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Immunology News

Going wild for immunology:

exploring how the environment shapes immune function

Immunotherapy in clinical practice: new training

Belfast highlights: BSI Congress & BSI-CIPN Conference

Public engagement: BSI members in action

British Society for immunology

www.immunology.org

Welcome to another edition of your membership magazine! *Immunology News* is the place to learn about our latest activities to support our wonderful membership, as well as the perfect way to explore what your fellow members have been up to lately.

We ended last year with an amazing celebration of immunology with the BSI Congress and the BSI-CIPN Conference, and you can look back at some of the highlights on pages 6 to 9. But we have more in store this year! Make sure you take a look at page 23 to discover a new BSI training course on immunotherapy in clinical practice. This is ideal for anyone working with patients but also for those who aren't but would like to learn about the clinical application of immunotherapies.

As always, I'm thrilled to have brilliant articles from our members working on a range of areas, including the fascinating field of ecoimmunology, innovative public engagement around the gut microbiome and dementia, and connecting early career researchers.

I'd love to hear from you on other areas you'd like to read about and if you want to contribute on a topic that matters to you, please don't hesitate to get in touch!

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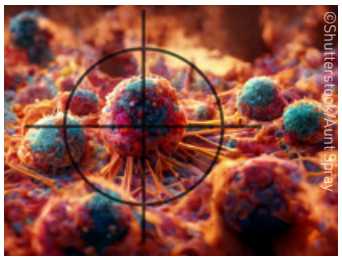
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VIEW FROM …

THE CHIEF EXECUTIVE

Another big welcome to you all to this issue of *Immunology News*! As always, we have a huge amount of exciting content for you to get stuck into and see how much has been happening at the BSI and through our membership.

First things first, we are of course hot off the heels of BSI Congress that was held in Belfast in December… and what an event it was! It was fantastic to see so many of you again and to fully immerse ourselves in the breadth of immunology for the week. We welcomed just over 1,400 people to Belfast and I, for one, was hugely inspired by the science as well as the energy of the networking between delegates. A huge thanks to the BSI team and the Congress Committee for all their hard work in making this flagship event such a huge success, again! Do turn to p6 for a summary of the highlights.

During the week in Belfast we also held our inaugural BSI-Clinical Immunology Professional Network (BSI-CIPN) Conference which was another a huge success (p8)! It was an important milestone post-merger with the UK Primary Immunodeficiency Network, where we brought together all the disciplines in the clinical immunology specialty to discuss clinical and research matters. The conference will now be an annual event and demonstrates our commitment to support the clinical community who are such a valuable part of the BSI ecosystem. I would strongly recommend you turn to p16 to learn about the interesting topic of ecoimmunology, for which we are publishing a special collection in our *Discovery Immunology* journal. This is one of the ways in which we showcase the exciting research being done in the field and being published in the BSI journals. Not only is this a fascinating area of research but it is part of the value that our journals offer as a platform for disseminating novel quality research. In fact, if you are planning to write an original research article or a review soon, our official journals, *Discovery Immunology, Immunotherapy Advances* and *Clinical & Experimental Immunology*, can provide a great home to your paper. Every article we publish in our journals provides essential financial support for everything we do at the BSI, including our grant programmes, as well as provides you, as an author, visibility in a high-quality, peer-reviewed journal and unparalleled dissemination that helps your paper reach far and wide! Please do consider submitting to our journals, and if you have any questions, get in touch with our friendly publishing team who would be more than happy to help guide you.

And finally, all members will have received an email regarding this year's elections for BSI committee posts. A huge thanks to all those who have been nominated for roles, it is fantastic to see such a high calibre of candidates. But, we need votes from all of our members! Please do read the candidate statements and cast your votes for those who you feel will bring the most value to the BSI.

Thank you for all you do for immunology, it is such an exciting field to be in right now! And if you read something in here that triggers a thought or inspires an idea, I'd love to hear from you, please do just get in touch via the details below.

Doug Brown
Chief Executive,
British Society for Immunology
Email: d.brown@immunology.org

SOCIETY NEWS

BSI committees: have a say in your Society

Elections for various positions across our committees are now open. This is a fantastic opportunity for members to have their say in the work of the Society and make a real difference to immunology in the UK!

Our committees are crucial to the work of the BSI. Committee members oversee and assist in areas such as the delivery of our strategy, and governance and finances. They also work closely with our CEO and staff to support all our members. They have front-row seats for all the action and through them, you – as voters – can influence how we support our members and promote and champion immunology for all.

Why should I vote?

Because you get to have your say about who represents you and your interests! It is your chance to vote for those who will be involved in the work of the BSI and UK immunology more widely. Your elected representatives will make numerous decisions on your behalf, and by taking part in the committee elections, you can influence many different aspects of the BSI's work, governance, activities and much more.

Voting is quick and easy and will be open until Tuesday 16 April with the election results being announced on the BSI website in early May. All current BSI members eligible to participate will receive a voting link so please keep an eye on your inbox during this time!

Dates for your diary

Voting closes:
Tuesday 16 April 2024

Results announced:
Early May 2024

Committee Vacancies

BOARD OF TRUSTEES
Our Board of Trustees is responsible for overseeing the business activities of the BSI. Board members must ensure the Society is well-run, financially sound, and that it meets its charitable aims and objectives. They use their wide-ranging skills, knowledge and experience to ensure good governance and the development of an effective strategy for the Society.

SECRETARIES
Secretaries have defined areas of responsibility. They report to the Board and may be asked on occasion to attend Board meetings to provide activity reports and chair relevant committees as required.

CONGRESS COMMITTEE
The primary focus of the Congress Committee is the planning and delivery of the BSI's flagship event, BSI Congress. These roles are not elected by the membership and will be appointed by the BSI CEO and the Congress Secretary to complement the existing expertise on the Committee.

MEMBER REPRESENTATIVE FORUM
The Member Representative Forum is the BSI's 'think tank' and the place where important issues and ideas are raised, discussed and developed. This committee is designed to be representative of the Society's membership and includes individuals from all career grades and immunology sectors including industry, academia and clinical.

BSI CLINICAL IMMUNOLOGY PROFESSIONAL NETWORK (BSI-CIPN) STEERING GROUP
The BSI-CIPN Steering Group delivers the activities of the BSI-CIPN which champions, supports and represents UK clinical immunology.

*Voting is open to all paid categories of membership and honorary members. Please note, this excludes undergraduate members and low-income economy overseas members, and only BSI-CIPN members can participate in the BSI-CIPN Steering Group elections.

Find out more

You can find out more about the BSI committee elections and the specific roles available for voting at: **www.immunology.org/news/bsi-committee-elections-2024**.

SOCIETY NEWS

Belfast highlights: BSI Congress 2023

At the end of last year, our flagship event BSI Congress brought together over 1,400 immunologists for an amazing four days of immunology. The conference was packed with cutting-edge science, inspiring debates and many opportunities to network with peers, reunite with friends and start new collaborations.

Our keynote speaker, Professor Ronald Germain, presenting at BSI Congress 2023.

"What an incredible time at #BSI23! It's always special but this year felt so rewarding. I've gained so many new avenues to explore in future and finally feel part of the field! So good to see friends, new and old (sorry to those I missed too!). Get home safe! Until #BSI25"

"What a spectacular keynote by Prof Ronald Germain on dynamic imaging of the immune system! Didn't realise just how much we were missing out by only focusing on single cell data. Definitely going to up my immune-imaging game! #BSI23"

"Feeling extremely thankful to have been awarded a Bright Spark in #Immunology at the @bsicongress."


Bright Sparks in Immunology winners with BSI Education & Careers Secretary, Dr Donald Palmer.

"Absolutely loved the public engagement parallel session yesterday at #BSI23. Everyone's work was so inspiring."

"Yesterday, I got back from Belfast after a few exciting days at the British Society for Immunology Congress and I am still buzzing. It is always a lovely event to hear all the exciting new science and catch up with all my immunology friends new and old."

1,429 delegates online and in person

4 days of world class immunology

43 sessions

867 abstracts submitted

108 orals

600 posters

27 themes

76 invited speakers

The BSI staff team ready to welcome our delegates to the ICC Belfast for BSI Congress 2023.

