum is an easy way to reach out to your community for help and inspiration—if you're not sure where to post, or if you have ideas for more categories to add, please get in touch with the [BioClocks UK Coordinator](#).

Jobs

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Advertise job opportunities here!

Follow



**Want to be updated
on a particular
section?
Click "Follow"**

BioClocks UK Expertise Database

find your nearest clock expert!

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NINA RZECHORZEK

We are thrilled to announce the launch of our BioClocks UK Expertise Database, a searchable resource to connect you with leading chronobiology experts. A global first for biological clocks research, this innovative, publicly accessible tool allows visitors to easily find established chronobiology and sleep researchers working in the UK and Ireland. Searches can be filtered by lab name, institute, geographical location, key models, and research methods. Whether you're seeking insights for your latest study, looking for a mentor, or aiming to initiate a research collaboration, our Database is your key to unlocking the vast potential of our network and leveraging its diverse expertise.

The BioClocks UK Expertise Database serves to:

- Enhance the visibility of UK chronobiologists and their team's work
- Help the global chronobiology research community find potential UK collaborators, tools, resources, and training opportunities
- Help funders understand the scope and breadth of UK chronobiological research
- Make it easier for stakeholders and the media to contact UK experts working on a specific topic, or in a specific location

Dive in and accelerate your journey towards ground-breaking discoveries and impactful partnerships!

Submissions are welcome from Principal Investigators (Group Leaders) and independently-funded Research Fellows based at any institute in the UK or Ireland whose work involves chronobiology and/or sleep. The Database is curated and updated by the BioClocks UK Team.

If you want to be part of the Database, or if your submitted data need to be amended/deleted, please Contact Us via the submission form on the [BioClocks UK Home page](#).

UPCOMING EVENTS

17/09/2024

Manchester Clock Club

18/09/2024

Andrew Loudon's Retirement Symposium

MARCH 2025

Warwick Clock Club (details TBA)

OPPORTUNITIES

BioClocks Policy Strategy

**Want to get involved with influencing policy?
BioClocks UK will be developing a strategy for
informing UK policy on bioclock-related issues.**

**Whether you'd like to contribute experience,
contacts, knowledge or passion, we'd love to hear
from you!**

**Contact Lorena
lar27@leicester.ac.uk**

Newsletter features

**Have something you'd like to share with the
community? Put it in the newsletter!**

**Contact Antony
Antony.Dodd@jic.ac.uk

or Lorena
lar27@leicester.ac.uk**

KEEP UP TO DATE WITH PROJECTS, EVENTS AND OPPORTUNITIES

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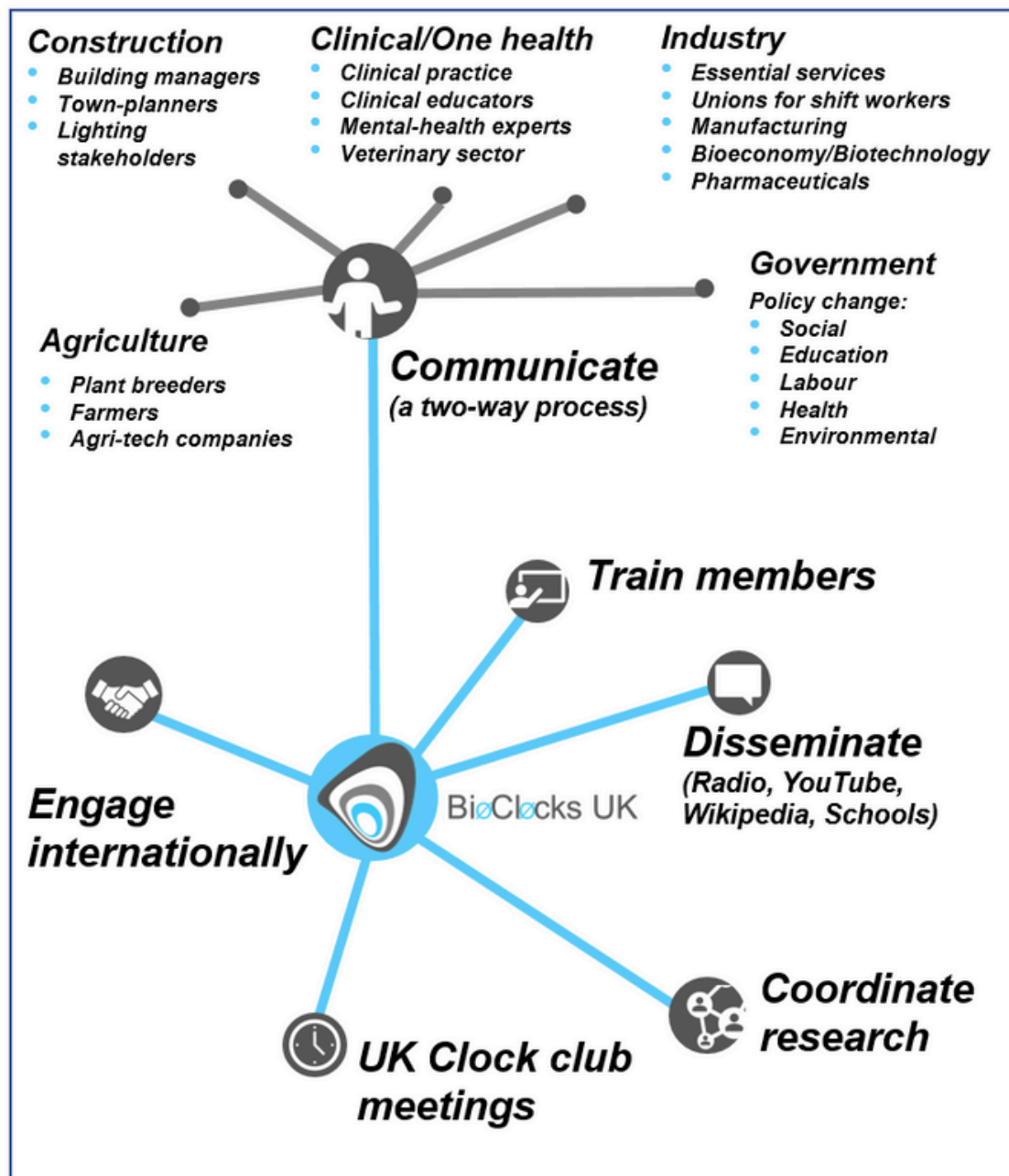
BioClocks UK

BioClocks UK represents the UK researchers who study biological rhythms.

The organisation was started by volunteers from universities, BBSRC-supported institutes John Innes Centre and IBERS, and the MRC Laboratory of Molecular Biology.

BioClocks UK aims to catalyse a community-wide transition in outreach, training and impact from this area of UK research success.

Main Activities:



We extend our heartfelt gratitude to all the individuals whose contributions have made this newsletter possible. Thank you for sharing your expertise, insights, and passion with our readers, enriching their experience with every word and image.

Special thanks to the BioClocks UK team:



Andrew Antony Bambos Daniel



Hannah James Malcolm Marissa Nina



Rebecca Robert Rob Tyler Lorena

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Dr. Nina Rzechorzek, *Creator of BioClocks UK images and logos*

Pictures are credited to the contributing labs and Institutions.

And our Funders: