March 2026 | ISSN 1356-5559

Immunology News

Championing careers

Helping immunologists thrive

Meet the trainers

Bioinformatics and flow cytometry educators

Clinical workforce

Our report reveals services under strain

When caring and career collide

The latest update from Carers in STEMM

British Society for immunology

www.immunology.org

Welcome to the first *Immunology News* of 2026!

With New Year's resolutions in mind, this issue focuses on careers – whether that's upskilling, overcoming barriers to career progression or expanding your network. You can find out more about the training opportunities available through the BSI, apply to get involved in how the BSI is run by participating in our upcoming elections cycle, and find out more about our upcoming events.

You can also peruse our most impactful articles published in the BSI journals in 2025 on p10, reflect on the fantastic events that were BSI Congress and the BSI-CIPN Conference on p7 (see if you can spot yourself in any of the pictures taken during these events!) and meet our newest Honorary Members on p9.

We also break down the key findings of the BSI-CIPN Workforce Report: Moving towards a workforce equipped for the future. This was the culmination of a huge amount of work exploring the staffing levels across the specialty. We're continuing to engage with policymakers to raise awareness of the pressures exposed in the report, so watch this space for future updates.

I hope you enjoy the issue and do get in touch if you would like to contribute to future issues of the magazine. We would love to celebrate your work!

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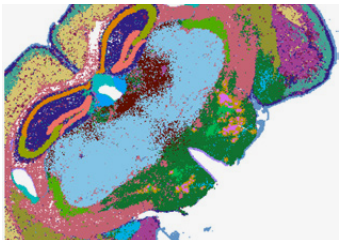

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VIEW FROM ...

THE CHIEF EXECUTIVE

Welcome to our first *Immunology News* of 2026 and to my first editorial as Chief Executive of the BSI! It has been a busy first few months in the role, and I've been blown away by the warm welcome from the immunology community. It's natural to wonder what a new Chief Executive might bring, and whether change or new ways of working are on the horizon. My approach is to begin by listening and understanding and then build carefully on what already works well. So much about the BSI is already right, and as you'll have noticed from our 2026–2030 Strategy, we are focusing on evolution, not revolution. I look forward to building on the excellent foundations already in place, and I'm excited to get to work in supporting immunology to thrive.

I've really enjoyed getting to know our fantastic Trustees, Member Forum and Committee members, who play a vital role in delivering on the commitments laid out in our new Strategy. As you'll see on page 5, there are many important roles open in our upcoming elections cycle, with opportunities available for a variety of career stages. I would strongly encourage you to consider getting involved to help steer the BSI and shape the work that we do for all our members.

I was thrilled to meet so many of you in Liverpool at the BSI Congress and the BSI-CIPN Conference, and it very quickly became clear that the BSI community is full of ambitious, friendly and inspiring people. Bringing together more than 1,800 members of the immunology community under one roof was truly special, and the quality and breadth of topics presented across the four days far exceeded my expectations. Thank you to everyone who attended and helped make the event such a celebration of immunology, I am already counting down the days until we go to Glasgow to do it all again.

In December, we also launched our **BSI-CIPN Workforce Report: Moving towards a workforce equipped for the future**, which sets out the significant challenges facing the clinical immunology and allergy workforce, alongside key recommendations to bolster services for the future. It's an important piece of work, and you can find out more on page 14.

As part of the BSI's commitment to supporting and enhancing careers, we are dedicated to providing high-quality training and education opportunities for immunologists, helping you to develop the skills you need to take your research to the next level. Accordingly, this issue has a strong focus on professional development and upskilling. On pages 16 and 20, you can read interviews with two of our training partners, John Cole and Derek Davies, who explain how they developed bioinformatics courses and flow cytometry courses to support immunologists. On page 22, Stavroula Piliou shares how she used a BSI Career Enhancing Grant to attend a unique neuroimmunology programme in France, and as always, we celebrate the achievements of our membership on page 23.

I hope you enjoy the issue, and I very much look forward to continuing to immerse myself in the world of immunology.

Graham Blair
Chief Executive,
British Society for Immunology
Email: g.blair@immunology.org

SOCIETY NEWS

BSI committees: have a say in your Society

Nominations for upcoming vacancies on a wide range of BSI committees are now open. This is a fantastic opportunity for members to have a say and get involved in the work of your Society and make a real difference to immunology in the UK.

Our committees are crucial to the work of the BSI. As a committee member, you will help oversee areas such as the delivery of our strategy, governance and finances.

You'll work closely with our CEO and have front-row seats for all the action. This is your opportunity to influence how the BSI supports its members, and to promote and champion immunology more widely. Joining a committee is also a chance to develop your personal and professional skills, and to contribute to a group of likeminded people.

For most positions, you need no previous experience of sitting on a committee, just plenty of enthusiasm!


©Shutterstock/VectorMine

We encourage nominations from across the spectrum of our membership, from all backgrounds and career grades. Please check your emails and the BSI website for details on how to nominate yourself.

If you have any questions or if you have any problems submitting your nomination, please contact membership at **membership@immunology.org**.

Committee vacancies

BOARD OF TRUSTEES
- President and Chair of the Board of Trustees
- Chair of the Member Representative Forum and Trustee
- Early Career Trustee
- General Trustee

BSI MEMBER ENGAGEMENT FORUM
- Clinical Representative
- Early Career Representative
- Regional Representative – Scotland
- Regional Representative – England
- PhD Representative

BSI CONGRESS COMMITTEE
- Clinical Representative

SECRETARIES
- Public Engagement Secretary

The roles listed below are only open to BSI Clinical Immunology Professional Network (BSI-CIPN) members:

BSI-CIPN STEERING GROUP
- Nursing Representative
- Membership Lead
- Industry Liaison Representative

BSI-CIPN CONFERENCE PROGRAMME COMMITTEE
- General Member

We are keen to have representation from both medics and healthcare scientists on this group, both fully qualified and trainees. We would also be keen to receive applications from individuals working in paediatrics. After nominations, positions are selected by an in-house panel to complement the existing expertise on the committee.