"This is the BSI team that really delivers. The Congress has created so much enthusiasm and a great feeling of community. Thank you everyone in the picture for such an amazing event."

ECI 2024, 7th European Congress of Immunology

BSI Congress will return with another fantastic programme in 2025 and this year ECI 2024 will take place on 1-4 September in Dublin. Organised by the European Federation of Immunological Societies (EFIS) and hosted by the Irish Society for Immunology, the programme features the most recent advances in innate and adaptive immunity, diseases of the immune system and immune interventions. Abstract submission will close on 2 April and early bird registration on 15 May. Make sure you visit **eci2024.org** to find out more!

SOCIETY NEWS

BSI-CIPN Conference 2023:
connecting the clinical immunology community

The 2023 BSI Clinical Immunology Professional Network (BSI-CIPN) Conference took place at the ICC Belfast alongside the BSI Congress on 4 and 5 December 2023. It was a fantastic meeting, attracting over 220 participants from six countries, including more than 35 people attending online.

A big thank you to our BSI-CIPN Programme Committee for assembling an engaging agenda packed with important clinical and scientific updates as well as many valuable networking opportunities.

British Society for Immunology
CIPN
Clinical Immunology Professional Network

Professor Siniša Savić, BSI-CIPN Chair, opening the BSI-CIPN Conference 2023.

"This was my 1st BSI-CIPN meeting... and not my last. It was amazing!!!"

Jill Edmonds, BSI-CIPN Nursing Representative, speaking at the Nursing Session.

BSI-CIPN Conference 2024

The BSI-CIPN Conference will return later this year, with more details to be announced very soon. To stay up to date, make sure you're following @BSI_CIPN and **#BSICIPN24** on Twitter/X.

"The clinical cases and the science are so fascinating! The people are so friendly!"

Over
220
delegates from 6 countries

35+
attending online

56
abstracts submitted

35
posters

"Thank you for the opportunity to present at the Grand Round!"

"#BSICIPN23 has been amazing, and huge thanks to the @bsicongress team!"

"Brilliant #BSICIPN23 conference dinner with the best colleagues & friends!"

"Homeward bound after a great BSI-CIPN meeting … great to catch up with lots of people"

Find out more about the BSI-CIPN

The BSI-CIPN is an integrated and impactful professional network for all professional and trainees working within clinical immunology. The BSI-CIPN's membership includes clinical immunologists, healthcare scientists, allergists, pharmacists and immunology specialist nurses. The network provides a strong voice for clinical immunology in policy and public affairs and supports the immunology community to network and engage with each other across many disciplines.

If you work in clinical immunology but aren't part of BSI-CIPN yet, as a BSI member, you can apply to join at no extra cost to your membership.

Find out more about the network and how to join on the BSI-CIPN homepage: **www.immunology.org/cipn**

SOCIETY NEWS

Call for contributions: write about what matters to you

A mix of recent Society news, synopses of cutting-edge immunology research and feature articles showcasing what our members are up to, this magazine is the perfect opportunity to share your interests with your fellow members. As the BSI membership magazine, *Immunology News* aims to not only highlight how we're supporting our members and representing immunology on a wider stage, but also amplify the voice of our membership.

We're always looking for articles from our wonderful and diverse membership and we would love to hear from you. Are you interested in honing your writing skills and having a platform to start conversations about issues that matter to you? This is your chance!

Whether you'd like to highlight your career path to others to provide encouragement for those in similar positions, especially if you're working in industry or clinical settings, or you're an expert on a topic that might inspire others, please get in touch.

We're particularly interested in having a diversity of voices that represents our strong and vibrant community of immunologists from different backgrounds, career grades, immunology sectors and places around the world.

Here are a few topics that we'd be interested in featuring, but if you're interested in other areas, please don't hesitate to get in touch.

- Equality, diversity and inclusion; for example, your lived experiences working in immunology or your involvement in activities promoting a fairer and more inclusive community
- Sustainable science, such as practical steps you've used to reduce your carbon footprint or advice for others
- Mental health and well-being strategies that support an improved experience within immunology
- Your achievements; for example, if you have recently received grant funding, passed your PhD viva or accepted a new appointment
- Creative pieces; for example, poems or drawings about immunology

We want to continue to provide content that is of interest to the breadth of our membership. In particular, we'd love to hear from members from:

- Different areas across the UK and beyond, especially north of London and including the devolved nations
- The spectrum of immunology, both in terms of research areas and of sectors, such as industry and clinical
- A range of career stages, such as postdocs and early career researchers
- Underrepresented communities in science and those interested in building a fairer, more inclusive immunology community

Do you want to contribute to sparking conversations within our community through content that inspires, educates and engages? Get in touch to discuss your ideas and how they might fit in the magazine!

Please let us know a bit about yourself and the topic that you would like to write about. You can express interest by contacting us at **media@immunology.org**.

SOCIETY NEWS

EDI activity grants: promoting equality, diversity & inclusion across immunology

The British Society for Immunology aims to build a fairer, more inclusive immunology community. We know that many of our members actively work towards diversity and inclusion, and we strive to support your efforts. Through our Equality, Diversity and Inclusion (EDI) activity grant scheme, you can be awarded up to £500 to help fund activities and events that accelerate culture change and promote EDI.

Accelerating culture change within immunology

Building a more diverse and inclusive immunology environment has been an important focus for us for many years. In line with our Diversity & Inclusion Framework , we work with and for our members to proactively integrate equity, diversity and inclusion in all aspects of our work, both internally and externally. Part of our work in this area is to support our members in turning their EDI ideas into reality.

With this in mind, we established our EDI activity grant scheme to help fund activities and events that promote diversity and inclusion across the immunology community and the wider biomedical sciences.

Do you need support funding an activity that advances diversity and inclusion in immunology? These competitive grants are designed to help organisations and individuals fund EDI activities and events. For example, they can be used for:

- hiring a speaker for an event
- paying for supplies or promotional materials
- carrying out community outreach

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Inspiration from BSI members supported by our grant

Decolonising and diversifying the immunology curriculum

In the summer of 2021, Dr Bronwen Burton and Dr Caroline McKinnon ran their first decolonising and diversifying project on the biomedical curricula at the University of Bristol. They employed undergraduate students to review material from Year 1 and Year 2 units with significant immunology content with the aim to identify opportunities to diversify the content and highlight areas of good practice. The detailed reports produced led to thoughtful reflection and discussions with the university staff resulting in constructive changes to the curriculum.

As of the summer of 2023, the grant helped to kickstart a much wider programme of work at the University of Bristol to decolonise and diversify the biomedical sciences. This included further work with students to review teaching and learning materials, resulting in wider changes to the curriculum. They have also carried out surveys and focus groups which have revealed valuable insights into attitudes towards decolonising and diversifying the curriculum.

Harnessing the experience of a lifelong career in immunology

EDI are vital principles to ensure everyone can have a fulfilling career in immunology. In a recent workshop, BSI members explored the experiences of senior immunologists to push towards progress in this area.

The presentations discussed harnessing the inherited knowledge of late-career immunologists for the collective benefit of themselves, their colleagues and their organisations, with two speakers who have direct experience of changing landscapes throughout their careers: Professor Ann Ager (Cardiff University) and Professor Liz Glass (The Roslin Institute at University of Edinburgh).

The workshop was organised by Professor Jayne Hope, Dr Omar Alfituri, Dr Sean Wattegedera and Professor Gary Entrican.

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Inclusive research showcase

Dr Harriet Groom of the University of Cambridge ran an event centred around the lack of diversity in STEM research, highlighting the people they are researching rather than focusing on the researchers themselves. For example, despite the predominance of HIV-infected individuals being in Africa, a minority of genetic studies have been carried out on African sequences. Dr Groom and her collaborators have identified a genetic variant that controls the HIV viral load in African sequences specifically.

The event included speakers highlighting similar EDI issues in immunology-related fields speaking about their research and discussing how the immunology community can think in a more diverse way during research and education.

The programme featured an afternoon of talks followed by a mixer event where early career researchers who won the flash-talk competition had the opportunity to meet with the speakers and ask questions.

Promote EDI in immunology!

Applications are now open and will close on Wednesday 8 May. Find out more and apply here: **www.immunology.org/BSI-EDI-grant**.

