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Immunology News

Diversity & Inclusion

SPECIAL EDITION

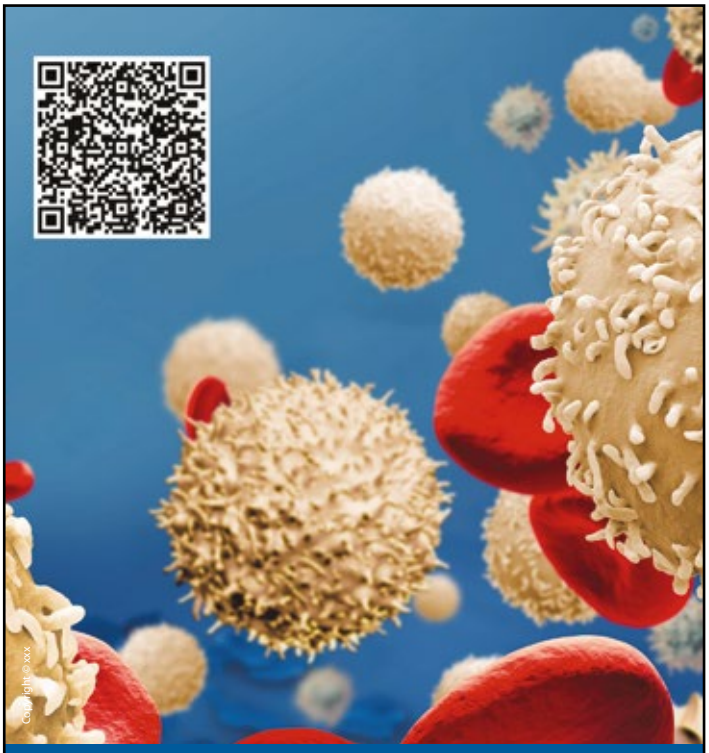
The STEM Village:
LGBTQ+ in STEM

Lifelong careers:
the need for EDI

Inclusive research:
representing all individuals

British Society for immunology

www.immunology.org



Welcome to this special Diversity & Inclusion edition of *Immunology News*! We're thrilled to be putting the spotlight on important equity, diversity and inclusion (EDI) issues, sharing how the Society is pushing for progress and the inspiring efforts of our members.

The BSI represents a vibrant and diverse community of immunologists – we're here to provide a safe and inclusive platform for all those working in the field. We know that we can only drive innovation and unleash the full benefits of immunology in health by creating an environment in which people from different backgrounds, experiences and perspectives can feel welcomed and valued.

In this edition you can learn about our new Diversity & Inclusion Framework which outlines how we will work with our members and the wider community to build a fairer, more inclusive environment. You can also hear about some of the impactful projects our members have been carrying out to promote EDI in immunology, including how our EDI activity grant scheme has offered vital support in making them a reality.

We're also very proud to present the new BSI committee members, including our President-elect, Professor Tracy Hussell. We're very much looking forward to working with them and our wonderful membership to achieve our mission and foster a culture within immunology that ensures fair treatment and opportunity for all.

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VIEW FROM …

THE CHIEF EXECUTIVE

Welcome to another stunning issue of *Immunology News*! Many of you will have seen that we recently launched our new Diversity & Inclusion Framework, and I hope you have had a chance to read it. We are really excited about this at the BSI because it consolidates the efforts that we have already made but also, importantly, sets out a path for how we are going to do even more to support equity, diversity and inclusion (EDI) in our community.

Details of our new framework can be found on pages 8–9 and you will see that this issue is peppered with some inspiring initiatives that we have been able to support our members with. These include:

- The STEM Village: inspiring & embracing LGBTQ+ people in STEM. We are providing webinar support for the activities of this valuable platform. Turn to page 16 to hear from the founder, Dr Matthew Sinton, where he talks about addressing challenges and improving visibility for the LGBTQ+ community.
- Harnessing the values of EDI for supporting lifelong careers in immunology – on page 18 you can read about how one of our EDI activity grants funded a fantastic workshop focused on channelling the knowledge of senior immunologists to help those earlier in their career.
- Inclusive research: making science represent all individuals – another workshop funded by our EDI activity grant scheme has highlighted the importance of research cohorts being representative of all individuals, considering EDI in science from all angles including the research subjects (page 20).

These are just a few of the many wonderful examples of how the BSI and our members have been striving to improve EDI within our community, and I know that there will be many more!

On the Diversity & Inclusion Framework itself, I am delighted that we have been able to take a big step in the right direction on EDI. As noted in our 2021–2025 strategy, we said we will maintain the BSI as a sector-leading organisation and a crucial part of that is through embedding EDI in all of our activities. Through consulting our membership, inviting feedback and researching best practice in other organisations, we worked with the BSI Forum and Board of Trustees to develop this framework. I hope that you agree that it paints an inspiring picture of how we will increase our focus and initiatives on EDI, taking positive action to create meaningful change. Working with our membership is at the heart of everything we do, and our EDI work is no exception. EDI is not a single one-off initiative that we deliver and then tick a box; for us to be successful and for our community to reap the rewards of what EDI brings, we need to ensure that it is fully integrated and commit to a process of continual improvement.

Only through a concerted effort with EDI will we be able to see immunology and the work of all our members thrive at the highest level. We are proud of what we and our members have done to date. We are proud of the framework we and our members have produced – we must do more together. And we look forward to working with you all on this so that we go from strength to strength!

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

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SOCIETY NEWS

New BSI committee members

Following our recent nominations call for positions on the BSI Board of Trustees, Forum and a Secretary role, we are pleased to announce the following appointments. The turnout for these elections was over 16% of the BSI membership; thank you to everyone who voted. We would also like to thank all the other fantastic candidates who stood for election.

Board of Trustees

TRACY HUSSELL
BSI President

Director, Lydia Becker Institute of Immunology and Inflammation, MCCIR, University of Manchester

Tracy will commence her term in December 2022.

JAMES BREWER
BSI Chair of Forum

Professor of Basic Immunology & Head of the Centre for Immunobiology, University of Glasgow

James will commence his term in December 2022.

Secretaries

TERESA LAMBE
BSI General Trustee

Calleva Head of Vaccine Immunology & Professor of Vaccinology & Immunology, University of Oxford

Teresa will join the BSI Board of Trustees in December 2022.

MATTHEW SIGGINS
BSI Early Career Trustee

Research Fellow, Imperial College London

Matthew will join the BSI Board of Trustees in July 2022.

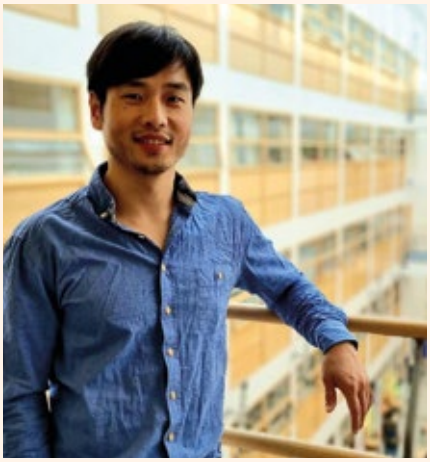
MATTHIAS EBERL
BSI Public Engagement Secretary

Professor of Translational Immunology & Joint Academic Lead for Public Involvement and Engagement, School of Medicine, Cardiff University

Matthias will commence his term in January 2023.

SOCIETY NEWS

Forum



PATRICK CAO
BSI Forum Scotland Representative

Lecturer, Institute of Medical Sciences, University of Aberdeen

Patrick will join our Forum from January 2023.

GARETH-RHYS JONES
BSI Forum Clinical Representative

Wellcome Trust Clinical Research Career Development Fellow & Honorary Consultant Gastroenterologist, University of Edinburgh & Western General Hospital

Gareth will join our Forum from July 2022.

JULIA MAKINDE
BSI Forum England Representative

Senior Manager Clinical Immunology at IAVI & Honorary Lecturer, Imperial College London

Julia will join our Forum from July 2022.

REBECCA MCLEAN
BSI Forum Veterinary Representative

Senior Postdoctoral Researcher, The Pirbright Institute

Rebecca will join our Forum from July 2022.

GEORGE ROBINSON
BSI Forum Early Career Representative

Postdoctoral Research Fellow, University College London

George will join our Forum from July 2022.

You can read the full candidate statement in the members' section of our website at **www.immunology.org/bsi-new-committee-members-2022**. We welcome them all to the BSI and look forward to working with them to provide a strong voice for immunology.

The British Society for Immunology is here to represent all immunologists working in science, healthcare and industry. Our committees are vital in leading our work, making numerous decisions about how the Society is run, what activities we focus on and what support we provide to members. Find out more about our committees here: **www.immunology.org/about-us/our-people/governance**.

SOCIETY NEWS

Our Diversity & Inclusion framework

The British Society for Immunology Diversity & Inclusion Framework outlines our commitment to how we are going to work with our members and community to ramp up our equity, diversity and inclusion (EDI) work and respond to members' needs.

Embedding EDI in all our activities is one of the cornerstones of our five-year strategic plan (**www.immunology.org/strategy**) to drive scientific discovery and to make a positive impact on health. Our aim is to foster a culture within immunology that ensures fair treatment and opportunity for all.

Building on past and ongoing activities developed with and for our members to create a fairer, more inclusive immunology community, we have begun setting a long-term plan of action for diversity and inclusion at the BSI.

A diverse and inclusive immunology environment can change the world for the better

Equity, diversity and inclusion (EDI) is vital to the future of immunology and of the BSI. Immunology has the potential to deliver huge health benefits for society, but it can only change the world for the better with deliberate action towards a fairer, more inclusive field. Our Diversity & Inclusion Framework aims to showcase our renewed commitment to ramping up our EDI efforts to foster a culture within immunology that ensures fair treatment and opportunity for all.