The BSI-CIPN is our professional network that provides a strong voice for clinical immunology. BSI-CIPN membership is open to professionals and trainees working in clinical immunology, with applications subject to approval from the BSI-CIPN Steering Group. You must be a BSI member to join the BSI-CIPN but there is no additional cost to your membership. You can find out more here: **www.immunology.org/clinical/bsi-cipn**

Why should I vote?

Your vote is your chance to have a say in who represents you and your interests! Your elected representatives will make numerous decisions on your behalf, and will help to shape UK immunology more broadly. By voting, you can influence many different aspects of the BSI's work, governance and activities. Voting is quick and easy. All eligible BSI members will receive a voting link so please keep an eye on your inbox!

Dates for your diary

Nominations open:
23 March 2026

Nominations close:
13 April 2026

Voting opens:
5 May 2026

Voting closes:
28 May 2026

Results announced:
Mid-June 2026

Find out more

You can find out more about the BSI committee elections and the specific roles available at: **www.immunology.org/news/committee-elections-2026**.

SOCIETY NEWS

BSI Member Representative Forum: here to represent you

The BSI Member Representative Forum is the place where the voice of our membership is fed into our activities. Chaired by Professor Jim Brewer, 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, and communications. The BSI Member Representative Forum aims to help the Society in implementing its strategic plan by providing a mechanism by which the views of the membership can be inputted into our activities.

Our January meeting started with an update from BSI Congress 2025, reflecting on the event, reviewing delegate feedback and discussing suggestions for how to make Congress even better in 2026. The group then went on to discuss the BSI's bioinformatics training opportunities, exploring how these courses can be made more sustainable and accessible for immunologists with different working patterns or availability. The Forum discussed the option of delivering bioinformatics in a self-paced format, and how this might impact learners' experiences.

Next, Forum discussed the 2026 BSI election cycle – with several major roles open for nomination this year, Forum members were updated on the timelines for elections, and encouraged to get the word out to colleagues, share perspectives of working with the BSI in a voluntary capacity and encourage relevant members of the immunology community to put themselves forward for open roles.

The meeting ended with a discussion around the BSI's annual Vaccine Engagement Day, which this year will take place on 25 March 2026. The goal of this event is to increase knowledge about vaccinations, and engage immunologists, scientists and the public in conversations around vaccine facts. In 2026, the BSI will focus on UK-based vaccine topics, particularly given the numerous changes that have recently been made to the UK vaccines schedule. Members of the group brought their personal perspectives from conversations they have had around vaccines with peers and members of the public, and a number of suggestions were made around resources to share and topics to cover on Vaccine Engagement Day.

Find out more

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 Chief Executive Officer, Graham Blair, at **g.blair@immunology.org**.

AI supercomputing models advancing discoveries to transform understanding and treatment of cancer immunity

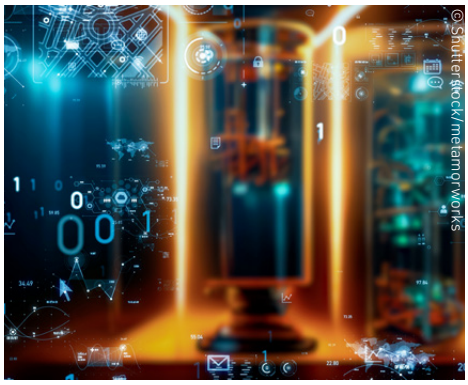
Are you a computational immunologist, or interested in building AI, GPT or foundation models to understand cancer immunity?

The UK Cancer Vaccine AI Scientist and Supercomputing Project is a national project to advance understanding of cancer immunity and accelerate the development of safer, more precise and more effective cancer vaccines. They are launching a Cancer Immunity Supercomputing AI Accelerator. This initiative is creating opportunities for AI scientists, immunologists and translational leaders to create state-of-the-art foundation models capable of predicting immune responses to cancer and guiding next-generation vaccine design.

Participating teams will be able to share in access of sovereign UK AI supercomputing infrastructure, with compute allocations to support ambitious, high-impact modelling. The goal is clear: decode tumour immunity at scale and accelerate safe, precise cancer vaccines. This is in line with the ambitions of BSI to provide the immunology community with support to establish more connections and enhance collaboration, both within their field and with other related scientific disciplines, and between sectors.

The accelerator is led by Dr Lennard Lee and Prof Tim Elliott, anchored within the Centre for Immuno-Oncology at the University of Oxford.

'Participating teams will be able to share in access of sovereign UK AI supercomputing infrastructure.'



Find out more

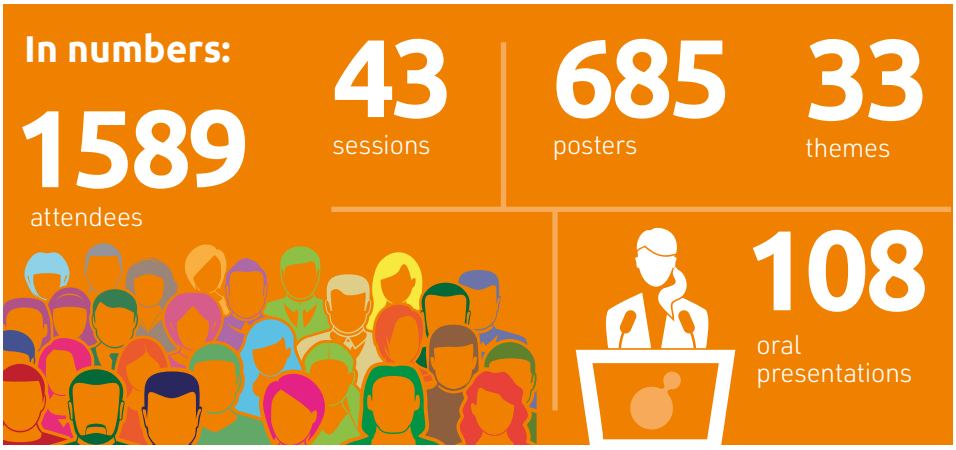
To complete an expression of interest and learn more

SOCIETY NEWS

In pictures: **BSI Congress and BSI-CIPN Conference 2025**

Thank you to everyone who joined us in Liverpool in December for BSI Congress and the BSI-CIPN Conference.