You can read the BSI Diversity & Inclusion Framework here: **www.immunology.org/diversity-and-inclusion-framework**.

SOCIETY NEWS

IUIS Star: outstanding science, exciting connections and immunology fun

The 2023 International Congress of Immunology (IUIS) Congress took place from 27 November to 2 December in Cape Town, South Africa, uniting immunologists from around the world to discuss cutting-edge science. Here, Dr Laura Pallett, BSI member and former Early Career Representative on the BSI Member Representative Forum, shares her experience as an IUIS Rising Star at the inaugural programme in IUIS 2023.

Early in 2023 I received an invitation from the BSI to apply for the inaugural IUIS Rising Stars Programme, which was to be integrated into the 18th IUIS Congress later in the year. I felt honoured to have been nominated for this programme by the BSI! Driven by the IUIS Scientific Committee, its aim was to raise the profile of outstanding young professionals (those within five years of starting their own independent laboratory) who have made significant contributions to the field and their community.

Nominations were put forward by immunology societies from across the globe together with some direct applicants from US institutions. As part of the application process, we each had to submit a short one-minute video introducing ourselves, showcasing our work and what we were excited to share with the IUIS community. These videos were uploaded alongside the more traditional one-page letter detailing two or three of our greatest career accomplishments, a brief recommendation from a mentor, and two recent publications of our choice. Then, after some deliberation by the IUIS Scientific Committee (chaired by Professor Mirian Merad and Professor Mark Davis), 15 brilliant multinational early career immunologists were selected to come together as the first cohort of IUIS Rising Stars.

Remarkably IUIS 2023 signified a landmark occasion, as the first gathering of this international triennial meeting to be held in Africa (ever!). This special event was marked in suitable style over six days in the Cape Town International Convention Centre (CTICC) in the heart of Cape Town, South Africa with the sub-theme 'from basic to translational immunology and back'. Locally, the meeting was hosted jointly by the South African Immunology Society and the Federation of African Immunology Societies, and comprised a broad range of networking events, symposia and workshops with topics ranging from ageing and immunity, through to immunity to viruses and transplant immunology. To mark the occasion, every evening we were regaled with moving artistic performances from young individuals from the **Amathunzi Arts & Development Centre** (a non-profit organisation located in Khayelitsha) – with one particularly poignant interpretation of the intimate experiences of a group of teenage boys from a Western Cape township with relation to tuberculosis (TB), and the lack of education around infection risk and control.

Scientifically, as Rising Stars, we each had the privilege to present in a plenary session throughout the conference, alongside stellar, world-leading immunologists; instantly giving considerable exposure to our research and the work of our growing teams. However, due to some odd scheduling I presented my work on how tissue resident T-cells adapt in the liver in a session dedicated to TB – which made for a lively (and stimulating) Q&A session! Not only did we have the opportunity to present our work and to network as a cohort discussing things like how to establish a thriving group, but also the IUIS Junior

Committee (a new ECR network: **iuis.org/committees/early-career-committee-ecc/the-iuis-junior-community**) invited us to attend (with ten other nominated individuals) a meet and greet session with Nobel Laureates Professor Jim Allison (discovery of immune checkpoint blockade) and Professor Emmanuelle Charpentier (CRISPR revolution), which was an intimate and frank Q&A session.

If the significance surrounding the location of the meeting and the launch of the IUIS Rising Stars Programme were not enough firsts at this meeting, the IUIS Gender Equality Committee awarded the inaugural winner of the Menarini Prize for an Outstanding Woman Immunologist. This prestigious lifetime career award went to Professor Diane Mathis (Harvard Medicine) who during her inspiring address shared her "scientific surprises" – memorable data from her career – that fuelled her love of research and pleaded with the scientific community to promote more of the positives (and less of the negatives) of a career in research because at the end of the day "we all have fun"! Something that was evidenced in full swing at the conference party at the beautiful Cabo Beach Club with live music from the multitalented immunology band made up of Jim Allison, Eric Vivier, Ira Mellman, Luke O'Neill, Thomas Gajewski, Matteo Iannacone and Jaime Mateus-Tique, with some tasty African food, drumming and dancing.

> 'As Rising Stars, we each had the privilege to present in a plenary session throughout the conference, alongside stellar, world-leading immunologists; instantly giving considerable exposure to our research and the work of our growing teams.'

Dr Laura Pallett,
UKRI Future Leaders Fellow, UCL Institute of Immunity & Transplantation
@ljpally19 @pallett_lab

SOCIETY NEWS

BSI Member Representative Forum: here to represent you

The BSI Member Representative Forum provides our membership with the opportunity to input their thoughts and opinions into the activities of the BSI. Chaired by Professor Jim Brewer, the 18 elected members come from all sections of the Society and act as our 'think tank' for topics such as education and careers, public engagement and communications.

Our most recent online meeting in January was filled yet again with many insightful discussions from our wonderful Forum members, the first of which explored the potential for the BSI to develop a climate change/net zero policy. This preliminary conversation was intended to gauge Forum members' thoughts surrounding such a strategy and what this might look like in practice. Many excellent ideas were shared on this topic including sustainability within the research sector and ideas about how the BSI could make an impact, with highlights on the importance of sustainability at BSI conferences and events. This was a very fruitful discussion and will help to develop future plans in this area.

Next, we moved to discussing what constitutes an Early Career Researcher (ECR) including how this varies depending on the organisation/institution and what this means for ECRs. Members then had the opportunity to share their thoughts and feedback on the research culture session that took place at BSI Congress 2023, which is an important area of our work that we will continue to develop. This was clearly an important issue for our Forum members, and we were very grateful for the helpful viewpoints and opinions that they shared.

Finally, there was some time for members to offer feedback on BSI Congress. This was another invaluable discussion as such feedback is vital in how we formulate future events and ensure that they are tailored to our membership and provide maximum benefit. The meeting was concluded with a summary of recent BSI external affairs and outreach activities that we have been undertaking to ensure we are amplifying the voice of our immunology community.

If you would like to raise any issues for your Member Representative Forum to discuss during a future meeting, please contact your relevant representative – you can find a list on our website at **www.immunology.org/forum**. Alternatively, you can email our Director of External Affairs, Jennie Evans, at **j.evans@immunology.org**, who can pass on the message.

New Associate Editor of *Immunotherapy Advances*

Immunotherapy Advances has recently undergone a reorganisation of its editorial board, moving from Regional Editors to Deputy and Associate Editors each with expertise in key areas of immunotherapy.

We're delighted to welcome a new Associate Editor to the team, Professor Yiwei Chu. Professor Chu is Director of the Biotherapy Research Center and Department Chair of Immunology at Shanghai Medical College, both based at Fudan University in China. She is currently Vice President of the Chinese Society for Immunology.

Her research interests focus on cancer immunology and immunotherapy, especially on translational studies of chimeric antigen receptor (CAR) or bi-specific T cell adaptor (BiTE) engineered T cells for cancer therapy. She is also interested in the role of regulatory B cells in disease, discovering that CD11b^{+} B cells play an important regulatory role in the remission of autoimmune colitis and hepatitis.

Professor Chu has served as an editorial board member for *Immunotherapy Advances* since its launch in 2020 and is a long-standing contributor to the BSI journals.

Find out more about *Immunotherapy Advances*' editorial team: **https://bit.ly/3Q5QDw6.**

Upcoming BSI events

BSI Comparative and Veterinary Immunology Affinity Group with support from The Pirbright Institute
PIONEERING ORGANOIDS AND 3D CELL CULTURES FOR ANIMAL AND HUMAN HEALTH
Tuesday 16 April 2024, Online

BSI Immunometabolism Affinity Group
FUELLING THE IMMUNE RESPONSE III: UK IMMUNOMETABOLISM MEETING 2024
Tuesday 23 April and Wednesday 24 April 2024, Newcastle

BSI Neuroimmunology Group
BSI NEUROIMMUNOLOGY SYMPOSIUM
Wednesday 24 April and Thursday 25 April 2024, Manchester

BSI Wessex Immunology Group
STROMAL-IMMUNE CELL INTERACTIONS IN HEALTH AND DISEASE
Thursday 16 May 2024,Southampton

BSI Midlands Immunology Group
EVERY CELL IS AN IMMUNE CELL: EARLY DRIVERS OF IMMUNE RESPONSES
Friday 14 June 2024, Loughborough

BSI London Immunology Group
VISUALISING IMMUNOLOGY
Friday 12 July 2024, London

View all BSI events at: **www.immunology.org/events**.