To us, 'diversity' means appreciating, respecting and embracing all the unique characteristics that make people who they are, and 'inclusion' is about creating an environment in which people feel welcomed and valued. All those working in immunology, irrespective of age, gender, ethnicity and any of the other infinite factors that distinguish individuals from one another, belong in our BSI community. To realise our vision of better health for all through immunology we need to build a fairer, more inclusive immunology community, with and for our members.

The Society's journey so far...

Building a fairer, more inclusive immunology community has been an important focus for us for many years. We work with and for our members to proactively integrate equity, diversity and inclusion in all aspects of our work, both internally and externally.

We strive for EDI in many ways. However, we know we must do more. In the first part of our framework, we showcase some of the existing projects we will build on with this framework and celebrate the achievements and progress made to date.

Next steps to fulfil our mission

Immunology needs more diversity and inclusion to continue to thrive. Our starting point has, and will continue to be, an open and honest two-way dialogue with our members about the issues they face in their lives as immunologists. Through this continuous communication, we have begun setting an effective plan of action for diversity and inclusion at the BSI.
In the second part of our framework, we highlight some of our future focal areas that will build on our current activities and the well-established lines of communication with our membership.

Delivering our promise to you

Our Diversity & Inclusion Framework has been developed in consultation with the BSI Board of Trustees and thanks to the helpful discussions with our membership's Forum. Our committees will work with BSI staff to deliver this framework and apply the principles of EDI in every aspect of the organisation.

We will report on our progress on a regular basis and continue to listen to the emerging challenges and opportunities of our diverse membership.

Our open-door policy

We believe in an open and honest dialogue with our members about the issues they face in their lives as immunologists. If you have questions, comments or feedback on this framework or diversity and inclusion matters, we would love to hear from you. Please contact us at **inclusion@immunology.org**.

Thank you to all members and partners for their ongoing support, engagement and enthusiasm for our Society and its activities.

We hope that this framework strengthens everyone's commitment to EDI and encourages our wonderful members to continue their inspiring efforts towards a fairer, more inclusive world of immunology.

Professor Arne Akbar, President of the British Society for Immunology, said:
"The immense passion and dedication we see in all of our members has played a critical role in advancing our understanding of the immune system and delivering real benefits to global health. However, for immunology to unleash its full potential and maintain the incredible transformation we've seen in recent years, we must move forward in our journey to becoming a truly diverse and inclusive community.

"The British Society for Immunology's Diversity & Inclusion Framework begins our long-term plan of action in this area which, together with the support from our community, will enable a fair and equal working environment and better health for all through immunology."

Find out more

Read our full Diversity & Inclusion Framework on our website at **www.immunology.org/bsi-diversity-inclusion-framework**.
If you have any feedback, please email **inclusion@immunology.org**.

SOCIETY NEWS

BSI finances explained: how we fund vital support for our members

The British Society for Immunology acts as a focal hub for the immunology community, supporting and empowering immunologists to drive forward scientific discovery and application together. Over the past 60 years we have carried out countless activities to benefit both our members and the wider immunology community and, as outlined in our 2021–2025 strategy (**www.immunology.org/strategy**), we plan to continue building and significantly expanding our work to make a positive impact on health. Ensuring the financial stability of the BSI is crucial to the delivery of our ambitious plan. Here, our Finance Director, Otto Balsiger, spotlights how the Society is funded and our plans to maintain its financial health over the next five years.

Where do we spend our income?

Over the last few years, we have significantly expanded our work to provide valuable support for our community and we're set to continue in this journey as we deliver on our current strategy.

Most of our income is used to generate opportunities for our members to connect with others, establish collaborations and grow their skill sets in a supportive environment. Our flagship event, the BSI Congress, together with the annual programme of our Regional & Affinity Group meetings, is by far our biggest cost. This is followed by services for our members which include membership, awards and grants, and our careers and education support. For example, last year we significantly expanded our career development offering (**www.immunology.org/bsi-career-development-offering**) with various activities including our new grant scheme, the BSI Career Enhancing Grants, which provides flexible funding for any type of career-related activity to help immunologists advance their professional development.

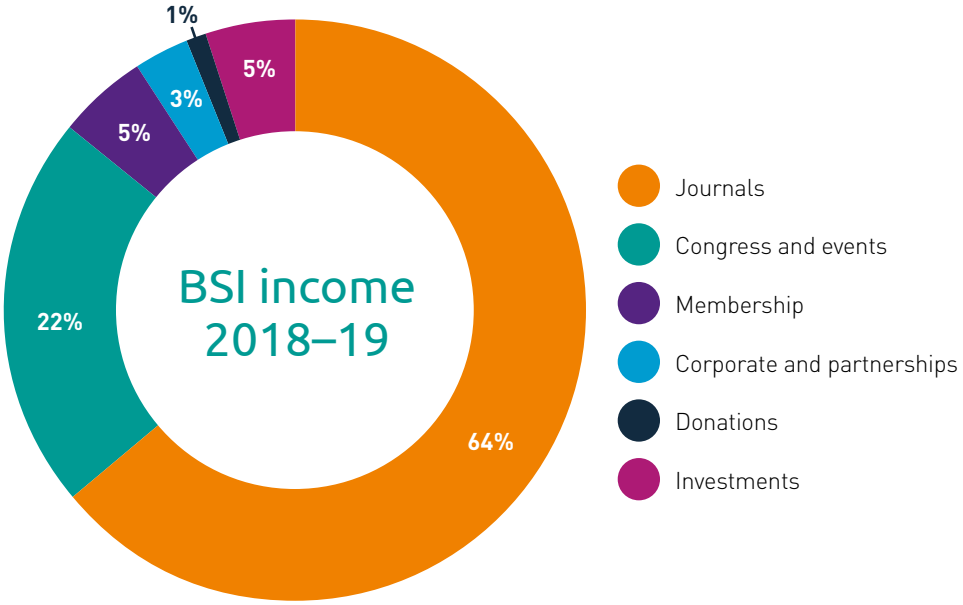


Figure 1. Illustration of the typical composition of the BSI income for a year in which BSI Congress is held.

We also carry out numerous activities which harness the knowledge generated by our membership to influence the outside world and enable immunology to deliver positive outcomes for health. Our activities in the policy and public engagement area have increased following the receipt of funding for various projects detailed in this article. The last main area of cost is the publishing of our scientific journals which facilitate innovation and research dissemination.

How are we funded?

Figure 1 shows the Society's income for the 2018–19 financial year which illustrates the typical composition of income for a BSI Congress year (which typically happens every two out of three years) over the last decade.

Our established journals at the time provided the lion's share of income (64%). Our journal income has provided the BSI with a large stable income stream for many years subsidising charitable activities across the Society and the important support we provide to our members. This is followed by our Congress and events income at 22%.

The remaining 14% of our income is split between membership, our investments and our corporate and partnership work. In a typical year, membership fees from our 4000+ members provide around 5% of our income, which does not cover the cost of services we provide to members, such as grants, conferences and discounted meetings and career support.

The last three years have brought huge changes to the Society's funding. Figure 2 illustrates our projected budgeted income for 2022–23, which is significantly higher than 2018–19, but we project will show a distinct change in the diversity of the main income streams.

The most noticeable change is the significant reduction in journal income following changes in our publishing portfolio. As part of our income diversification efforts to secure the financial future of the BSI, in 2021 we evolved our publishing strategy to focus on developing journals wholly owned by the Society which will allow us to support current and future generations of immunologists (see **www.immunology.org/news/announcement-changes-bsi-publishing-portfolio**). These changes

SOCIETY NEWS

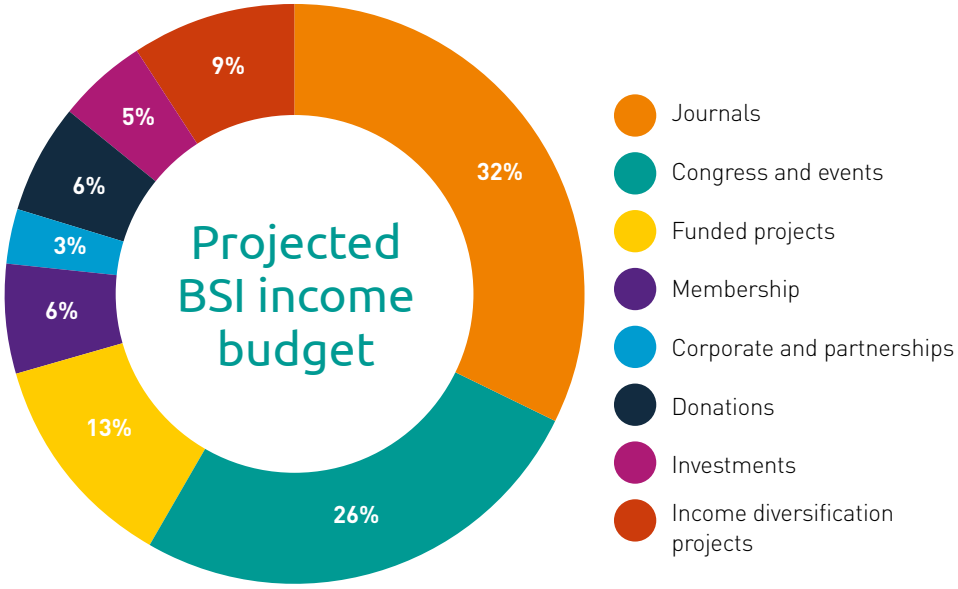


Figure 2. Illustration of the expected composition of the projected BSI income.

resulted in our current family of journals with three excellent platforms for research dissemination: *Discovery Immunology*, *Immunotherapy Advances* and *Clinical & Experimental Immunology*. As we have been working to reduce our reliance upon journal income to widen our revenue sources, next year our journals will bring in approximately half of the income we received from our publishing portfolio in 2018–19. This was expected and our income is now more diverse showing two new large income streams which better support the financial security of the Society.