This was our second time running both events in tandem, with a number of joint sessions allowing the clinical immunology community to join the wider BSI community for networking, knowledge exchange and sharing perspectives. We had a record attendance this year, with over 1850 immunologists from around the world attending the two events.



Congratulations to our 2025 Bright Sparks

Congratulations to the winners of our Bright Sparks sessions at the British Society for Immunology Congress 2025. This event aims to showcase the work of early career researchers as well as providing them with valuable experience talking about their work in front of a large audience.

PhD category:

1st place: Carin Andrea Brundin, *Francis Crick Institute* – 'Germinal centre activity in tumour-draining lymph nodes regulate systemic immunity'
2nd place: Alexander Redmond, *University of Oxford* – 'The soluble isoform of the type I interferon receptor is a negative regulator of antiviral gene expression'
3rd place: Holly Sedgwick, *University of Manchester* – 'Investigating B cell dynamics and interaction with the extracellular matrix in chronic lung disease'

Postdoc category:

1st place: Jonathan Mannion, *Institute of Cancer Research, University of London* – 'Harnessing immunogenic cell death to improve cancer therapy'
2nd place: Georgia Baldwin, *University of Manchester* – 'Ym1 as a regulator of IL-17 and LPS-induced lung inflammation'
3rd place: Samuel Higginbotham, *Newcastle University* – 'Neutrophils as a sex-specific driver of hepatic steatosis'

SOCIETY NEWS

Poster prizes

We are delighted to announce the winners of the six Poster Prizes awarded at BSI Congress 2025 in recognition of outstanding poster presentations. This year's prizes were awarded as follows:

FOCIS Poster Prize

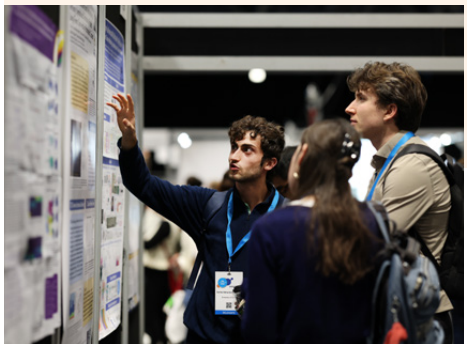
We would like to thank the Federation of Clinical Immunological Societies (FOCIS) for kindly sponsoring one of our poster prizes. Together with FOCIS, we congratulate:

- **Ehsan Sedaghat-Rostami**, *The Pirbright Institute* – 'Comparative pathogenesis and immune dynamics of porcine respiratory coronavirus and pandemic H1N1 influenza virus in a swine model (P.018)'

Science Immunology Poster Prize

Science Immunology has kindly sponsored one of our poster prizes. With them, we congratulate:

- **Spyridon Makris**, *University College London* – 'Lymph node homeostasis is driven by lymphocyte number and maintained by robust tissue topology (P.180)'



BSI journals sponsored Poster Prizes

The BSI's official journals *Clinical & Experimental Immunology*, *Immunotherapy Advances* and *Discovery Immunology* were proud to sponsor three poster prizes. On behalf of all the editors, we extend our congratulations to the following winners:

- **Flavio Beke**, *Cancer Research UK Cambridge Institute, University of Cambridge* – 'L-type voltage-gated Ca^{2+} channels control T cell killing via non-canonical Hedgehog signalling (P.193)'
- **Aisling Newing**, *Trinity College Dublin* – 'Fuelling mitochondrial metabolism boosts phagocytosis in *ex vivo* human monocytes (P.340)'
- **Rébecca Barascud**, *INFINITy, France* – 'Prenatal maternal stress alters offspring CD4 T cell immunity through microbiota alteration (P.420)'

Disease Models & Mechanisms Poster Prize

And finally, we would like to thank *Disease Models & Mechanisms* for sponsoring this prize, and extend our congratulations to the winner:

- **Charlotte Simpson**, *Cancer Research UK Cambridge Institute, University of Cambridge* – 'LC2 promotes pancreatic cancer by enforcing the co-localisation of Tregs and PD-1^{+}TCF1^{+} $CD8^{+}$ T cells in peri-tumour niches (P.569)'

BSI-CIPN Prize Winners

This year, we introduced two new prizes at the BSI-CIPN Conference 2025. The prize for most outstanding poster is in honour of Prof Helen Chapel, Professor of Clinical Immunology at the University of Oxford, and the prize for most outstanding oral presentation is in honour of the late Dr David Webster, who was a leading primary immunodeficiencies physician.

The Helen Chapel Prize for most outstanding poster

- **Haggar Elbashir** – 'Phenotypic spectrum of TCF3 deficiency: case series from the United Kingdom, the Republic of Ireland and Qatar'

The David Webster Prize for most outstanding oral presentation

- **Grace Evans** – 'Functional testing enhances the usefulness of *ex vivo* T-lymphopoiesis assays assisting clinical decision-making in genetically undefined T-lymphocytopaenia'

Congratulations to the winners and to everyone who presented their poster at the BSI-CIPN Conference this year.

Save the date!

BSI Congress 2026 and BSI-CIPN Conference 2026 will take place from **30 November to 3 December** in Glasgow.