Ecoimmunology:

bridging the gap between the lab and the wild

©Dr Iris Mair and Prof Kathryn Else

A Longworth trap used to capture wild mice in the field

The immune system is shaped throughout life by many variables such as diet, and infection history, yet most of our immunological knowledge stems from controlled laboratory experiments that strive to eliminate the variation which will be at play in natural environments. Here, Dr Iris Mair and Professor Kathryn Else introduce the fascinating emerging field of ecoimmunology, which draws from both ecology and immunology to explore how the immune system functions in the real world.

A 5-week long fieldtrip to a remote Scottish island – the Isle of May – is not quite considered standard laboratory practice in the immunology community. But we hope it will become a celebrated new tool in the toolbox of immunological research going forward, connecting the immunology community with the ecology community for an enhanced understanding of what shapes the immune system in a complex, uncontrolled environment.

So, what is special about the Isle of May? It is home to a feral population of house mice, *Mus musculus domesticus* – the same species as laboratory mice. This mouse population has historically been studied in the context of genetics and population ecology. With a 40% recapture rate within one month, the Isle of May mice lend themselves to mark–release–recapture studies. This means immune responses can be monitored within an individual over time. This is especially important given that mounting any immune response needs to integrate with the rest of an animal's physiology and so will vary with, for example, reproductive status, social interactions and environmental stressors. Such a tractable wild mouse system also offers the opportunity of performing interventional studies in a real-world context with the full analytical power of the laboratory mouse immunology.


©Dr Iris Mair and Prof Kathryn Else

Exploring the noise around immune variation

Ecoimmunology combines the seemingly opposing strengths of population/disease ecology and immunology. While ecologists explore the uncontrolled variation seen within a population with the aim to uncover broad associations, immunologists aim to control the experimental variable(s) to understand cellular and molecular mechanisms at play within an individual. There are good reasons why reductionist approaches have been adopted in immunology. By using genetically identical, inbred strains of mice for example, controlling for sex, age and environment, the amount of experimental 'noise' is minimised and results are more reproducible. What if, however, we want to understand what induces this noise, i.e. immune variation? Humans are inherently diverse in genetic makeup as well as 'life-history traits', as ecologists term the 'age- and stage-specific patterns, and timing of events that together make up an organism's life'. Immunologists, whether clinical or pre-clinical, will invariably ask the question of: why do individuals react so differently to the same immunological challenge? Which environmental or host-associated factors determine the immune response? In order to bridge between the immense knowledge from controlled laboratory experiments, and the uncontrolled environment animals and humans live in, ecoimmunology has emerged over the past decades with the hope to accelerate translational research, whether for public health, animal welfare or conservation purposes.

'Dirty' lab mice as a more human-like model system

The laboratory mouse has been the most used immunological model for human health and disease, and has led to incredible discoveries. However, the immune system of inbred laboratory mice resembles more closely that of a newborn than that of an adult human; this is due to a lack of exposure to normal life-history events and a less controlled environment. We call a

'Such a tractable wild mouse system also offers the opportunity of performing interventional studies in a real-world context with the full analytical power of the laboratory mouse immunology.'

mouse without intervention 'naïve', and it is true for its immune system too. 'Dirtying up' laboratory mice simply by co-housing them with mice from a pet shop, allowing the microbiomes to transmit, results in a significantly more mature immune system, resembling more the immune makeup of an adult human. An elegant study by Barbara Rehermann's group tested drugs which had failed in clinical trials due to safety concerns in naïve laboratory mice (in which these drugs had been deemed safe in pre-clinical trials), and in 'wildling' lab mice with microbiomes from wild mice.[1] The 'wildlings' reacted with similar adverse effects as seen in human volunteers, and so could have served as a warning sign in previous pre-clinical studies.

This study highlights that we may be able to render the laboratory mouse model system more relevant to translational science, and thereby increase the efficacy of pre-clinical research, by integrating 're-wilded' lab mouse set-ups into our translational pipeline. Taking this approach one step closer to the real-world complexity, Andrea Graham's group have set up outdoor enclosures to release laboratory mice – of specific age, sex, genotype and intervention – into a semi-wild environment. This allows the tight control of certain host factors while allowing variation in other factors such as microbial exposure, diet, exercise, social contacts and weather. Through this set-up, it has become apparent that a change of environment can make the difference between a mouse being susceptible or resistant to parasite infection.[2]

Going wild for immunology

The immunological study of fully wild animals, including the Isle of May mice, offers one step further in the aim to embrace complexity, by *a priori* allowing all natural variation to be at play. Wild immunology approaches need not just focus on *Mus musculus*. Indeed, important findings have been made in wild populations of non-model organisms including wild sheep, voles, wood mice and buffalo. However, for immunologists, wild house mice are a key enabling factor in the study of immunology. Our tools available for the dissection of immune responses are vast, matched only in human immunology research which of course represents another wild system but with less opportunity for interventional studies.

Using flow cytometry to phenotype the immune cells present in several organs in wild house mice, our own as well as other groups were able to show that wild mice have a much more mature immune system than laboratory naïve mice, as suggested by the 'dirty' lab mouse models. Further, we saw immune cell ratios and phenotypes rarely described in laboratory settings in relevant immunological organs such as spleen, peripheral lymph nodes and bone marrow. It will be fascinating to learn what the drivers behind these are and the functional consequences of these naturally occurring phenotypes. Given that maintaining immune cells and mounting immune responses are costly, in a natural setting where several physiological processes compete and trade-offs are likely, we hypothesise that there are functional benefits for these phenotypes. Not just cell phenotype, but cytokine responses to a parasitic infection – *Trichuris muris* – were distinct in wild mice compared with laboratory mice.[3]

Validating our controlled laboratory models in a relevant natural context is one of the benefits of ecoimmunological research. For example, in collaborative work across lab mice, wild mice and humans, we were able to assert whether differences in findings across lab mice and humans is likely due to the controlled environment, or a species-specific difference.[4] Given the required permits, it is also possible to do interventional studies in wild mice, getting at mechanism: we are currently pioneering immunological interventions in the wild mice and are using wild-to-lab microbiome transfers to dissect the interplay between diet, the immune response and the microbiome in determining susceptibility to endoparasitic infection. Our work also speaks strongly to the 3Rs agenda with our approach involving harvesting multiple tissues from each individual mouse, creating a 'biobank' of material accompanied by rich metadata suitable for future exploration.

Trap sorting in the field

'We are currently pioneering immunological interventions in the wild mice and are using wild-to-lab microbiome transfers to dissect the interplay between diet, the immune response and the microbiome in determining susceptibility to endoparasitic infection.'

Challenges and future directions

Due to its interdisciplinary and exploratory nature, ecoimmunology comes with challenges, especially as the area establishes itself, with 'gold-standards' yet to be defined. Especially for immunologists, one of the greatest challenges lies in the integration of fieldwork into the experimental design. Scarce availability of tools and assays for non-model organisms can limit the immunological detail. One way of circumventing this issue is of course the use of model organisms and introducing real-world variation in a controlled (laboratory), semi-controlled (enclosures, zoos) or uncontrolled (wild population) setting, as exemplified above. Not every immunologist has access to

wild animal systems or the legislation in place to allow their study. However, everyone can take steps towards developing systems which explore real-world immunology by being mindful of context and introducing multiple variables into their study systems such as sex, age, genetic background or previous infection.

Continued growth of this interdisciplinary area requires immunologists and ecologists alike to learn each other's language, to engage in conversation around best practice and a drive to expose students and researchers to a broad spectrum of research approaches and learn from each other. This transcends the engagement ladder from teaching curriculum, meetings and conferences, interdisciplinary funding calls, and journals' openness to publishing papers crossing the boundaries between these two research arenas.

Our upcoming Special Collection on ecoimmunology in the BSI's journal *Discovery Immunology* aims to provide a publishing home for research in this interdisciplinary area, spanning from humans to non-model organisms and laboratory immunology to ecological field studies. Keep an eye on the journal's website and Twitter/X page (@discovimmunol) to read the the latest articles in the collection as soon as they are published.