The first income stream refers to funded projects which reflects the expansion of our activities to support wider immunology research efforts and the income received for our work on partnership projects including National Core Studies Immunity and the new CARINA network on the immunology of ageing. Funded projects are an important new source of income for the BSI which is expected to contribute over 10% of our income next year. We are planning to develop this area further over the next few years as we build relationships with our project partners and funders.

The second new income stream is currently under development for launch in the next financial year. We are very excited to share some new projects which will generate new sources of income to support our members soon.

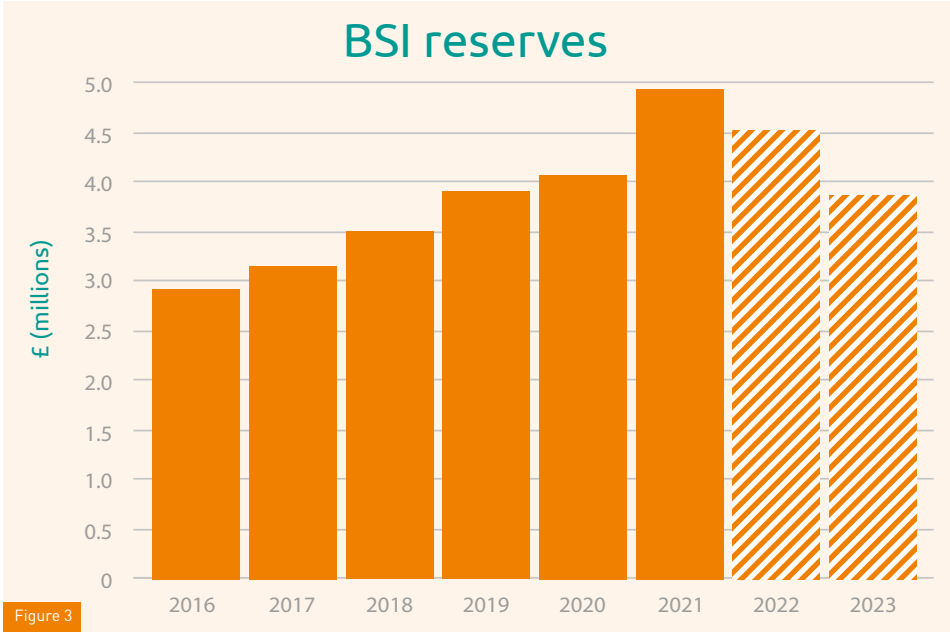


Figure 3

How have we been securing our financial stability?

To deliver our ambitious strategic aims, we need to maintain the BSI as a sector-leading organisation, and one of the key enablers to do so is our financial sustainability.

Over the past decade our journals provided a high level of stable income and, together with the strong performance of our investments, we built up reserves of almost £5m last year.

We have well thought out plans to use some of our reserves to further support our members through new initiatives such as our Career Enhancing Grants (**www.immunology.org/bsi-career-enhancing-grants**) and to develop new sources of income for the Society that will in turn fund other important activities to benefit our members.

The development of new income streams is not a quick process as there is often a delay between investment and return requiring the use of reserves. They have been built up for exactly this purpose and their use has been carefully planned to ensure they are used in the most effective way while ensuring the financial sustainability of the BSI.

Otto Balsiger
BSI Finance Director
Email: **o.balsiger@immunology.org**

Find out more

More financial details can be found in our latest Annual Report and Accounts: **www.immunology.org/about-us/annual-review-and-accounts**

SOCIETY NEWS

BSI Forum: here to represent you

The BSI Forum is the place where the voice of our membership is fed into our activities. Chaired by Professor Ann Ager, the 18 elected members come from all sections of the Society's membership. Their role is to act as our 'think tank' on issues relating to education and careers, public engagement, policy and public affairs as well as communications. Forum aims to help the Society in implementing its strategic plan by providing a mechanism by which the voice of the membership can be fed into activities.

The April Forum meeting, which took place virtually, was particularly engaging with all members voicing their views on a range of topics, from the future of postgraduate research and training needs of the immunology community to recent changes in working with animals in research.

A major focus for Forum members in this meeting was informing the BSI's submission to the UKRI consultation on their 'New Deal for Postgraduate Research', a long-term piece of work that aims to improve the experience and quality of postgraduate research training in the UK. Topics raised included the benefits and drawbacks of different funding models, ways to embed equality, diversity and inclusion, and the importance of channels for two-way feedback between supervisors and students. This discussion will form the basis of the BSI's response to the UKRI consultation.

Next, there was an interesting discussion to identify the various training needs of different sectors of the immunology community. A range of options were highlighted, including skills such as leadership and teamwork, and specific lab techniques, which will be fed into future training programmes that we will launch as part of our strategy. Then, Forum members shared their experiences on the impact of the pandemic on animal research and recent changes to inspection procedures, an important topic which we will highlight in discussions with relevant external partners and focus groups.

Finally, Forum took an overview of all the external affairs and outreach activities that the BSI has undertaken over the past few months including our policy, public engagement and partnership work to communicate the voice of our immunology community to the wider world.

The BSI Forum and its members are here to represent you. If you would like to raise any issues for Forum to discuss at an upcoming meeting, please do contact your relevant Forum member – you can find a list of your representatives 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 the message on.

Find out more:

Six new candidates were elected to positions on Forum in our committee elections this year. Find out more about your new representatives on page 6.

UPCOMING BSI MEETINGS

We have lots of upcoming meetings covering a vast array of immunological topics. Find out more at **www.immunology.org/events.**

BSI meetings

BSI SUMMER SCHOOL 2022
11–13 July 2022
Coventry, UK

BRITISH SOCIETY FOR IMMUNOLOGY CONGRESS 2022
5–8 December 2022
Liverpool, UK

BSI Regional and Affinity Groups

BSI Immunosenescence Affinity Group
IMMUNE SURVEILLANCE IN THE AGEING MICROENVIRONMENT
3–4 October 2022
Sheffield, UK

First content of *Discovery Immunology*

Our brand-new journal *Discovery Immunology* has published its first-ever content! Through our latest Open Access journal, we're proud to continue our mission to disseminate scientific research for the benefit of the immunology community and society as a whole.

The first published articles include an insightful review on how unconventional modes of peptide-HLA-I presentation change the rules of TCR engagement, from researchers at the Cardiff University School of Medicine and Immunocore. It also features a cutting-edge study that shows how NKG2D regulates a population of pro-tumour γδT cells capable of producing IL-17A, from Imperial College London and the University of Glasgow.

Discovery Immunology is edited by Professor Simon Milling supported by an international editorial board of experts from academia and industry. It publishes high-quality articles describing novel mechanisms controlling the immune response, including basic aspects of cellular or molecular immunology, immune mechanisms of infection, inflammation and pathogenesis, and immunology underpinning novel therapeutics. The journal is currently seeking submissions which will be part of the inaugural issue coming out this year!

Discovery IMMUNOLOGY

As an official journal of the BSI, profits derived from the journal are invested back into the Society, providing major financial support for our charitable activities. BSI members receive a 20% discount on Open Access publication fees. You can support the vital activities of the BSI by contributing your work to *Discovery Immunology.*

Visit **academic.oup.com/discovimmunology** to find out more and follow **@discovimmunol** for the latest updates.

The STEM Village: inspiring & embracing LGBTQ+ people in STEM

The STEM Village is an important platform designed to improve visibility of the LGBTQ+ STEM community around the world (**www.thestemvillage.com**). They actively work to provide opportunities for LGBTQ+ people to showcase their research to the wider fields of science, technology, engineering and maths. Here, Dr Matthew Sinton, founder of The STEM Village and Postdoctoral Research Associate at the University of Glasgow, talks about how the platform was founded, some of the challenges faced by the community and what he wants to accomplish with the seminar series.

The first gay village in the world was born in 1920s Berlin, and as homosexuality was decriminalised across the world, during the 20th century, villages became more frequent and visible. The gay villages developed as places where LGBTQ+ people could build their communities and be open about their sexuality and gender. Despite modern legal protections for the LGBTQ+ community in the UK, there is often still stigma attached to being open about sexuality and gender in the workplace, and this is prevalent in science, technology, engineering and maths (STEM) workplaces. The concept for The STEM Village was born from the notion that the LGBTQ+ community working in STEM workplaces needed an opportunity to build community and be visible, like in the gay villages. This builds on the work of groups like Pride in STEM, who were the pioneers of LGBTQ+ STEM Day, an international day to celebrate our community.

Challenging stereotypes

One of the major challenges for the LGBTQ+ STEM community is the concept of heteronormativity. This is the concept that the world and societal structures have evolved to view heterosexuality as 'normal' and anything else as 'other'. It also assumes stereotypical gender roles, whereby men are masculine, and women are feminine. STEM fields have long been dogged by the stereotype of scientists, engineers, etc, being older white men, who wear suits and lab coats. Although this stereotype has relaxed to a degree, it is still pervasive and damaging, and for a significant number of people heteronormativity equates to scientific rigour. For example, if a 30-year-old man, dressed smartly, stood at a conference and presented his research, it is likely that the audience assume that his research is serious and rigorous. If the same person identified as a man, but wore a dress, makeup and nail varnish, a significant proportion of the audience may assume that he is attention-seeking and that his research is less rigorous than his colleagues. Of course, this is a ridiculous assumption, but this is a challenge that we face as a community.