SOCIETY NEWS

Recognising our new BSI Honorary Members

Each year, the British Society for Immunology awards honorary lifetime membership to individuals in recognition of their outstanding contribution to immunology and/or to the Society. This honour is awarded after rigorous discussion and a vote by the Trustees. For 2025, we are delighted to announce that Professor Liz Simpson and Dr Kimberly Gilmour were made BSI Honorary Members at a ceremony conducted at BSI Congress.

Professor Elizabeth Simpson

Elizabeth Simpson's illustrious career spans many of the key innovations and specialisms within immunology. Having initially qualified in veterinary medicine, she trained in pathology at Cambridge University where she became interested in similarities between protective responses to tumours and rejection of transplants in both humans and in other species. From here, she started work alongside Nobel laureate Peter Medawar during a critical period in the late 1960s when the immunology of graft rejection first began to be understood. Her research focus was on antigens present only in grafts from male mice, research that eventually made it possible to track down the genes responsible on the Y chromosome.

A major focus of her subsequent work was investigating how T cells, which play a major role in rejecting foreign tissue, recognise these Y chromosome antigens. Her in-depth, elegant work on multiple facets of this has made contributions to our understanding of the mechanisms of immunological tolerance and graft rejection. Her discoveries have been critical in making organ transplantation safer and more successful for patients.

She has worked in leading institutes around the world but spent most of her career in London at the National Institute for Medical Research, and latterly at Imperial College London, first as one of the founding PIs and then as Deputy Director of the Clinical Sciences Centre. She now holds the role of Emeritus Professor of Transplantation Biology. Her contribution to the field of immunology and transplantation biology has been immense and it is our absolute pleasure to recognise her achievements with an honorary membership.

> ‘Her in-depth, elegant work on multiple facets of this has made contributions to our understanding of the mechanisms of immunological tolerance and graft rejection.’

Dr Kimberly Gilmour

Kimberly Gilmour is an internationally acclaimed clinical scientist. She is Chief of Laboratory Medicine, Clinical Lead for Immunology and Director of Cell Therapy at Great Ormond Street Hospital. In collaboration with medical genetics, she developed and now heads the national service for diagnosing primary immunodeficiencies.

Her contribution to advancing patient care and treatment is unparalleled. She has developed a number of protein and mRNA-based diagnostic tests for primary immunodeficiency and transduction of cells for gene therapy trials. She was one of two clinical scientists who manufactured the cells for successfully treating the first baby with X-linked severe combined immunodeficiency in the UK with gene therapy and has since paved the way with her in-depth contribution to gene therapy research for primary immunodeficiencies. In addition, she has played a pivotal role in the UK clinical immunology community, first through her representation of clinical scientists via the UK Primary Immunodeficiency Network (she was the first non-medic to chair the organising committee for a very successful UKPIN conference) and then supporting the BSI through our merger to form the BSI Clinical Immunology Professional Network.

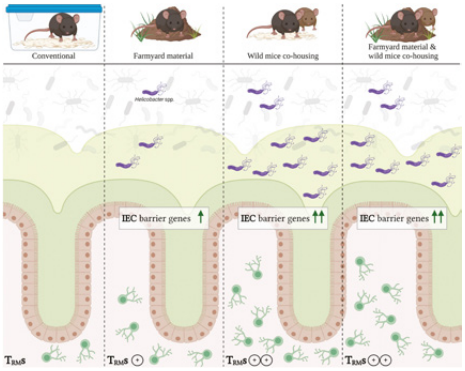
Kimberly shows exceptional leadership, both within her lab where she leads with unmatched inclusiveness and outside her lab through her selfless dedication to patients with immunodeficiency. She is a wonderful advocate for clinical immunology and we are honoured to have her as a lifetime member of the BSI.

SOCIETY NEWS

Our most impactful research of 2025

We are pleased to highlight a selection of impactful articles published in the BSI's official journals, *Immunotherapy Advances, Discovery Immunology* and *Clinical & Experimental Immunology* over the past year. These standout papers were selected due to their high number of article downloads, citations or wider reach, and span topics from immune regulation and infection biology to autoimmunity and cancer immunotherapy, reflecting the research that has captured the attention of our global community.

Discovery Immunology



Comparison of naturalization mouse model setups uncover distinct effects on intestinal mucosa depending on microbial experience
https://doi.org/10.1093/discim/kyaf002
H Arnesen *et al.*

Researchers compared multiple 'naturalization' methods in mice and found that different microbial exposures, especially co housing with wild mice, produce distinct effects on gut microbiota, epithelial gene expression and immune cell composition. These insights help guide the selection of naturalized mouse models for studies aiming to better reflect real-world immune and gut barrier responses.

Obesity drives dysregulation in DC responses to viral infection
https://doi.org/10.1093/discim/kyaf001
A Woodcock *et al.*

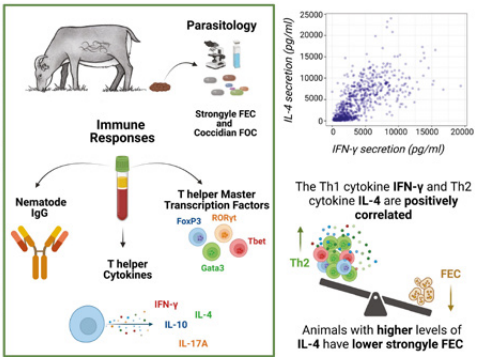
This study shows that dendritic cells from mice with diet-induced obesity produce fewer cytokines when faced with a viral infection, linked to impaired cellular metabolism and reduced protein translation. These obesity-driven defects may weaken downstream immune responses, increasing vulnerability to viral illness.

Dynamic roles of ILC3 in endometrial repair and regeneration
https://doi.org/10.1093/discim/kyaf004
A O Cuff *et al.*

ILC3 cells in the uterus shift between two subsets that become active at different stages of the menstrual cycle and after birth, helping drive tissue repair and regeneration. In endometriosis, these cells sit farther from the tissues they normally support, which may impair healthy endometrial healing.