Ecoimmunology encourages a bridging of two research arenas which are ultimately concerned with individual and population health. We encourage you to consider the context in which your immunological research ultimately plays out, and hope that ecoimmunology can help to generate new discoveries about how the immune system functions in, and interacts with, the natural world.

Dr Iris Mair, University of Edinburgh
Professor Kathryn Else, University of Manchester

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Coming soon: Ecoimmunology Special Collection

Led by Dr Iris Mair & Professor Kathryn Else

Original research and review articles bridging the gap between the laboratory and the real world
academic.oup.com/discovimmunology

Women in immunology

For many years we have supported initiatives that recognise the critical role that women play in science and beyond. We celebrate women's contributions to the field of immunology by shining a spotlight on some of the brilliant women in our committees and our journals. Here, we highlight a selection of interviews.

Professor Deborah Dunn-Walters

BSI Trustee
Professor of Immunology,
University of Surrey

What's your current research focus?
Understanding the development of B cells and B cell repertoires during an immune response. Working across disciplines (bioinformatics, bioengineering) to understand what factors affect B cell development and class switching, how better to measure quality of immunity and what are the key failings in immunity with age?

Why is gender equity in science important to you?
Diversity is important in all things. We need diverse approaches, opinions, points of view. One type of person swimming with the tide, alongside others with the same way of experiencing the world, has limited opportunities for insight and innovation compared to having people with different views, taking different pathways through the currents. Everyone who wants to be a scientist should not be prevented from doing so by something as irrelevant as gender.

What would you say to women and girls who are looking to have a career in science?
Absolutely go for it. Your working life is a long one so you should enjoy it, and science is never boring. Don't be afraid to ask for help from mentors, friends and cheerleaders. When your turn comes, reach around to do some cheerleading yourself.

Dr Divya Shah

BSI Trustee
Research Lead, Site and Systems,
Wellcome

What's your current research focus?
I currently work in the field of infectious diseases. My work involves supporting research in low- and middle-income countries to make sure that they have the right ecosystem in place to enable medical products, such as vaccines and treatments, get to the people that need them most.

Why is gender equity in science important to you?
For me, gender equity is important in all walks of life, including science. By everyone having the same opportunities, it will mean a greater diversity in thoughts and ideas to help advance science, contribute to society and improve the world we live in.

What would you say to women and girls who are looking to have a career in science?
I think it's important to find something that you are interested in and passionate about. For me it was immunology. Try to keep an open mind and remain curious about your work, because you just never know where it's going to take you!

Dr Simone Cuff

Regional Representative – Wales,
BSI Member Representative Forum
Research Integrity Auditor, Frontiers

What's your current research focus?
Something else entirely! I defend the scientific record from fraud and other practices by investigating potential research integrity breaches at a large publisher.

Why is gender equity in science important to you?
Because there are structural aspects in science careers that have clearly contributed to gender inequity. If we can identify and address them in a clear, unbiased way, we can increase equity – not just for women – but also for other marginalised groups who aren't as big a percentage of the population.

What would you say to women and girls who are looking to have a career in science?
What are you waiting for?

More inspiration!

You can read more interviews with BSI committee members and our journal editors here: **www.immunology.org/news/celebrating-women-immunology**.

'Different people will bring different perspectives and skills. Diversity is refreshing and necessary for any science.'

Professor Tracy Hussell, BSI President

The Gut Florists:
microbiome science at Glastonbury

We recently supported a project to engage with the public around the gut microbiome at the Glastonbury music festival, with funding from our BSI Communication and Engagement Grant scheme. Here, the organiser, Dr Rebecca Jeffery, shares how the project was developed, its impact and the importance of opening communications between scientists and the public.

The gut microbiome is the collective term for the trillions of bacteria, viruses, fungi and archaea that colonise the gastrointestinal tract. Far from being inert bystanders, gut microbes are being increasingly implicated in numerous aspects pertaining to human health, such as enteric pathogen infection, obesity and inflammatory diseases. Our growing understanding of the microbiome has been fuelled by the rapid expansion of this research field which has taken place over the past decade. Naturally, this growth has led to increased media coverage, retail and commercial interest, and public awareness of the microbiome and its importance to human physiology.

An ode to gut flora

In June 2023, we were given the unique opportunity to run a public engagement stall on the gut microbiome at the legendary Glastonbury music festival. As the largest greenfield music and performing arts festival in the world, Glastonbury draws a crowd of approximately 200,000 people and serves as a rich and unique environment in which to talk about microbiome science with members of the public.

Our stall focused on discussing the microbiome, what we are learning about host–microbiome interactions in health and disease, and the potential of therapeutic strategies that aim to harness this knowledge to improve health. Our stall was named the Gut Florists in an ode to 'gut flora', a term used interchangeably with gut microbiome, and aesthetically incorporated floral aspects.

To discuss microbiome science in a manner befitting of Glastonbury, we gave away temporary tattoos of the 2023 headliners reimagined as bacterial gut microbiome members by Dr Nick Ilott. The tattoos comprised *Escherichia john* (representing *E.coli*), *Akkermansia monkeys (A. muciniphila)* and Guns N' *Roseburia* (genus *Roseburia*). Perhaps reflective of celebrity status, E. john 'sold-out' in just over two days, and we gave away 1,025 tattoos in total. In addition to the tattoos, we also gave out stickers, had a bean 'bug' zone and ran 'adopt a bug', where stall visitors could choose a pre-made or make their own pom-pom bacteria to accompany them around the festival. In total, we estimate that we had 1,200 visitors to the stall over the weekend.

'Feeding' public interest

We collected visitor responses through multiple-choice questions and a general feedback collection point, both of which indicated positive impacts on those who came to the stall. Discussions with the public often focused on dietary interventions and therapeutic strategies linked to gut health, such as increasing fibre and fermented food intake and taking probiotics, likely reflective of increasing availability and advertisement of microbiome-linked products. Many of the food stands at Glastonbury had aspects linked to gut health, for example kimchi was incorporated into meals sold by multiple vendors, which indirectly created an environment receptive to microbiome-related conversation. In general, while the microbiome and its relevance to health was generally of interest to visitors upon entry, further interactions with stall volunteers led to increased awareness and understanding of the science behind this topic and the current scope and limitations of microbiome research.

A rewarding experience

In addition to the public, running a science communication stall at Glastonbury had many positive impacts on the team of PhD students and early career postdoctoral research scientists involved. Alongside all the efforts that went into organising and bringing concepts into fruition for the stall, discussing science with members of the public was a genuinely rewarding experience for all those involved. We had a broad audience from children to medical professionals, and so conversations were diverse and held on levels relevant to individual scenarios. Overall, discussing the microbiome and science in general at Glastonbury was a great way to open communications between scientists and the public. Gauging public perception of research science will feed into how everyone views their work going forward and highlights the importance of science outreach, especially in a growing field which informs real-world and current commercial and therapeutic avenues.

Dr Rebecca Jeffery, Kennedy Institute of Rheumatology

With thanks to the following from the Kennedy Institute of Rheumatology: Dr Vivian Lau, Dr Ffion Hammond, Elizabeth Jennings, Declan Pang and Alex Grannell for their help in organising and running the stall, and to Dr Nick Ilott for the tattoo artwork.

Snakes and ladders for a healthy brain

Through our BSI Communication and Engagement Grant scheme, we supported the creation of a 'snakes and ladders' game to strengthen understanding of the public around risk factors linked to the likelihood of dementia. In this article, you'll hear from one of the organisers, Professor Jessica Teeling, on the evidence in this area and how it was used to design this engaging game for the public.

Almost one million people in the United Kingdom are living with dementia, with the majority due to Alzheimer's disease. As a person gets older, their risk of developing dementia increases significantly. A recent study[1] showed evidence that an unhealthy lifestyle may also contribute to the likelihood of dementia. The study found that 40% of dementia cases may be due to lifestyle choice and exposure to 'modifiable' risk factors, such as smoking, high blood pressure, poor diet and inactivity. Many of these risk factors involve activation of our immune system which is consistent with our growing knowledge of the links between inflammation and dementia.