A second major challenge for our community is that those of us who are cis-gendered (we identify as the sex assigned at birth and assume the presumed gender role) are not always visible as LGBTQ+ people. One reason that this can be problematic is for those people who are considering STEM careers but think that the field is not for them, because they are not aware of LGBTQ+ people in STEM. Marian Wright Edelman

> 'For people to be visible they have to feel comfortable and secure to be open in the workplace. So the emphasis is on workplaces to make their employees feel safe and protected so that they are able to be open.'

once said, "You can't be what you can't see". This resonates with many underrepresented groups, and it is one reason why visibility is so important. But for people to be visible they have to feel comfortable and secure to be open in the workplace. So the emphasis is on workplaces to make their employees feel safe and protected so that they are able to be open.

Addressing challenges

At The STEM Village, we want to help address these challenges. As part of this, we began running seminar series where people from the LGBTQ+ community present their research to their respective scientific (or other specialist) communities. The idea is that the wider communities are exposed to people who do not conform to the heteronormative stereotype and see that their research is as rigorous and valid as any other. This also increases the visibility of LGBTQ+ people to colleagues and to people considering careers in STEM. To date, we have hosted conferences and seminar series on a range of areas in STEM. Due to my own background, I wanted to run a seminar series based on immunology, where LGBTQ+ immunologists presented their research to the wider immunology community. We have run two of these series and both were a great success, with a wide variety of immunologists, from across the world, presenting their work. They were well attended, too, by prominent immunologists from around the world. While the world returns to in-person meetings (which we're very excited about!), we want to keep running these series virtually for a number of reasons. Firstly, we can host LGBTQ+ speakers from around the world, as well as presenting these talks to a global audience. Secondly, for many people around the world it is not safe to be openly LGBTQ+ and a virtual platform provides a means by which they can safely attend these seminars. Lastly, a very powerful aspect of these virtual seminars is the ability to record them so that they can be seen at any time, and can be used as a resource for those who are thinking of pursuing a career in biology or immunology but have never seen themselves represented in the field.

> 'From PhD level up to PI, we really want to hear about the great research that is being performed by LGBTQ+ people, especially those of genders and ethnicities that are typically underrepresented within our community.'

BSI support

Following the last seminar series, we approached the BSI for support with hosting future seminar series, and they could not have been more helpful or supportive. With their support, we hope to continue running our immunology seminar series and welcome LGBTQ+ immunologists from around the UK and world, to share their research. From PhD level up to PI, we really want to hear about the great research that is being performed by LGBTQ+ people, especially those of genders and ethnicities that are typically underrepresented within our community. We really hope that the wider immunology community will continue to come along and support our community and learn about the cutting-edge research being performed by LGBTQ+ immunologists.

Dr Matthew C. Sinton
Founder of The STEM Village and Postdoctoral Research Associate at University of Glasgow

Find out more

The STEM Village has a range of activities and resources to increase the visibility of the LGBTQ+ STEM community. You can:

- Meet other people in the LGBTQ+ community and/or be included in the community page
- Attend and/or speak at events for LGBTQ+ scientists
- View a collection of research and community resources

Visit **www.thestemvillage.com** for more details and to get involved, and follow **@TheSTEMvillage** on Twitter. The BSI is proud to support the upcoming STEM Village webinar series. Keep an eye on our website!

Harnessing the values of EDI for supporting lifelong careers in immunology

Equality, Diversity and Inclusion (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. Here, the organisers discuss the importance of channelling the knowledge of late-career immunologists to benefit individuals, organisations and those earlier in their careers.

The values embodied within EDI are important for everything we do in life and define how we treat each other. Within the workplace, it is well-established that organisations that promote the values of EDI attract and retain good staff, do not spend time dealing with unnecessary legal issues of bullying, harassment and discrimination, and as a result are more productive and successful (**www.acas.org.uk/improving-equality-diversity-and-inclusion**).

The BSI has a strong record of taking positive action to address gender inequalities and supporting early career researchers (ECRs), striving for gender balance at scientific events, assigning ECRs as co-chairs in the parallel sessions at BSI Congress and creating two ECR positions on the Board of Trustees. Nevertheless, there remains a 'leaky pipeline' for career development for many groups including ethnic minorities and women. Despite positive action being taken to close the gender pay gap, progress has not only been slow but has stalled in recent years. We are aware that we don't discuss the issues around age particularly well, especially how expectations and demands on individuals change as careers progress.

Aiming high

In this EDI workshop, funded through the BSI EDI activity grant scheme (**www.immunology.org/BSI-EDI-grant**), we aimed to discuss how to harness 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 (Box 1).

Workshop aims

- Better support lifelong careers in immunology for the benefit of individuals and organisations
- Identify barriers and opportunities to achieving this outcome
- Discuss the evolving challenges and expectations on individuals as careers develop
- Propose solutions for 'closing the circle'

Box 1

The workshop was held on the afternoon of 13 April 2022 at The Easter Bush Campus of The University of Edinburgh. The programme was designed to stimulate discussion towards the aims as described in Box 1 and included presentations by two invited speakers followed by a panel Q&A with the delegates and a networking session. A total of 45 delegates registered for the meeting, comprising a mixture of in-person and online attendees.

The two invited speakers have had long research careers in immunology and are long-standing members of the BSI. Each described their personal journey and gave their perspective on the opportunities and challenges they have faced throughout their careers.

Research reflections

The first speaker was Ann Ager (Cardiff University), the current Chair of BSI Forum, a Trustee of BSI and the BSI representative on IUIS Council. Ann began by highlighting that a PhD in immunology is not only a foundation for a career in academic research, it also prepares individuals for careers in biotech/industry, publishing, policy-making, journalism and consulting (**www.immunology.org/careers**). She then described the evolution of her own career path, from a PhD in vascular biology at the Babraham Institute in Cambridge followed by a Fellowship on tumour angiogenesis in the USA, a PDRA in HEV blood vessels and T cell homing in Manchester leading to a Group Leader position at Mill Hill and then a Professorship in Cardiff where her previous expertise in cell migration, vascular biology and tumour immunology coalesced.

Ann talked about the current research culture, the time spent writing papers and grants and the pressures of these metrics. She also highlighted the importance of 'team science' in an era of multidisciplinary technologies and how the various inter-

Invited speakers: Professor Ann Ager and Professor Liz Glass (L-R)

dependencies and expectations that come with that can be difficult to manage. Ann also talked about the many activities that scientists engage in but are often not recognised or rewarded such as mentoring and contributing to the career progression of others, including EDI activities. Ann concluded her presentation with a list of resources provided by the BSI to support career development and described the key role that Forum plays in representing BSI membership across all sectors of immunology.

A poignant perspective

The second speaker was Liz Glass (The Roslin Institute at The University of Edinburgh). Liz has recently retired and opened her presentation with a reflection that really hit home. The year she went to The University of Edinburgh as an undergraduate student was the first year that women were allowed into the Student Union Bar. If we ever need reminding why positive actions on EDI are required, there we have it.

Liz's degree was in biochemistry and she started her PhD at Edinburgh University after working as a Research Assistant in the late 1970s. Immunology was still a young science and The Metchnikoff Club (now BSI Edinburgh Immunology Group) and Scottish Immunology Group (the first BSI Regional Group) were fundamental to Liz's transition to immunology as a research career, with a focus on associations between MHC and disease. She then took up a post at the AFRC (now BBSRC) Animal Breeding Research Organization (which then became The Roslin Institute), and although this was a 'permanent' position the ever-changing funding landscape meant that this was never a guarantee.

Liz discussed how she has invested time in promoting women in STEM throughout her career including Athena Swan applications, prompted by situations and behaviours that she has directly experienced.

Proactively seeking promotion

Both speakers described their experiences of motherhood while maintaining a career in research. In particular, Liz discussed the challenges she faced while working 80% time and how that became a direct barrier to promotion. Throughout their talks they both reflected on some of the key messages for a successful research career. A common theme was the importance of pushing to make things happen and not sitting back waiting for opportunities to be presented (Box 2). They also both talked about the role of mentoring in their careers which extended into the Q&A Panel Discussion.

Key messages from the discussions

- Take time to enjoy your research, inspire your colleagues and have a vision
- Your skill set is unique, be bold and use it to take risks
- Let the data speak, don't be constrained by dogmas
- Don't wait to be asked, put yourself forward for committees and promotions
- Committee activities are a great way of establishing networks and influencing change
- Be aware that research strategies can switch quickly with a change of leadership, which could be an opportunity or a threat depending on 'fit'
- Focus on dealing with the issues that are within your control to change

Box 2

> 'Schemes that support and reward late-career immunologists for mentoring colleagues who are earlier in their careers were welcomed.'

How can we plug the gaps?

For the panel discussion the two speakers were joined by the event organisers (Jayne Hope, Gary Entrican and Omar Alfituri, all from The Roslin Institute, The University of Edinburgh) with Sean Wattegedera (Moredun Research Institute, Edinburgh) acting as a facilitator. The discussions focused on the aims of the workshop as highlighted in Box 1. Schemes that support and reward late-career immunologists for mentoring colleagues who are earlier in their careers were welcomed at all levels. This could include helping earlier career immunologists prepare grant applications to enhance success rates by senior colleagues who have experience of funding panels and are at a stage where they will not be leading on new applications themselves. Such transfer of knowledge would help 'close the circle' but is dependent on organisations recognising and valuing such input for collective organisational benefit.