T-helper cell phenotypes are repeatable, positively correlated and associated with helminth infection in wild Soay sheep
https://doi.org/10.1093/discim/kyae017
Y Corripio-Miyar *et al.*

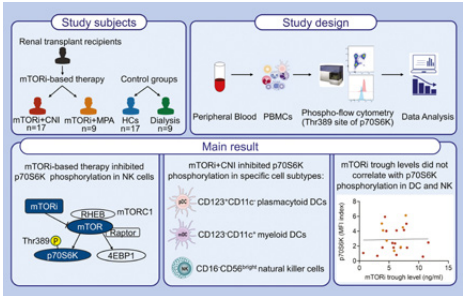
T-helper immune responses in wild Soay sheep are surprisingly flexible: instead of opposing each other, Th1 and Th2 signals often rise together and consistently reflect resistance to different parasites. Though antibody levels are stable over time, T-helper cell counts vary widely between individuals, highlighting how complex and dynamic immune strategies are in natural environments.



CD28 and TCR differentially impact naïve and memory T cell responses
https://doi.org/10.1093/discim/kyaf006
C Williams *et al.*

CD28 signalling doesn't just amplify T cell activation, it shapes naïve and memory T cells in distinct ways. This study shows that the balance between CD28 and TCR signals determines how these cells divide and function, with memory T cells even showing CD28 driven effects independent of the TCR, revealing a far more complex interplay than previously appreciated.

Clinical & Experimental Immunology



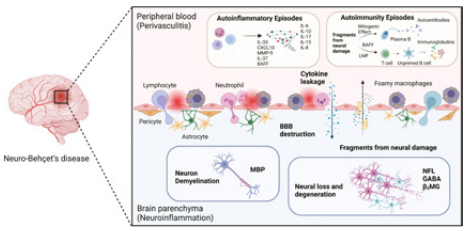
Pharmacodynamic effect of mTOR inhibition-based immunosuppressive therapy on dendritic cell and natural killer cell subsets after renal transplantation
https://doi.org/10.1093/cei/uxaf026
S Weber *et al.*

mTOR inhibitor therapy after kidney transplant suppresses key signalling (p70S6K phosphorylation) in specific dendritic cell and NK cell subsets, but not uniformly across all immune cells. Measuring this signalling directly, rather than relying on drug blood levels may offer a more accurate, personalised way to gauge immunosuppressive effectiveness.

FcγRIIB (CD32B) antibodies enhance immune responses through activating FcγRs
https://doi.org/10.1093/cei/uxaf015
AP Simpson *et al.*

Blocking the inhibitory receptor FcγRIIB with antibodies boosts antibody production and improves tumour clearance, not by removing inhibitory signals but by promoting Fcγmediated activation of other Fcγ receptors. The study suggests that FcγRIIB targeting antibodies could be a powerful new strategy to enhance vaccine effectiveness.

SOCIETY NEWS



Neuro–Behçet's disease: an update of clinical diagnosis, biomarkers and immunopathogenesis
https://doi.org/10.1093/cei/uxae123
H Zhan *et al.*

Neuro–Behçet's disease is a rare but severe neurological manifestation of Behçet's disease, diagnosed mainly through clinical features and MRI because reliable lab biomarkers are still lacking. Emerging evidence highlights IL 6 and other inflammatory markers as key indicators of disease activity, while immune imbalance and autoantibodies reveal the autoimmune and inflammatory mechanisms driving CNS damage.

Human genetics of responses to vaccines
https://doi.org/10.1093/cei/uxaf034
E Karp-Tatham *et al.*

Genetic differences help explain why people vary so much in how strongly they respond to vaccines, and why rare adverse reactions occur in only a small subset of individuals. Large-scale studies, especially during COVID-19, have revealed clear links between specific HLA variants and vaccine responses, opening the door to safer, more effective and more personalised vaccination strategies.

Proteomic analysis reveals dysregulation of peripheral blood neutrophils in patients with Multiple Sclerosis
https://doi.org/10.1093/cei/uxae115
KJ Smith *et al.*

Neutrophils from people with multiple sclerosis (MS) show major protein level differences compared with healthy individuals, including an overabundance of inflammatory granule proteins and altered MAVS pathway signalling. These dysregulated neutrophils also fail to properly suppress T cell activation, especially pathways linked to Th17 cells suggesting they may contribute directly to the immune imbalance that drives MS.

Immunotherapy Advances

Bispecific T-cell engagers for the recruitment of T cells in solid tumours: a literature review
https://doi.org/10.1093/immadv/ltae005
L Dewaele *et al.*

BiTEs can successfully redirect T cells to kill cancer cells without relying on normal MHC–TCR interactions, but they've struggled to work in solid tumours because of toxicity, short half lives, and the barriers created by suppressive tumour microenvironments. Newer Fc-silenced, half life extended designs and better tumour-specific targets offer promise, especially when BiTEs are combined with other immunotherapies.

Therapeutic targeting of tumour-associated macrophage receptors
https://doi.org/10.1093/immadv/ltaf009
RGA Martins *et al.*

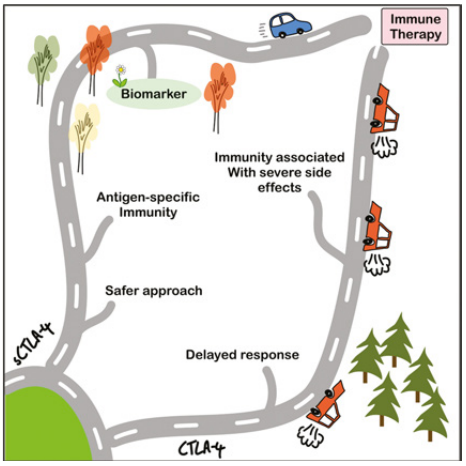
Tumour associated macrophages (TAMs) are among the most abundant immune cells in solid tumours, where they help drive cancer growth, spread and resistance to therapy. This review outlines the most promising TAM surface receptors being explored as drug targets, highlighting both their therapeutic potential and the challenges of safely and effectively reprogramming these pro tumour immune cells.