With the phrase 'prevention is better than cure' in mind, we applied for a BSI Communication and Engagement Grant from the British Society for Immunology to generate a giant 'snakes and ladders' game, where players learn about lifestyle choices that prevent (ladder) or increase (snake) the risk of dementia.

Game time!

Giant, bouncy, foam dice are used to run though the 'life course' to create an interactive fun element. If a player ends up on a ladder they are rewarded and move up the board, but if a player ends up on a snake, they drop down. The game host explains why certain risk factors will accelerate the development of dementia, and particularly the role of the immune system in this process. At the end of the game, each player receives a take-home postcard version, containing further information and links to websites of the British Society for Immunology and Alzheimer's Research UK who co-funded our game.

Contributing to healthier brains

Evaluation indicates that 80% of participants change their perception of risk after playing the game, showing evidence that this knowledge exchange activity has a positive societal impact. Most surprising risk-factors were not 'flossing teeth' and hearing loss, both topics of active dementia research at the University of Southampton. We discovered that our game is suitable for young and old and by participating in Science & Humanities festivals, dementia café/training events and a school STEM Day, we reached over 5,000 members of the public. Participation at these local events and raising awareness of dementia risk factors significantly enhanced the engagement with our local community and will hopefully contribute to healthier communities and healthier brains.

The team that made this happen

The game was designed by myself and Dr Sofia Michopoulou from the University of Southampton and University Hospital of Southampton. We have a background in immunology and neuroscience and share the ambition to improve the lives of people with dementia by developing methods and accuracy of diagnosis and prognosis of dementia. The project is supported by Dr Jay Amin, who is a consultant in Older People's Mental Health and Dr Vanissa Wanick from the Winchester School of Art. Our project is further supported by game designer/artist Venezia Georgieva, computer expert Dr James Stallwood and Neuroscience Master students from the University of Southampton. This project would not have been possible without the support from the British Society for Immunology and their Communication and Engagement Grant. Apply for yours today!

Is this it for the game?

Not if you ask us! We attracted a further £15,000 to work with artists and computer game designers to generate an electronic 'trivia' version of the game. Watch this space for new special editions to promote healthy brains for all communities.

Professor Jessica Teeling,
University of Southampton
With thanks to Dr Sofia Michopoulou and everyone else involved.

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BSI Communication and Engagement Grant

Sparks interest in and strengthens understanding of immunology, and builds your engagement skills. The next deadline is 1 June 2024. **www.immunology.org/communication-engagement-grant**

Congratulations

This is the section of the magazine where we celebrate the achievements of our members. Our congratulations to all who are mentioned here.

The future looks bright

The 2023 BSI Congress saw the return of our very popular Bright Sparks in Immunology sessions which highlight and recognise exceptional work from PhD students and postdocs. Across both sessions, the standard of presentations was extremely high and fascinating research was shared.

Dr Matthew Sinton (University of Manchester) won the postdoc category for the talk entitled 'IL-17 signalling is critical for controlling subcutaneous adipose tissue dynamics and parasite burden during chronic *Trypanosoma brucei* infection'. Runners up in this session were **Dr Karen Slattery** (Trinity College Dublin) and **Dr Julio Furlong-Silva** (University of Exeter).

Meanwhile, the PhD category was won by **Luc Francis** (King's College London) for the presentation entitled 'Using single-cell transcriptomics to characterise early mechanisms of biologic-induced psoriasis resolution'. Runners up were **Rachel Coulombeau** (Imperial College London) and **Nicole Ong** (University of Dundee). Our congratulations to all the finalists!

BSI Congress poster prizes

Our congratulations to the following BSI Congress poster prize winners: **Dr Sarwah Al-Khalidi** (Beatson Institute for Cancer Research), **Dr Anna Andrusaite** (University of Glasgow), **Gearóid Conlon** (Trinity College Dublin), **Katie Flaherty** (King's College London), **Dr Isobel Mouat** (University of Edinburgh Centre for Inflammation Research) and **Xiawei Zhang** (University of Oxford).

IUIS Rising Stars

This initiative recognises outstanding early career professionals who have made significant contributions to the field and their community. Our congratulations go to BSI member **Dr Laura Pallett** who was selected as an IUIS Rising Star. You can read more about her experience on page 13.

New BSI Honorary Members

At BSI Congress 2023, we were delighted to award Lifetime Honorary BSI Membership to three of our members in recognition of their outstanding contribution to immunology and the Society:

Professor Arne Akbar, Professor of Immunology at University College London and former President of the BSI

Professor Allan Mowat, Professor of Mucosal Immunology at the University of Glasgow and former member of the BSI Trustee Board

Dr Brigitta Stockinger, Senior Principal Investigator and Associate Director at the Francis Crick Institute

EFIS EJI Ita Askonas Prize

Our congratulations to BSI member **Professor Muzlifah Haniffa** and to **Dr Charlotte Scott** for being awarded the 2023 *European Journal of Immunology* Ita Askonas Prize by the European Federation of Immunological Societies (EFIS), which acknowledges women group leaders in immunology.

Travel grant success

93 travel grants were allocated to our members to facilitate their attendance at BSI Congress 2023 in Belfast! Congratulations also to the 10 BSI members who were awarded travel grants to attend the International Union of Immunological Societies (IUIS) conference.

UKRI's Future Leaders Fellow

This scheme aims to develop the next generation of world-class research and innovation leaders. Our congratulations to BSI member and new Future Leaders Fellow **Dr Madvhi Menon**.

BSP President's Medal

Our congratulations go to BSI member **Dr Juan Quintana** for being awarded the British Society for Parasitology President's Medal for 2024, which recognises ambitious rising stars in the parasitology field.

Grifol's ASPIRE Award

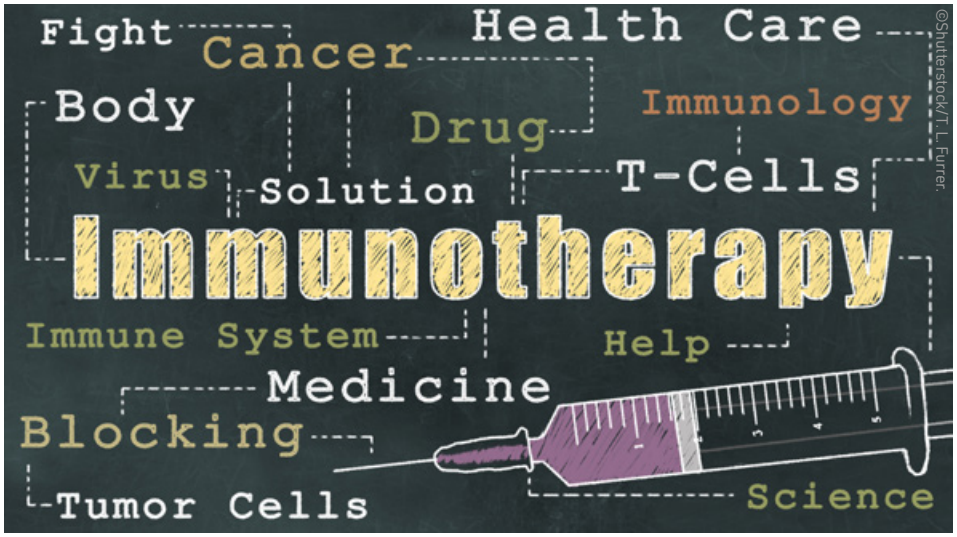
Congratulations to BSI member **Dr Adrian Shields** who won the Grifol's ASPIRE Award at the International Primary Immunodeficiencies Congress 2023, which recognises and supports innovative clinical research projects.

We would love to hear from you about your achievements. Have you or a colleague recently received grant funding, passed your PhD viva or accepted a new appointment? If so, let us know by emailing **media@immunology.org**.

FUTURE FOCUS

Immunotherapy in clinical practice: a new BSI training course

We offer valuable training courses for current and future generations of immunologists to build essential skills and advance in their career. Recently, we have developed a new training course to strengthen the understanding of the science behind immunotherapies for better patient care.



Why have we developed this course?

The last 15 years have seen new forms of immunotherapy introduced into almost every area of clinical practice. Staying ahead of this rapid evolution is crucial. With this in mind, we offer an interactive training programme providing the essential immunology knowledge needed for practitioners involved in the care of patients treated with immunotherapies.