A gap was identified for mid-career researchers who don't have access to the opportunities for ECRs (e.g. Travel Award criteria) and are not yet in a full leadership role where they control budgets. Networking and joining committees were seen to be a great way of increasing visibility and learning from others. A final question from the delegates: how do we know when we are successful with our EDI activities? The panel agreed there was no simple answer, but perhaps it will be when we don't need to be thinking any more about having to take corrective actions.

We are very grateful to the BSI for supporting this workshop through their new EDI activity grant scheme. To our knowledge, this is the first that attempts to link up junior and senior immunologists. We are collecting feedback from delegates and will share that with the BSI to help with future events.

The event was recorded and is available to view online here: **www.immunology.org/lifelong-career-immunology**.

Professor Jayne Hope, Dr Omar Alfituri, Dr Sean Wattegedera & **Professor Gary Entrican**

Inclusive research:
making science represent all individuals

For science to be truly inclusive, diversity should be considered from all angles. Funded by a British Society for Immunology Equality, Diversity & Inclusion (EDI) activity grant, Dr Harriet Groom organised a workshop to highlight the importance of research cohorts being representative of all individuals. Here, she reports on the discussions at the event on Monday 9 May during Black Inclusion Week, emphasising the need to embrace and investigate our differences.

Based within the Cambridge Institute of Therapeutic Immunology and Infectious Disease (CITIID) at the School of Clinical Medicine at the University of Cambridge, I am one of a team of EDI champions within the Department of Medicine – we number over one hundred across the school. Our inclusive research showcase afternoon was a great success and enjoyed, appropriately, by a diverse range of participants. We had registrations from the University of Cambridge, Cambridge BioResource, NIHR, other UK HE institutions, and even abroad. We had three speakers from across a range of disciplines with opportunities for participants and speakers to interact during the breaks and after the event. Although great work has been done encouraging minority groups into STEM fields, I wanted this event to bring an increased focus on making the science we do representative of all individuals. In this spirit, our first speaker was Dr Viki Male, Lecturer in Reproductive Immunology at Imperial College London and proponent of great science and communication thereof.

Sex and immunology

Dr Male did her PhD on NK cells in human pregnancy at the University of Cambridge followed by a postdoc on NK cell development at Imperial College London. In 2015, she was awarded a Sir Henry Dale Fellowship, which she used to start her own laboratory at the Royal Free Hospital campus of UCL. Her work focused on the role of NK cells in the liver. In 2021, she took up her Lectureship in Reproductive Immunology. Using clinical samples and a novel mouse model, her research group is investigating the role of the uterine immune cells in disorders of pregnancy such as pre-eclampsia and pre-term birth. During the pandemic, she has also been involved in collating and communicating information on the effect of SARS-CoV-2 infection and COVID vaccination on fertility, pregnancy and breastfeeding.

> ‘It is our hope that this new knowledge could form the basis for new treatments for HIV which could target those carrying particular African-specific sequences.’

Her talk, entitled ‘Sex and Immunology: what are we missing?’, was a tour de force in the role of sex in immunology and in the appropriate design and interpretation of scientific studies using human subjects. Dr Male began by emphasising the range of different parameters governing biological sex and how it was important for researchers to include and consider different cohorts in research design, such as menopausal and post-hysterectomy women, as well as transgender people. She then gave an engaging overview of her work on menstruation changes post-vaccination making the point that female reproductive physiology and health is an under-funded, under-researched field. Further information on her work on reproductive immunology can be read in several highly recommended review articles.[1–3]

African genomics of HIV

I then spoke about work we have been doing as part of the International Collaboration for the Genomics of HIV. Genome Wide Association Studies (GWAS) are a powerful way to understand the genetic components of viral control. However, despite 70% of people living with HIV being in Africa, when we initiated our study only 3% GWAS studies had been carried out on African genomes. GWAS have previously been used to identify two controllers of HIV load in European individuals – the Human Leukocyte Antigen, which is involved in presentation of antigen to T cells, and CCR5, a key coreceptor for HIV entry. However, applying these techniques to African sequences identified a new locus associated with set point viral load in African sequences specifically.

> 'Many of the techniques she highlighted will be familiar to those in academic roles and could provide a useful framework for the application of successful techniques in the future.'

Funded by the MRC, we have been working with the Wellcome Trust Sanger Centre, King's College London, L'Institut de microbiologie de l'Université de Lausanne and our genomics collaborators Paul McLaren and Jacques Fellay, to characterise this new genetic component. It is our hope that this new knowledge could form the basis for new treatments for HIV which could target those carrying particular African-specific sequences.[4]

A different view

Our final speaker was Laura Messer, PhD candidate at the University of East Anglia and Executive Assistant to our Head of Department Professor Ken Smith. Having worked supporting academics for more than 15 years, Laura is in a unique position to analyse her research area job-craft in academia. In a side-step from the previous sessions, we heard how academics have not typically been included in analysis of job-crafting (enhancing work experience and efficacy through redesign of work practices). Laura's inclusive approach considered academics at different career stages and from three different viewpoints: task, relational and cognitive crafting. Many of the techniques she highlighted will be familiar to those in academic roles and could provide a useful framework for the application of successful techniques in the future.

Embracing inclusivity

In addition to the specific work showcased by the speakers, I also highlighted several great projects ongoing within the university of an inclusive nature. Although not directly related to immunology in most cases, they impact the scientific community as a whole.

- Hidden epidemics and epidemiological obfuscation[5]
- University of Cambridge Black Advisory hub decolonisation projects[6]
- Cambridge Centre for Teaching and Learning's inclusive teaching learning and assessment[7]

We are very grateful for the support of the BSI in making this day possible and for the support of the Clinical School (particularly Jane Goodall) and networks within Cambridge for making this day a success.

Dr Harriet Groom
Cambridge Institute of Therapeutic Immunology and Infectious Disease, University of Cambridge

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4. McLaren & Fellay 2021 *Nature Reviews Genetics* **22** 645–657 **https://go.nature.com/3lk1rcG**
5. Hidden Epidemics and Epidemiological Obfuscation **https://bit.ly/3yIPzZA**
6. Black Advisory hub **https://bit.ly/3wH2sRA**
7. Inclusive teaching learning and assessment **https://bit.ly/3yI29Zh**

What diabetes means to us: patient stories and impactful research

To celebrate the centenary of the discovery of insulin, researchers at the Cardiff Diabetes Research Group developed a public engagement project featuring a creative website, an engaging video and an online event. Here, the Group shares how they planned these activities and what they learnt in the process.

Type 1 diabetes is an autoimmune disease caused by the immune cells (T cells) destroying the insulin-producing beta cells in the pancreas, resulting in insufficient insulin secretion to meet the body's needs; thus insulin has to be injected multiple times each and every day.
2021 was a special year marking the centenary since the discovery of insulin, a life-saving drug, co-discovered by Frederick Banting and James Macleod, with essential help from Charles Best and James Collip, which in 1923 led to Banting and Macleod being awarded the Nobel Prize in Physiology or Medicine.

What diabetes means to us

To commemorate the centenary, we (Cardiff Diabetes Research Group) organised a creative art project entitled 'What diabetes means to us' to help us all to understand the impact of diabetes on people living with diabetes, and their families and friends, as well as people who work in the field of diabetes. There are many misconceptions about type 1, type 2 and other types of diabetes, and very often the voices of people who live and work with diabetes remain unheard. Therefore, we wanted to create an opportunity for everyone who knows something about diabetes to share some of their experience during this discovery of insulin centenary year, as well as learn more about the important research we do. While we had planned to host an in-person event, due to the ongoing pandemic we altered our plans to incorporate more of our event online and set up a new website (**www.cardiffinsulin100art.com**), which to date has had over 1,500 views. We wanted people to be able to interact with this centenary celebration, wherever in the world they were, and thus we decided to create a video about the research we do. Through our BSI Communicating Immunology grant we shared the story of Alex, a young adult living with type 1 diabetes, who wanted to learn more about why people develop type 1 diabetes, as well as our research to help prevent it. Alex met with members of the Cardiff Diabetes Research Group and discussed current ongoing research. This journey to discovery helped him to better understand what type 1 diabetes means to us as researchers and how we can work together to develop new strategies to target the immune system. Our research video telling Alex's story was shown at the Hearth Gallery, Llandough Hospital, Wales for any patients/visitors/staff on site as part of a larger diabetes art event aimed at both increasing awareness of what diabetes is and what it means to people affected by diabetes (directly or indirectly), as well as online for everyone else to enjoy. You can watch it at **youtu.be/D8nt1gJU2HU**. We encourage all those who wish to learn more about type 1 diabetes to view and share it.

Positive impact

We have received so much positive feedback from attendees in person or from those who viewed online about how accessible it was and how much they learnt about type 1 diabetes. We shared our event details and research video with diabetes charities who also publicised the event and video for us, which helped us reach a wider audience. We learnt, as a group, what type 1 diabetes means to those who have it, how to communicate difficult scientific terminology and concepts more effectively to the broader public, as well as how props can be used to break up long dialogue effectively and also promote accessibility to the research. We worked very closely with an artist-in-residence, Bridget O'Brien, who kindly volunteered her time to help us (and she will always be an honorary lab member), as well as a film-maker, Richard Thomas, who helped us storyboard ideas and write our script in order to make the messages as clear as possible. This certainly took time but was very much worth it!