Imaging antigen processing and presentation in cancer
https://doi.org/10.1093/immadv/ltaf002
D Lau *et al.*

Imaging technologies are giving researchers new ways to watch how cancer cells process and present antigens, revealing details of the steps that shape T cell activation and immunotherapy outcomes. These tools help map where and how these pathways fail, supporting better biomarker development and improving the ability to predict and monitor treatment responses.

CTLA-4–two pathways to anti-tumour immunity?
https://doi.org/10.1093/immadv/ltaf008
FJ Ward *et al.*

Anti CTLA-4 therapies seem to work through two different mechanisms: either by directly boosting effector T cell activity by blocking CTLA-4 signals, or by depleting regulatory T cells that normally suppress anti-tumour immunity. This review discusses evidence for both pathways and explores how the soluble form of CTLA-4 may complicate current treatments while also offering new therapeutic possibilities.



CD40L and IL-4 suppress NK cell-mediated antibody-dependent cellular cytotoxicity through the HLA-E:NKG2A axis
https://doi.org/10.1093/immadv/ltaf029
LV Graham *et al.*

CD40L and IL-4 signals in the lymph node raise HLA-E levels on malignant B cells, which suppresses NK cell killing by engaging the inhibitory receptor NKG2A and reduces the effectiveness of anti-CD20 therapy. Blocking NKG2A restores NK cell driven antibody-dependent cytotoxicity, suggesting that combining anti NKG2A with anti-CD20 could improve treatment for CLL and lymphoma patients.

Every article you read, cite or share plays a crucial role in advancing vital research. All revenue generated from our journals is reinvested into BSI initiatives, supporting grants, events and career development programmes that strengthen the immunology community. Your engagement helps drive discovery and ensures continued progress in the field of immunology.

We also encourage you to publish your own research in the BSI journals portfolio, helping to shape the future of immunology. Join the conversation online by tagging us on **X, Instagram, LinkedIn** and **Bluesky**.

SOCIETY NEWS

An update from the BSI-CIPN

The BSI-CIPN community had a great end to the year with the BSI-CIPN Conference taking place in Liverpool, on 2–4 December 2025. Ahead of the main conference, the BSI-CIPN Steering Group also held their December quarterly meeting to round off the year and set some plans in place for 2026.

The Steering Group had a chance to meet our CEO, Graham Blair, in person, and discussed the new BSI Strategy, 2026–2030, and the place of the BSI-CIPN within the organisation's wider strategic aims. The group was pleased to acknowledge that a clinical focus is prominent in the new strategy, and are looking forward to continuing to implement work to improve care for their patients.

During the conference, the BSI-CIPN also launched a new workforce report, which brings together data from across the four UK nations to present a picture of how services are currently staffed across the different professional groups working in clinical immunology. The findings show that workforce numbers are hugely variable, with implications for service resilience and access to care. The report sets out a series of recommendations including urgent full-service reviews of clinical immunology and allergy services in each UK nation, improved national data, an increase in the number of nationally resourced training and consultant posts, and strengthened support for nursing and healthcare science. You can find out more about the report on page 14.

Since the report has been launched, BSI-CIPN members – with the support of the BSI staff team – have been working to ensure the report reaches decision-makers and other key stakeholders. The report was featured in health sector press, and we received acknowledgement of the report from national health workforce planning agencies and departments. We will continue to promote the report and its recommendations over the coming weeks and months, with a round of parliamentary engagement planned for the near future. In England, we will be keenly awaiting the publication of the NHS 10 Year Workforce Plan to understand what it means for clinical immunology and to ensure we are continuing to put forward workforce recommendations for the specialty through the framework we expect it to provide.

We were also excited to have recently launched a Clinical Audit grant scheme which will see grants awarded to BSI-CIPN members who are looking to implement clinical audits within their services with the aim of improving patient care. We are very pleased to be able to offer this opportunity to the clinical community and are looking forward to seeing innovative and patient-centred projects receive support to help get them off the ground. The Clinical Audit grant scheme has been kindly supported through the provision of an educational grant from Grifols, who have not influenced the development of these grants.

The BSI-CIPN Clinical Guidelines Special Interest Group continues to meet monthly and is pushing ahead with guideline development on Good Syndrome. Since December 2025, sub-groups of the main Writing Group for the Good Syndrome guideline have met to review the literature and establish key questions across three thematic areas on which the guideline will focus – the diagnostic pathway for immunologists, the diagnostic pathway for non-immunologists, and monitoring and treatment. We are still looking for a nursing colleague to join the Writing Group for this guideline, so if you are interested, please don't hesitate to contact us.

The Clinical Guidelines Special Interest Group also worked together and with Steering Group colleagues to input into NICE technology appraisals on avapritinib for the treatment of advanced systemic mastocytosis, followed by a further submission on remibrutinib for the treatment of chronic spontaneous urticaria. The group also received support from colleagues attending the BSI-CIPN Conference to take forward work on the discontinuation of the Pneumovax-23 vaccine in the context of immunology practice, and will be able to share updates on this work shortly.

In January, the BSI-CIPN Steering Group decided to respond to the NHS England Draft Scope for Engagement on the proposed operational framework for individualised genetic therapies. This consultation response is available to view on the Policy and Public Affairs section of the BSI website, along with previous consultation responses submitted by the BSI-CIPN.

If you would like to find out more about the work of the BSI-CIPN, please email cipn@immunology.org.

> 'Since December 2025, sub-groups of the main Writing Group for the Good Syndrome guideline have met to review the literature and establish key questions across three thematic areas on which the guideline will focus'

BSI Immune Therapies Summit

Accelerating the next generation of immune therapies across diseases

Hosted by the British Society for Immunology

BSI Immune Therapies Summit 2026

Save the date!