By equipping researchers, clinicians and HCPs with tangible information that they can take back to their clinical or research area, course participants can continue to advance patient care and outcomes in immune-related conditions.

Who is it for?

It is designed to train anyone either working directly with patients and keen to better understand the science, or who has limited contact with patients but would like to understand the clinical application of these therapies better. It is open to all HCPs and clinicians involved in the care of patients receiving immunotherapy, including doctors, nurses, hospital pharmacists, clinical scientists, physician associates and GPs. However, it is also greatly valuable to researchers and industry-based product development teams interested in how these drugs are utilised in clinical practice.

What are the benefits?

Through case-based learning delivered live online, this course will empower participants to:

- Understand how the science directly relates to clinical practice
- Explain how immunotherapy drugs work in simple terms
- Discuss the pros and cons of different treatment options, the chances of success and reasons for drug-switching
- Better understand the safety profile of these drugs and why treatment resistance and immune-related toxicities can occur

Each training day includes foundation sessions on immunology and immunotherapy, followed by a clinical workshop tailored for different clinical areas to put the new knowledge gained into practice.

It is delivered online by engaging experts in the field with two initial workshops – rheumatology and gastroenterology, and more to come! You can find out more and book your place at: **www.immunology.org/immunotherapy-clinical-practice**.

> ‘It is designed to train those working directly with patients and keen to better understand the science, or with limited contact with patients and looking to understand the clinical applications.’

Dates for your calendar!

Tuesday 4 June 2024: Rheumatology
Wednesday 5 June 2024: Gastroenterology
You can sign up for both for a discounted fee but you only need to attend the foundation sessions in the morning once.

Meet the course tutors

IMMUNOLOGY 101: AN INTRODUCTION:
Professor Jim Brewer, Chair in Basic Immunology at the University of Glasgow

IMMUNOTHERAPIES: WHAT YOU NEED TO KNOW:
Professor Allison Green, Professor of Immunology, Hull York Medical School, University of York

GASTROENTEROLOGY WORKSHOP:
Dr Gareth-Rhys Jones, Consultant Gastroenterologist at the Western General Hospital, and Clinician Scientist at the University of Edinburgh

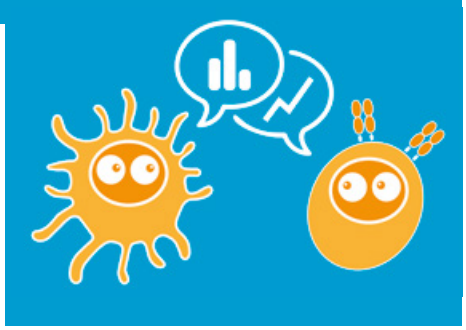
RHEUMATOLOGY WORKSHOP:
Dr Chris Wincup, Consultant Rheumatologist at King’s College Hospital

BSI training programme

We have a range of training courses for the immunology community covering different areas, including our popular bioinformatics programme and specialist patient and public involvement (PPI) training. You can find out more about them here: **www.immunology.org/training**.

BSI London Immunology Group Seminar Series: Connecting early career researchers

The BSI London Immunology Group (BSI LIG) is delighted to be continuing its successful journal-club-style online seminar series for a third season. Led by a team of PhD students and postdocs, the series aims to build a community of early career researchers (ECRs) working at London institutions with a focus on sharing world class research and personal experiences of working in research.



Benefitting from community

The latest iteration of AdvanceHE's Postgraduate Research Experience Study discovered an alarming 43% of postgraduate researchers do not feel part of a community, with 38% feeling no sense of belonging. 41% of respondents felt that there were insufficient opportunities to interact with other postgraduates, sharply underlining the importance of reinvigorating postgraduate research communities.

Over the last two seasons of the seminar series, we have hosted 13 ECR speakers from London institutions including University College London, King's College London, Queen Mary University of London, The Francis Crick Institute and Imperial College London. Within these sessions we have discussed a variety of immunological themes including cancer immunotherapy, autoimmunity, vaccination and allergic inflammation.

Insights from experience

At the end of each session, we invite our speakers to discuss any challenges they faced and unique insights gained through their academic and professional career thus far. Our speakers have shared fascinating perspectives on a wide range of topics, including the transition from PhD to postdoc, fellowship applications and relocation abroad.

Kevin Ng is a Postdoctoral researcher and Schmidt Scientific Fellow working in Gabriel Victora's lab at the Rockefeller University. Kevin shared a superb insight into his previous work at the Crick and his paper discovering that antibodies against endogenous retroviruses promote lung cancer immunotherapy,[1] talking us through the process, from the work's conception over drinks with colleagues to its publication in *Nature*. Kevin also shared his experience applying for fellowships and moving to New York to continue his exciting research into antibody responses.

Patricia Ogger is a Marie-Sklodowska-Curie Postdoctoral fellow at the Max-Planck Institute for Biochemistry (MPIB) and gave a superb talk on how type I interferon receptor signalling deficiency results in dysregulated innate immune responses to SARS-CoV-2 in mice;[2] work completed as a postdoctoral researcher at Imperial College London. Following her talk, Patricia gave us an insightful walkthrough of her experiences publishing her work, applying for fellowships and moving to the MPIB in Munich.

Far-reaching engagement

While this series places a spotlight on the work and experiences of ECRs in London, our community stretches far beyond the M25! Researchers from across the UK and as far afield as Poland, Italy and Spain have tuned in to listen and engage with our speakers.

Beyond the current journal-club-style format of our seminars, we are eager to trial one-off seminars or masterclasses. These sessions may involve an ECR overviewing a technology or method that they have mastered through their research, or a panel of ECRs could be invited to discuss career-related topics such as building presentation skills, coping with stress and effective time management.

We are excited to be putting together our third series with an even greater emphasis on experiences as researchers. This series is run by ECRs for ECRs and aims to foster a supportive community that members can engage with and feel a part of. We are proud to be led by the ECR community and welcome any feedback and suggestions to help us better cater this series to the needs of ECRs. We are also always looking for speakers for future series. If you or someone you know is an ECR and has recently published work they completed at a London institution, please get in contact with the organising committee at **ligbsicommittee@gmail.com**.

BSI London Immunology Group ECR Representatives
William Traves (Imperial College London), Dr Kyle Mincham (Imperial College London), Stephanie Kucykowicz (University College London), Dr George Finney (University College London), Johannes Schroth (Queen Mary University of London) and Katie Flaherty (King's College London).

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Get involved!

The BSI LIG Seminar Series take place fortnightly on Thursdays via Zoom.

BSI LIG page: www.immunology.org/london-group

@London_immuno @LIG_Seminar

ligbsicommittee@gmail.com

Immune Update

The BSI journals

A round-up of new research published in the British Society for Immunology's official journals written by ECR board members of *Immunotherapy Advances* and *Clinical & Experimental Immunology*. Members benefit from discounted publication fees and have access to these journals free of charge at **www.immunology.org/journals.**

Discovery Immunology

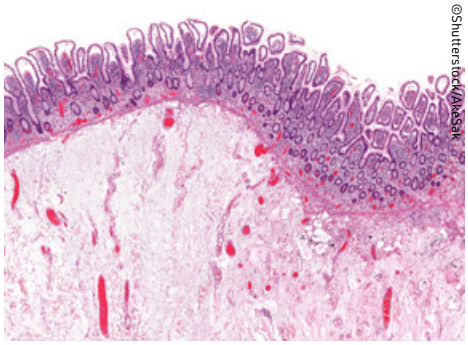
A novel *in vitro* model of the small intestinal epithelium

The interactions between dendritic cells (DCs) and the intestine are important for immune homeostasis in the gut. However, these interactions are difficult to study *in vitro* due to the lack of complexity in the current models.

In this study the authors created an *in vitro* model using small intestinal organoids (enteroids) and gut-like DCs. Firstly, DCs with gut-like characteristics were generated from bone marrow cells supplemented with GM-CSF and all-trans-retinoic acid (RA). These gut-like DCs were then added to enteroids in a co-culture system. The authors found that enteroids suppressed retinaldehyde dehydrogenase (RALDH; important for the function of DCs in the gut) activity in the gut-like DCs, which could be reversed by continuous exposure to GM-CSF and RA.