Top engagement tips

All of the Diabetes Research Group at Cardiff University have gained a lot of confidence in public engagement and new skills, and we very much look forward to planning the next engagement event!
We recommend planning any such event, well in advance (our event was planned over 18 months), contacting your university engagement staff (great at promoting the event and letting you know what does and doesn't work well from experience) and where possible, involving people with the condition you work on in all your discussions, and work with them, to gain a much greater perspective, give meaning to your work in human terms, and make everything you do as accessible as possible.

Dr James Alexander Pearson, Professor F. Susan Wong and the Cardiff Diabetes Research Group, with special thanks to Bridget O'Brien, Richard Thomas and everyone who watched our research video

BSI Communicating Immunology grant

Our Communicating Immunology grant scheme is designed to spark interest, discussion and understanding of immunology among a wider audience, with a particular interest in reaching new or traditionally hard to reach audiences.

If you're looking for funding for your next public engagement project, please visit **www.immunology.org/communicating-immunology.**

FUTURE FOCUS

Effective time management with 'deep work'

Developing effective time management skills can be incredibly beneficial for a healthy work–life balance and boosting productivity. In this piece, BSI member Dr Carolyn Nielsen gives an overview of the 'deep work' time management system and explains how it has helped her juggle priorities in her research career.

When you're someone who grows up devising elaborate schedules for your younger siblings, perhaps it's inevitable that you'll become enamoured with various time management strategies in adult life. These days, I am fascinated by what we can learn from the pros in psychology and business to support the development of academic researchers – especially those of us working in immunology. Specifically, I want to know how we can apply established organisational psychology principles to impact the quality of research output, leadership, and work–life balance of the average academic scientist.

Teaching soft skills

In my observation, early career researchers may be well-supervised with respect to developing their technical competencies, but there is often negligible practical guidance on critical 'soft' skills required for a successful research career; for example, evidence-based recommendations on how to hire and lead a research team, how to navigate interpersonal dynamics across power structures, and – you guessed it – even just how to manage your time.

There is no scarcity of books in these fields (see any airport bookshop) for an interested early career researcher, but what can be difficult is deciphering how to apply the broad advice to the specific context of a research job. Yes, we likely have a lot of autonomy over our time, but we are also likely tied to a physical environment (hello flow cytometer!) in a way most other knowledge workers are not.

'Deep work' philosophy

For me, the framework that has resonated best thus far comes from *Deep Work* by Cal Newport. Cal defines 'deep work' as 'professional activities performed in a state of distraction-free concentration that push your cognitive capabilities to their limit… create new value, improve your skill, and are hard to replicate'. As an academic himself (computer science), many of his examples of high priority deep work activities – for example, data analysis and writing papers – will be very familiar to my fellow university-based immunologists.

At a high level, the main thrust of the book (and the podcast if you're uber-keen) is that context switching is cognitively demanding. This goes further than any healthy suspicions you may already have about multi-tasking. A context switch occurs any time you and your brain move from one task, like analysing data, to another task, like just-very-quickly-checking-email-to-see-if-someone-has-sent-me-slides. Importantly, there is a cost to our focus and attention with each context switch. This cost is not only in the form of cumulating delays for the main task at hand, but also to your own energy level and attention span for the day. Professor Sophie Leroy at the University of Minnesota coined the term 'attention residue' to describe this detrimental cognitive impact of moving sequentially between tasks.

Focus, not frazzle

A working style where you flit between all your ongoing projects and priorities throughout the day is therefore not efficient, but rather an unnecessarily frazzling approach. You will never hit a flow state with analysis or grant writing, or really be able to focus on a paper if you bounce between these activities or intersperse with tiny chunks of time spent looking at email or ordering random reagents as they pop into mind.

The solution isn't necessarily to start dropping projects (a subject for another blog) or to resign yourself to ending each day in a whirlwind approaching burnout. What 'deep work' proposes is that we make a conscious effort to block out time for the activities that require a lot of what Cal Newport calls 'attention capital', and then guard this time ferociously.

'You will never hit a flow state with analysis or grant writing, or really be able to focus on a paper if you bounce between these activities or intersperse with tiny chunks of time spent looking at email or ordering random reagents as they pop into mind.'

Satisfying realism

I have always planned my days and weeks to an extent, but the game changer for me with this philosophy has been to give myself much longer periods of time to complete a given task. This doesn't mean I do less in a week but, instead of chipping away at everything every day, the most critical projects get prioritised for two- or three-hour blocks of dedicated undistracted time. This lets me more realistically account for the time it takes to get started on something (finding the data files, getting a coffee) and the time to wrap-up at the end in a less pressured way. It's these transition phases that we often forget about when we make really ambitious plans for what we can get through in a morning or afternoon.

Building schedules based on a best-case scenario, rather than reality, is apparently a common problem! But there is a satisfying calm that comes with reaching a stopping point within the amount of time you allocated, rather than saving half-way through a sentence you thought you could finish before realising you were five minutes late for a lab meeting.

It's not a perfect system of course, and it's certainly not executed perfectly in my own case. I am also aware that depending on your seniority or specific role in a team, it may be more or less straightforward to block out these periods of time for deep work. But it is worth exercising this control where you can. Can you express a preference for a meeting time that keeps your afternoon free for longer? Can you delay replying to a non-urgent email until you have finished your own high-priority work? Can you fit in just one solid two-hour block this week to really make progress with that data set? Specify it ahead of time, don't risk relying on your willpower in the moment to get started. As one of my favourite quotes in the book goes '[Great creative minds] think like artists but work like accountants'.

Dr Carolyn Nielsen
Senior Immunologist, University of Oxford

> 'Can you fit in just one solid two-hour block this week to really make progress with that data set? Specify it ahead of time, don't risk relying on your willpower in the moment to get started.'

Join the conversation!

If you've found the deep work system helpful in managing your workload or have any other productivity or career development tips you think could help others, please let us know. You can share your experiences on Twitter and tag us **@britsocimm**, or email Teresa Prados **t.prados@immunology.org** if you are interested in writing a piece.

Congratulations

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

Queen's Birthday Honours

Congratulations to the following outstanding immunologists recognised in this year's Queen's Birthday Honours list.

Professor Fiona Powrie FRS, Professor of Musculoskeletal Sciences and Director of the Kennedy Institute of Rheumatology at the University of Oxford. She has been appointed Dame Commander of the Most Excellent Order of the British Empire (DBE) for services to medical science.

Professor Stephen Powis, National Medical Director, NHS England and NHS Improvement and Professor of Renal Medicine at University College London. He has been appointed honorary Knight Commander of the Most Excellent Order of the British Empire (KBE) for services to the NHS, particularly during Covid-19.

Professor Paul Moss, Professor of Haematology at University of Birmingham. He has been appointed honorary Officer of the Most Excellent Order of the British Empire (OBE) for services to immunotherapy and to Covid-19 research.

Professor Saul Faust, Professor of Paediatric Immunology and Infectious Diseases and Director, National Institute for Health and Care Research Southampton Clinical Research Facility, University of Southampton and University Hospital Southampton NHS Foundation Trust. He has been appointed appointed honorary Officer of the Most Excellent Order of the British Empire (OBE) for services to the Covid-19 response.

Congratulations to new Fellows

Both the Academy of Medical Sciences and the Royal Society have announced their lists of new Fellows for 2022. Congratulations to the following BSI members on being elected:

ROYAL SOCIETY

- **Professor Paul Lehner**, Professor of Immunology and Medicine, Cambridge Institute of Therapeutic Immunology and Infectious Disease, University of Cambridge. Professor Lehner is distinguished for his work on the cell biology of immune and viral evasion pathways.
- **Professor Carola G. Vinuesa**, Royal Society Wolfson Fellow, Principal Group Leader and Professor of Immunology, Francis Crick Institute and Australian National University. Professor Vinuesa's work has illuminated how T cells regulate B cells and control the quality of antibody responses.
- **Professor Sally Ward**, Director of Translational Immunology, Cancer Sciences Unit, Centre for Cancer Immunology, University of Southampton. Professor Ward is recognised for her pioneering research related to the biology of the neonatal Fc receptor, FcRn, and the development of therapeutics with novel mechanisms of action.

ACADEMY OF MEDICAL SCIENCES

- **Professor Graham Anderson**, Professor of Experimental Immunology, University of Birmingham. Professor Anderson's research focuses on T-cell development and thymus development and function, including mechanisms of immune tolerance.
- **Professor Rose Zamoyska** FMedSci, Professor of Immune Cell Biology, University of Edinburgh. Professor Zamoyska studies the fundamental mechanisms of immune homeostasis and autoimmunity, focusing on the gene mutations involved in activation and regulation of T cell responses that control immune homeostasis.

Communicating Immunology Grants

The BSI is delighted to fund the following projects.

Dr Delphine M. Depierreux, from the University of Cambridge, has been awarded funding to make scientific research related to women's health accessible, break stigmas and raise awareness on social media.

Ella Mercer, from the Centre for Regenerative Medicine in Edinburgh, has been funded to engage with local high school pupils through a series of workshops to raise awareness of the HPV vaccine to empower young people to advocate for their health and make an informed choice when offered the HPV vaccine.

Dr Ximena Lucia Raffo-Iraolagoitia, from the CRUK Beatson Institute, has been funded to run interactive activities to explain cancer immunology and immunotherapies at the Glasgow Science Festival.

Dr Leo Swadling, from UCL, has been awarded funding to introduce local students to the vital research going on in the heart of their neighbourhood, offering informal immunology teaching and promoting diverse career options related to immunology.