Monday 18 to Tuesday 19 May 2026, Cambridge, UK

Following the success of the 2024 Summit, which brought together over 140 leaders from across industry, academia and clinical research, we are delighted to announce the return of the BSI Immune Therapies Summit in May 2026.

This cross-sector meeting provides a rare opportunity for experts working across different disease areas to come together and discuss the latest developments and future challenges in immune therapies. Attendees at last year's event described it as "inspiring", "invaluable for making new connections" and praised the breadth of discussion bridging autoimmune diseases and cancer.

The 2026 Summit will once again be hosted at Hinxton Hall Conference Centre in Cambridge, providing the perfect setting for collaboration and networking. With internationally recognised speakers, interactive sessions and cross-disease discussions, this is an exceptional opportunity to exchange insights, spark new collaborations and help shape the next generation of immunotherapy research for patient benefit.

Who should attend?

The BSI Immune Therapies Summit is aimed at senior leaders from industrial, academic and clinical research settings who are passionate about accelerating immune therapy development and building their cross-sector networks in this field.

Why attend?

At this event you can...

- Explore unparalleled and varied networking opportunities with sector leaders from industry, academia and health fields
- Listen to cutting-edge talks and discussions from top international experts
- Take part in holistic, cross-disease discussions on the latest developments across the spectrum of immunotherapy research
- Contribute to dynamic focus sessions

Registration is open now!

Find out more

Visit **www.immunology.org/immune-therapies-summit-2026**

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National data highlights significant workforce pressures in UK clinical immunology and allergy services

Recent analysis of UK workforce data has highlighted significant pressures across clinical immunology and allergy services, with immunology consultant shortages leaving some services extremely fragile, and wide variation in staffing across the country and across professional groups.

BioCryst UK
a Neopharmed Gentili company
CSL Behring GRIFOLS octapharma

This report was funded through the provision of educational grants from BioCryst, a Neopharmed Gentili company, CSL Behring, Grifols and Octapharma. These organisations have neither influenced nor contributed to the content of the report or any of its associated activities.

A workforce report from the British Society for Immunology Clinical Immunology Professional Network (BSI-CIPN), published in December 2025, brings together available national and regional data to present a clearer picture of staffing across the specialty. The findings show that workforce capacity varies substantially between regions and professional groups, with implications for service resilience and patient access to specialist care.

Clinical immunology and allergy services play a central role within the wider immunology landscape, providing specialist expertise in the diagnosis and management of immunodeficiencies, complex allergies, autoimmune and autoinflammatory conditions, alongside essential laboratory and diagnostic services. As immune-based therapies become more widely used across healthcare, the need for specialist immunology input continues to grow, making the resilience of this workforce increasingly important for the health system as a whole.

"Clinical immunology and allergy is a small but critical NHS specialty, yet years of inadequate workforce planning have left services under-resourced and, in some areas, close to collapse," said **Professor Sinisa Savic, Chair of the BSI-CIPN and Consultant in Clinical Immunology and Allergy, Leeds Teaching Hospitals NHS Trust.** "Despite the dedication of our clinical teams, current staffing levels cannot keep pace with clinical demand. This report sets out clear evidence of services at breaking point, with staff stretched to look after huge populations. Too many patients are facing a postcode lottery when it comes to access to services, with the situation in Scotland and Wales particularly critical."

"With this report, we are calling for an urgent, nationally led workforce review with sustainable, long-term planning at its centre. To inform this, we need better data on workforce activity, capacity and demand. Policymakers must act now to reduce pressure on services and ensure specialist clinical immunology and allergy services can be accessed by everyone who needs them – no matter where they live. The BSI-CIPN stands ready to work with the wider sector to implement the report's recommendations and build vital capacity within the specialty."


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The report identifies fifteen services across the UK that are operating with only one or two medical consultant immunologists. These services are particularly vulnerable, as the departure, illness or retirement of a single consultant could leave them without a medical lead and place the service at risk of collapse. Such fragility not only affects service continuity but also has consequences for patients, who may experience delays, fragmented care pathways or the need to travel out of area to access specialist expertise.

Staffing pressures are not limited to medical consultant immunologists. The report highlights substantial variation across nursing, healthcare science, technical and support roles, underlining the need for a more comprehensive understanding of workforce capacity across all professional groups. Specialist services rely on multidisciplinary teams, and gaps in any


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part of that workforce can affect how care is delivered, how services function day to day and how resilient they are to further pressures. This variability contributes to inconsistent service provision and reinforces the need for coordinated national planning.

"This new report showcases just how fragile the workforce has become due to a lack of workforce planning. My nursing colleagues work hard to deliver quality care to our clinical immunology and allergy patients as part of a multi-disciplinary team, and as workload increases, support for the workforce must keep pace," said **Jill Edmonds, Nursing Representative for the BSI-CIPN and Consultant Nurse, Liverpool University Hospitals NHS Foundation Trust**. "Support for our patients is at the heart of what we do, and our patients deserve to be confident in accessing services no matter where they are in the country. It's clear that now is the time for a national workforce review and for policymakers to establish a long-term plan to stabilise and grow clinical immunology and allergy services."

Adding to this, **Rachel Dale, Healthcare Scientist Representative for the BSI-CIPN and Clinical Scientist, University Hospitals of Derby and Burton NHS Foundation Trust**, said, "Healthcare scientists are a crucial part of the clinical immunology workforce. We must better support our valued staff currently working within clinical immunology and allergy to ensure that a career in the sector is both rewarding and attractive and promotes ongoing professional development. This report demonstrates that additional resource is needed to be able to nurture and retain new talent coming into the specialty across professional groups. Longer-term, comprehensive, workforce planning is needed, with training pathways at the core of this. It's time for policymakers to commit to bolstering the immunology and allergy workforce for the future."