These observations shed some light on how the intestine directly modulates the function of DCs in the gut. In addition, this new *in vitro* model may be useful for further investigation of the crosstalk between intestinal epithelium cells and gut-like DCs.

Summary by Dr Kirsten Ward Hartstonge, University of Otago, New Zealand



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Johnston *et al.* 2023 *Discovery Immunology* **2** kyad018 **https://doi.org/10.1093/discim/kyad018**

Clinical & Experimental Immunology

Unravelling Treg activity in a common childhood immunodeficiency

Transient hypogammaglobulinemia of infancy (THI) is a common humoral immunodeficiency, characterised by a spontaneous resolution in early childhood. THI has been associated with transiently elevated numbers of regulatory T (Treg) cells. Tregs play a pivotal role in the maintenance of immune self-tolerance, while their abnormalities are linked to autoimmune and inflammatory diseases.

Rutkowska-Zapala *et al.* performed transcriptome analysis of Treg cells isolated from THI children at two time points: during (THI-1 group) and in a resolution phase (THI-2 group) of hypogammaglobulinemia, in comparison with age-matched healthy controls. The Treg transcriptome profile varied mostly between THI-1 and THI-2, and THI-1 and control groups. Most of the differentially expressed genes were associated with Treg development and functions, including Treg master functional regulators and TGF-β signalling pathway mediators. The results suggest that, along with THI symptoms withdrawal, the Treg transcriptome profile returns to that observed in healthy children.

These findings show that the pathomechanism of THI is associated not only with transiently elevated Treg cells numbers, but also with their enhanced regulatory (inhibitory) functions. This paper sheds light on the role of Tregs in the course of hypogammaglobulinemia.

Summary by Dr Marzena Lenart, Jagiellonian University, Poland

Rutkowska-Zapała *et al.* 2023 *Clinical & Experimental Immunology* **214** 275–288 **https://doi.org/10.1093/cei/uxad116**

Immunotherapy Advances

JAK inhibitors may offer hope for patients with STAT3 gain-of-function disease

STAT3 gain-of-function (GOF) disease is an inborn error of immunity with an early-onset immune dysregulation phenotype, including lymphoproliferation and polyautoimmunity. A study conducted by Kaneko *et al.* aimed at evaluating the efficacy of targeted therapy of STAT3 GOF disease by Janus kinase inhibitors (JAKi).

They enrolled four Japanese patients with this condition and administered tofacitinib in three patients and ruxolitinib in one. An improvement of symptoms was observed in all patients; the three patients receiving tofacitinib showed an alleviation of skin rash, fever, joint pain and liver dysfunction. The patient receiving ruxolitinib also experienced a resolution of small intestinal inflammation, pneumonia and chronic liver disease.

They confirmed this efficacy by using FP6-stimulated Epstein-Barr Virus- immortalised Lymphoblastoid Cell Lines (EBV-LCLs) acquired from three patients and three healthy controls. Regardless of the site of the variants, co-incubation of these cells with ruxolitinib led to suppression of STAT3 phosphorylation, but this effect was less significant with toficitinib.

These results show that JAKi may be an effective targeted treatment for patients with STAT3 GOF disease.

Summary by Dr Mahnaz Jamee, Leiden University Medical Center, Netherlands

Kaneko *et al.* 2023 *Immunotherapy Advances* **3** ltad027 **https://doi.org/10.1093/immadv/ltad027**

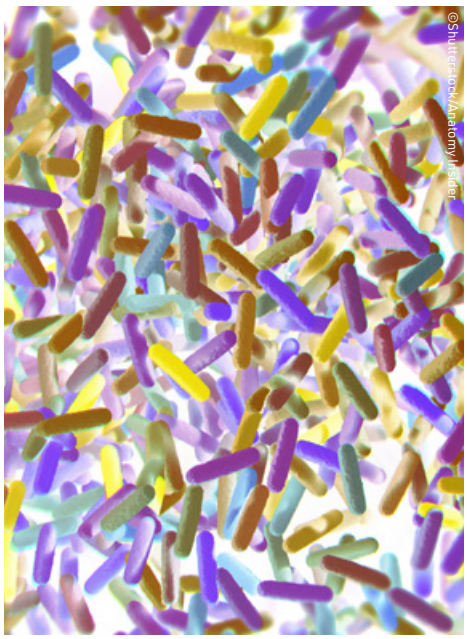
Around the journals

A summary of some of the latest papers from the world of immunology written by ECR board members of our official journals and the BSI Editorial Coordinator.

A dynamic atlas of immunocyte migration from the gut

Changes in the gut can affect systemic immune responses but the mechanisms are still poorly understood.

Galván-Peña *et al*. used Kaede photoconvertible mice and single-cell RNA sequencing (scRNA-seq) to map the migration of immune cells from the colon at homeostasis and found the gut is a source of immune cell populations to a much greater extent than previously realised. These cells are influenced by the microbiota in the gut, enter circulation carrying a gut-imprint and migrate to different peripheral tissues, in both healthy and diseased mice. There is constant emigration under steady state to a wide range of tissues.



The authors found that B cells are the most abundant of the gut-derived cells along with specific subsets of activated T cells, both $CD4^+$ and CD8, γδ T cells and IEL-like cells. Interestingly, in intestinal inflammation the gut-systemic migration pattern changes within two days and the effects are detectable weeks later, including in sites of peripheral inflammation.

These findings may have broad consequences for the study of inflammatory disease and cancer.

Galván-Peña *et al*. 2024 *Science Immunology* **9** DOI: 10.1126/sciimmunol.adi0672

Summary by Dr Daniel Johnston, Trinity College Dublin, Ireland

The delicate balance of FLT3-L-dependent dendritic cells to control tumour immunity

Dendritic cells (DCs) are key players of anti-tumour immunity by activating effector T cells. Yet, they are also crucial in generating regulatory T cells (Tregs) to maintain tissue homeostasis.

In the article by Régnier *et al*., the dependency of DCs on growth factor FLT3-L (FL) was utilised to study how DCs in the tumour microenvironment contribute to anti-tumour immunity. As expected, FL overexpression in B16 tumours led to tumour rejection and better survival. Surprisingly, absence of FL in B16 tumours also resulted in tumour growth suppression and prolonged survival. Further studies delineated these paradoxical findings: firstly, at baseline level, DCs recruited Tregs that allowed B16 tumour growth, whereas in the absence of FL, Tregs were depleted, thus unlocking effector T cells. Secondly, in the excess of FL, DCs favoured recruitment of natural killer (NK) cells, and together with effector T cells, rejecting tumour outgrowth. This paradoxical effect was also seen in different cancer types and intriguingly, patients with combined high FL and low Treg signatures survived the longest.

This study suggests that DC-based cancer therapies require concomitant Treg silencing and NK cells activation.

Régnier *et al*. 2023 *Cell Reports Medicine* **4** 101256 DOI: 10.1016/j.xcrm.2023.101256

Summary by Dr Alsya Affandi, Amsterdam UMC, Netherlands

UNC93B1 variants underlie TLR7-dependent autoimmunity

Christine Wolf *et al*. studied early-onset systemic lupus erythematosus (SLE) in four young patients from two families. Their investigation identified two mutations in the UNC93B1 gene, which regulates the nucleic acid sensing Toll-like receptors (TLRs) TLR3, TLR7, TLR8 and TLR9 that are essential for antiviral immunity.

Here, researchers found that cells carrying the UNC93B1 variants exhibited heightened production of inflammatory cytokines when stimulated by TLR7/TLR8 agonists, but not TLR3 or TLR9 agonists. Cryo-EM structures revealed that the E92G mutation destabilises UNC93B1 and weakens its binding to TLR7. The other mutation, R336L, may potentially disrupt TLR7 termination, leading to hyperactivation. TLR7 overactivation causes constant type I interferon signalling, leading to an immune attack and inflammation.

Their study suggests that blocking the overactive UNC93B1/TLR7 pathway may offer effective treatment for SLE and related autoimmune disorders.

Wolf *et al*. 2024 *Science Immunology* **9** DOI: 10.1126/sciimmunol.adi9769

Summary by Abigail Joyce, BSI Editorial Coordinator

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