Dr Emma Reeves and the BSI Wessex Immunology Group have been funded to deliver two engaging outreach events: an interactive antibody-making activity at the Science and Engineering Day at the University of Southampton and a three-day event at the New Forest and Hampshire County Show to showcase the importance of snot and lungs.

The next deadline is 1 July 2022. Please email Erika Aquino (**e.aquino@immunology.org**) for guidance or with any questions. For more details, visit **www.immunology.org/grants-and-prizes/communicating-immunology.**

New Deputy Vice-Chancellor for the University of Plymouth

Congratulations to former BSI Groups Secretary **Professor John Curnow** who has been appointed as Deputy Vice-Chancellor at the University of Plymouth. A Professor of Biomedical Education, Professor Curnow is also a leading researcher in the fields of immunology and immunotherapy.

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**.

BSI Midlands Immunology Group: building a wide-reaching community

Our Regional Group connecting immunologists in the West Midlands has recently expanded to bring together and encourage collaboration between all those interested in immunology across the whole Midlands region. Here, Dr David Bending and Dr Kendle Maslowski, the Group's Co-Chairs, tell us how they are widening their geographical scope, discuss their exciting ongoing activities and explain how you can get involved.

Previously called the BSI West Midlands Immunology Group, which largely encompassed university and clinical immunologists based within the Birmingham region, the BSI Midlands Immunology Group (MIG) is currently undergoing an expansion to bring together even more of the immunology community. The experience of the pandemic led to increased cross-Midlands interaction due to the nature of virtual platforms such as Zoom. The main change for the BSI MIG is that we have widened our geographical remit to include the University of Nottingham in the East Midlands. Nottingham now has dedicated representation on our committee at both academic and student levels, and we hope that this will increase engagement between the Universities of Birmingham, Aston and Nottingham.

BSI MIG's aim is to support the BSI in creating a connected community by promoting interaction among immunologists across both academic and clinical settings. We hold monthly seminars and an annual symposium, usually in spring. Our events throughout the year bring together students, early career researchers, clinicians, and group leaders to present and discuss the latest advances in research in immunology.

The pandemic restrictions led us to diversify our seminar series by inviting speakers to present virtually from across the globe, including San Francisco (USA) and Melbourne (Australia). This is something we typically may not have considered before the pandemic and has led to new and exciting collaborations. We were delighted to restart our in-person seminar series this February. The BSI MIG is particularly keen to invite early career researchers and new group leaders to help them promote their work and build networks, so please reach out to us if you would like to give a talk – we would be delighted to host you.

Our research interests cover almost every facet of immunology, including adaptive and innate immunity, autoimmunity, cancer immunology and clinical immunology. So far this year we have had many fantastic talks, including seminars on macrophages in the meninges and the immunosuppressive effects of stroke. Our seminars are typically held on a Friday at the University of Birmingham, but from July some will also be held at the University of Nottingham, with opportunities to speak at both institutions. We always offer our seminar speakers an opportunity to meet with researchers and many take up the opportunity to stay for a night in Birmingham and enjoy a meal to network with immunologists from the Midlands. We also organise

Co-Chairs of the BSI Midlands Immunology Group, Dr Kendle Maslowski & Dr David Bending

a lunch for students and early career postdocs to meet with the speaker. We believe these are excellent opportunities to meet informally with external scientists.

One of our key events is our annual symposium. Our last in-person symposium before the pandemic was in 2019. We successfully held a virtual symposium last June, which was a great success and succeeded in our aim of attracting speakers from across the Midlands. On 13 May 2022, we hosted our postponed symposium from 2020 at the University of Birmingham's Edgbaston Park Hotel. This was the launch date for the formation of the new Midlands Immunology Group, and we had a great line up of speakers. Our annual symposia are great opportunities for early career researchers to get involved in organising events, scoring abstracts, and getting experience in chairing scientific sessions. And the event itself is a great experience for presenting posters or short talks in front of a familiar and engaging audience.

Dr David Bending & Dr Kendle Maslowski, University of Birmingham, Co-Chairs of the BSI Midlands Immunology Group

'The BSI MIG is particularly keen to invite early career researchers and new group leaders to help them promote their work and build networks.'

Find out more

- To join the Group and take part in upcoming activities: **www.immunology.org/midlands-immunology**
- Follow the Group on Twitter **@Immuno_WM**

Eric Braham Bell, BA, VMD, PhD
1939–2022

The BSI was saddened to learn about the recent death of our Honorary Member, Dr Eric Braham Bell. He led the British Society for Immunology as General Secretary from 2001 to 2005 and made significant contributions to the field over decades.

Eric first developed an interest in immunology while he was studying for a Veterinariae Medicinae Doctoris at the School of Veterinary Medicine, University of Pennsylvania, Philadelphia (1961–1965). He worked with Benjamin Wolf on reproductive immunology and together they were the first to demonstrate antibody synthesis by the female reproductive tract which was published in *Nature* in 1967. He moved to Edinburgh in September 1965 to study for his PhD with Anne McLaren in the Department of Animal Genetics. Eric continued his interest in reproductive immunology working on the impact of immunity to sperm on fertility and contraception. He was a postdoc with James Howard in Edinburgh before moving to the Burroughs Wellcome Research Labs in Beckenham in 1969 where he worked with Frank Shand on cellular mechanisms of tolerance. In 1973 he returned to a Lectureship at Edinburgh University Medical School joining Bill Ford in the Pathology Department. Then, in 1975 he moved to Manchester University to a Senior Lectureship with Bill Ford who became Professor of Immunology there. Eric was acting head of the department from 1984 to 1987 following Bill's death and then became Reader in Immunology in 1988.

Studying immune responses in the context of the whole animal was extremely important to Eric, although he was not reluctant to use *in vitro* methods such as hanging drops for antibody synthesis. Early on in his career, he realised the power of thoracic duct cannulation in rats to study the trafficking of immune cells under different immunological conditions. He was the first to identify cells in thoracic duct lymph that had become laden with antigen after feeding, which we now know as intestinally derived dendritic cells. Eric's research expanded into the regulation of IgE in parasite infections and the role of T cells in transplantation immunology. In Manchester he started to work on the fate and lifespan of memory $CD4^+$ T cells by combining thoracic duct cannulation to isolate recirculating T cells with athymic nude rats as recipients of defined T cell subsets. In an elegant series of papers, Eric followed the fate, function and lifespan of $CD4^+$ T cells subsets which culminated in his most important discovery (and the one that he is famous for) that CD45R isoform expression could interconvert *in vivo*. Until this finding, CD45R isoform expression had been used to distinguish memory from naïve T cells. Eric's finding demonstrated clearly that phenotype alone could not be used to define memory T cells and that functional assays were required. The work was published in *Nature* in 1999 after a protracted 'battle' with the editors. He continued to investigate the nature of memory cells, their circulation and challenge the basic concepts of CD4 T cell memory, even dabbling with transgenic T cells!


Professor Adrian Hayday with Dr Eric Bell receiving BSI Honorary Membership

To describe Eric's research alone, however, is to miss out his most important characteristics. He was extremely patient and passionate about communicating immunology through teaching at undergraduate and postgraduate levels. His tall stature, white lab coat and characteristic beard-pulling could be off-putting to new students and departmental colleagues, but we all quickly learned that Eric had a big heart and was very approachable and welcoming. Eric was eager to listen and debate your point of view. He would always be enthusiastic, passionate and usually on the winning side, but with his great sense of humour and good grace you never felt bad losing. No doubt, his degree in Liberal Arts gained from Oberlin College before his Veterinary studies came into play during such debates. Eric also had the gift of writing in a highly accessible way and his papers are worthy of reading for their exemplary presentation style. He did his utmost to support and encourage career development in his own students and staff, as well as in his departmental colleagues. Eric was extremely collegial and really enjoyed departmental parties and days-out for networking purposes!

Eric was involved in many BSI activities and was a stabilising influence when he led the Society as General Secretary (2001–2005). The Society owes a debt of gratitude to Eric's commitment to animal experimentation and his outspoken support of animal work in immunology during this time. He was made an Honorary Lifetime Member of the Society in 2006.

Eric retired from the University of Manchester in 2006 after a very productive career publishing more than 90 papers. However, he continued his work as a magistrate in Trafford Magistrates Court until 2009. He also enjoyed his voluntary work for the Friends of Denzell Gardens in Hale, Cheshire near to the family home. Eric passed away peacefully after a protracted illness and was lovingly looked after by Teresa, his life-long partner, who he met in Edinburgh where they married in 1966. Eric's gifts of communication, level-headedness and human warmth are all continued in his children Brendan, Kirsty and Bruce.

Eric's friends and colleagues at the University of Manchester
Ann Ager, Mark Drayson, Richard Grencis, Jean Marshall, Christopher Morrison and Chunping Yang

Immune Update

The BSI journals

A round-up of new research published in the British Society for Immunology's official journals, *Clinical & Experimental Immunology*, *Immunotherapy Advances* and our newest fully Open Access journal publishing high-quality articles describing novel mechanisms controlling the immune response, *Discovery Immunology*. Members can access these journals free of charge at **www.immunology.org/journals** and benefit from discounted publication fees.

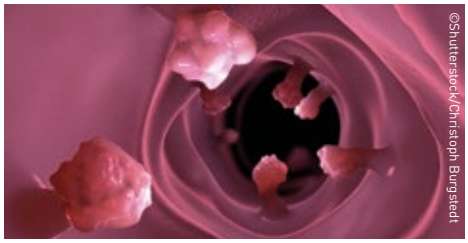
Discovery Immunology

New role for NKG2D receptor in promoting cancer progression

γδT cells are unconventional T cells particularly abundant in mucosal tissues that recognise stressed cells or cancer cells through the NKG2D receptor to kill these cells and maintain normality.
In this study, Curio *et al.* reveal a new role for the NKG2D receptor on γδT cells in promoting cancer progression, contrary to their well-established anti-tumour function. Using mouse models of intestinal cancer and lung metastasis, the authors found that loss of γδT cells resulted in longer survival. Furthermore, deletion of the gene encoding NKG2D reduced the frequency of γδT cells in the tumour microenvironment and delayed tumour progression. Blocking NKG2D reduced the capacity of γδT cells to produce the pro-inflammatory cytokine IL-17A, showing that NKG2D is essential for the accumulation of γδT cells in the tumour microenvironment and the production of IL-17A.

These findings reveal a new molecular pathway of γδT cell-mediated tumour progression and provide further evidence for a pro-tumorigenic role of γδT cells in inflammation-driven mucosa-associated cancers. Ongoing studies of NKG2D-targeting immunotherapies for Crohn's disease and colorectal cancer will provide crucial information on the function of NKG2D in the context of intestinal inflammation and cancer.

Curio *et al.* 2022 *Discovery Immunology* kyac002 **https://doi.org/10.1093/discim/kyac002**



Immunotherapy Advances

Lysine-free *Pseudomonas* exotoxin-based immunotoxin to maximise cytotoxicity

Pseudomonas exotoxin-based immunotoxins work by transferring ADP-ribose to a ribosome elongation factor. ADP-ribosylating toxins often have few lysine residues in their catalytic domain which is thought to prevent ubiquitin-dependent degradation of the toxin in the cytosol.

This study from Ammon *et al.* sought to generate a lysine-free *Pseudomonas* exotoxin-based immunotoxin to reduce potential degradation and maximise cytotoxicity. The authors mutated the exotoxin at lysine 590 (K590) and at K606 in a CD22-targeting immunotoxin and determined activity against various B cell malignancies in human cell lines and in mice.

K606 mutated to arginine (R) significantly improved cytotoxicity *in vitro* and *in vivo*, whereas K590R mutation reduced activity in three out of four tested cell lines. Mutation to histidine nor deletion of K590 could not reverse the loss of activity by K590R, whereas a simultaneous mutation of both lysines neutralised the effects of each individual mutant.

Taken together with previous studies, these data suggest that K590 is needed to achieve maximal cytotoxicity, whereas mutation of K606 enhances cytotoxicity of immunotoxins *in vitro* and in *vivo*.

Ammon *et al.* 2022 *Immunotherapy Advances* **2** ltac007 **https://doi.org/10.1093/immadv/ltac007**

Clinical & Experimental Immunology

Maternal BMI associated with an altered immunological profile at 28 weeks of gestation

Maternal obesity is associated with increased risk of miscarriage, pre-eclampsia and gestational diabetes mellitus among other adverse outcomes, and can pose a risk to the neonate.

In this study, Rees *et al.* analysed peripheral blood from fasted, gestational diabetes-negative pregnant women at 26 to 28 weeks of gestation to consider if immunological changes in pregnancy are influenced by maternal obesity. They found that plasma levels of key inflammatory mediators, leptin and IL-6, were directly correlated to increasing body mass index (BMI). Furthermore, mononuclear phagocytes, which have a well-recognised role in obesity-associated inflammation, were found to have elevated CCR2 expression and decreased mitochondrial content with increased BMI.

Consistent with previous studies in obesity, increasing BMI was correlated with an increasing CD4:CD8 ratio indicative of a significant decrease in $CD8^+$ T cells and a decline in NKT cells. The authors showed for the first time that maternal obesity is associated with a downregulation of Th2 cells and a shift towards TNF and IFN-γ-producing Th17 cells known to be detrimental to pregnancy.

Taken together, these results confirm that maternal obesity during pregnancy is associated with systemic inflammation, monocyte activation and an altered Th1/Th2/Th17 balance. These findings may offer explanations for increased risk of adverse pregnancy outcomes and may provide targets for potential therapies.

Rees *et al.* 2022 *Clinical & Experimental Immunology* uxac023 **https://doi.org/10.1093/cei/uxac023**

Around the journals

A summary of some of the latest papers from the world of immunology.
Written by Edd James, Louisa James and Donald Palmer.

Fetomaternal tolerance established through glycan-mediated B cell suppression

The ability to distinguish self from non-self is critical in establishing an immune response. However, in pregnancy, recognition of the placenta is inhibited by the establishment of immunological tolerance. While maternal T cells are thought to be held in check by regulatory T cells, the mechanism of B cell tolerance is not known.

Here, Rizzuto and colleagues show that trophoblast expressed foetal antigens are modified, containing terminal α(2,6)-linked and α(2,3)-linked sialic acids. These modifications bind the inhibitory receptors CD22 and Siglec-G respectively, with B cells specific for a model trophoblast antigen (OVA) shown to be suppressed via the CD22-LYN pathway. In addition, B cells were shown to mediate trophoblast-derived antigen presentation to $CD4^+$ T cells leading to their suppression.

These findings may allow better understanding of complications in pregnancy mediated by an immune response, which may be applicable in autoimmune disease.

Rizzuto *et al.* 2022 *Nature* **603** 497–502

Marginal zone B cells take on 'a-gnaw-ther' role

Antigen recognition through interactions between the T cell receptor and major histocompatibility complex class II (MHC II), is a critical step in the initiation of adaptive immunity. Marginal zone B cells play a key role in early life and responses to T cell-independent antigens.

In this paper, Shriek *et al.* show that MZ B cells acquire antigen-presenting capacity by capturing peptide-MHCII complexes from the membranes of conventional dendritic cells (cDC) by trogocytosis. The authors discovered that complement protein C3 binds to carbohydrates on peptide–MHC II complexes (pMHCII). MZ B cells express high levels of the complement receptor CR2 (CD21) which bind to MHCII-associated C3 to acquire cDC membrane proteins. Although this leads to loss of the cDC, it is regulated by the ubiquitin ligase MARCH1, which limits the number of pMHCII complexes on the cDC surface thereby preventing their excessive elimination.

This process allows MZ cells to efficiently initiate T cell responses.

Schriek *et al.* 2022 *Science* **375** doi: 10.1126/science.abf7470

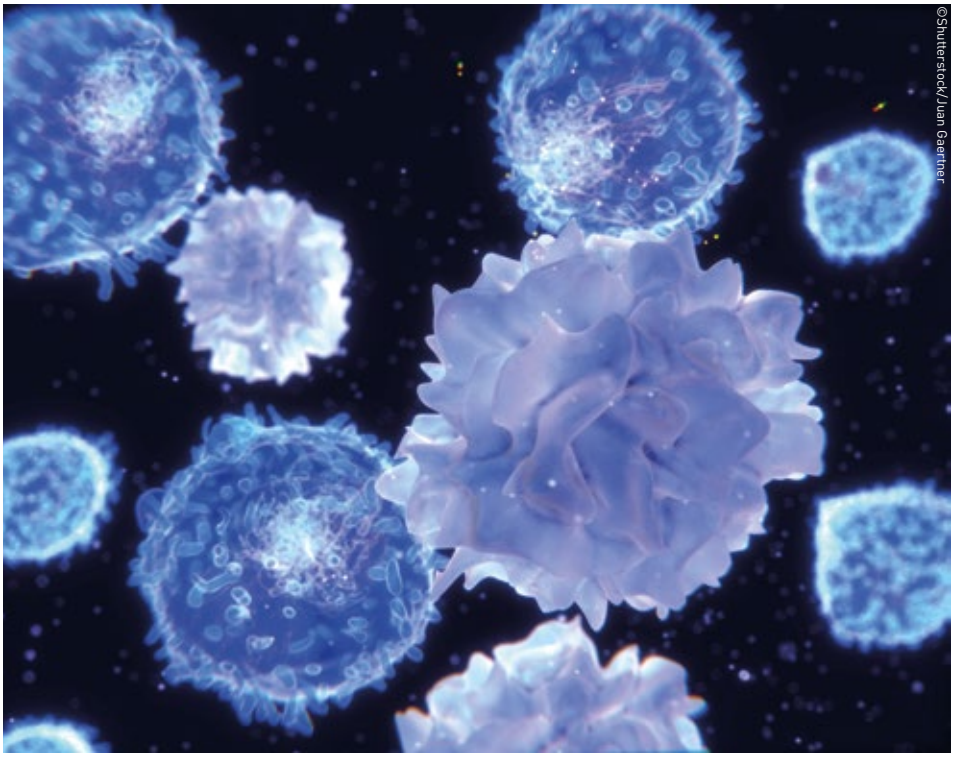
Impaired JAK-STAT pathway signalling in leukocytes of older people

Inflammaging refers to the age-associated increase in pro-inflammatory cytokines that contributes to the immune dysfunction that is most commonly observed in older people, implying alterations in the JAK-STAT pathway. Moreover, the association of this low-grade chronic inflammation with frailty within older populations remains to be fully explored.

In this longitudinal 20-year study, the authors observed that reduced pSTAT responses are associated with frailty. Interestingly, men with higher frailty index scores showed reduced pSTAT5 responses in $CD4^+$ and $CD8^+$ T cells; in contrast, women with higher frailty index scores showed reduced pSTAT1 responses in monocytes. Furthermore, men with high frailty index scores exhibited a lower IL-10-induced pSTAT3 response which also correlated with high CRP levels.

This study highlights that the JAK/STAT signalling pathway may play a role in immunosenescence.

Samson *et al.* 2022 *Immunity & Ageing* **19** doi: 10.1186/s12979-021-00261-w



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