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Currently, nowhere in the UK meets recommended consultant-to-population levels of one immunology consultant per 451,000 (recently published by the Royal College of Pathologists). Particularly concerning figures are shown in Scotland, where there is just one medical consultant immunologist for every 2,054,407 people, and Wales, with one for every 1,062,333 people. Scotland is also significantly understaffed in specialist immunology nursing, with just one immunology nurse per 1,180,191 people.

Where local staffing is insufficient, services increasingly rely on cross-border referrals to maintain access to care – for example, Newcastle supports Scotland, Manchester supports North Wales, and London supports the South East. While this helps mitigate immediate gaps, it can result in fragmented care pathways and places additional pressure on better-resourced centres. The report emphasises that every region should be adequately staffed in its own right to support equitable access to specialist services.

Beyond visible pressures on clinics and waiting lists, the report highlights that much of the work delivered by immunology and allergy teams happens behind the scenes. A significant proportion of care for people with immunodeficiency and complex allergies occurs outside formal outpatient clinics, including telephone advice, email communication, review of results and essential laboratory liaison. These activities are often not captured in routine service metrics, meaning that staffing needs may be underestimated during workforce and service planning.

This 'hidden' workload reflects daily reality for many clinical immunology and allergy staff and reinforces the need for better data to accurately represent the full scope of clinical, scientific and nursing practice within these services.

BSI-CIPN recommendations

In response to these findings, the BSI-CIPN sets out a series of evidence-based recommendations. These include urgent, nationally driven full-service reviews of clinical immunology and allergy services in each UK nation to establish the workforce required to deliver safe and sustainable care.

The report also calls for improved national data on service activity, workload and outcomes to support more accurate workforce planning, alongside routine long-term workforce strategies that include training pathways across all professional groups. Increasing training and consultant posts, strengthening support for nursing and healthcare science roles, and ensuring protected time for education and professional development are identified as key priorities.

Clinical immunology and allergy services provide vital care for their patients. When these services are understaffed, it creates a challenging and unsustainable situation for the dedicated teams working to keep them running. The BSI-CIPN has set out clear, evidence-based recommendations to stabilise and grow the workforce, and stands ready to work with national decision-makers and partners across the health system to act on them and ensure these vital services are equipped for the future.

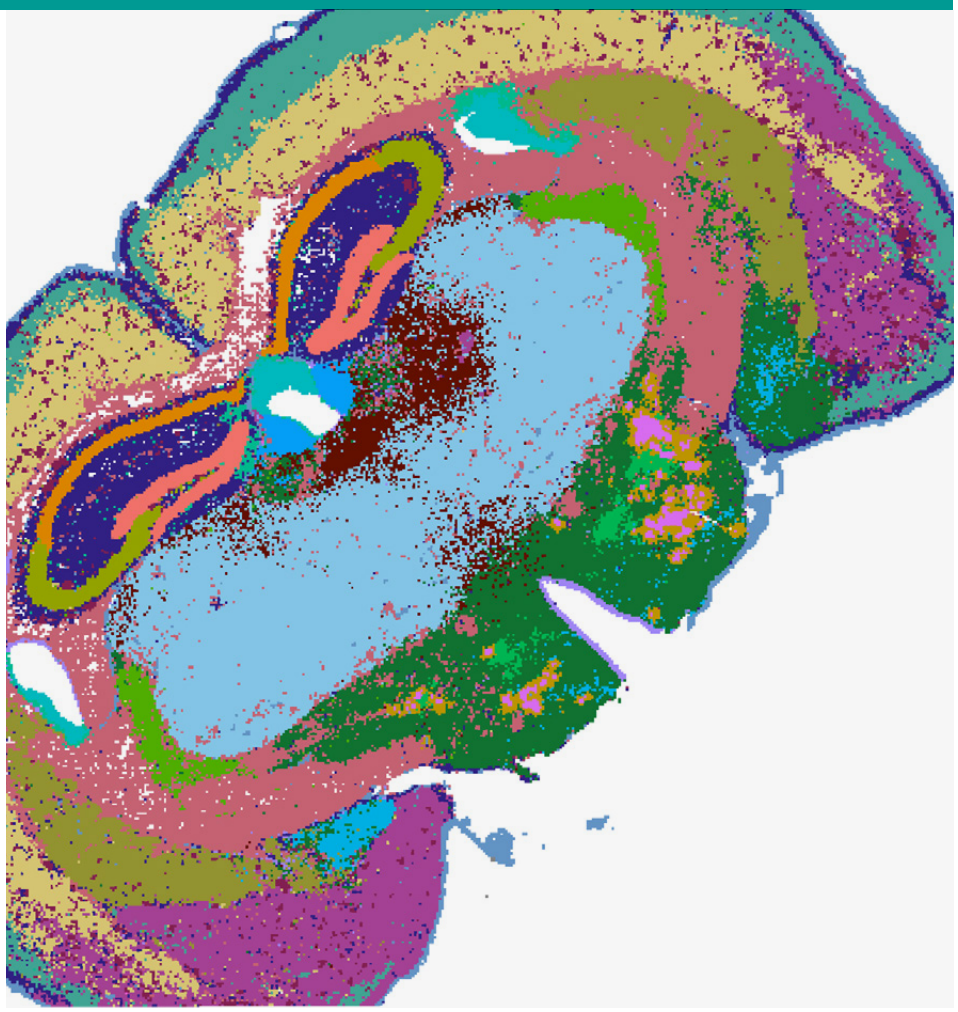
Acknowledgements

We would like to thank the professional organisations that contributed insights and recommendations to inform this report, providing valuable perspectives on the specific challenges in their own areas and helping to support the clinical immunology and allergy workforce. These organisations are:

- The British Society for Allergy and Clinical Immunology
- The Immunology and Allergy Nurses Group
- The LabMed Immunology Professional Committee
- The Institute of Biomedical Science
- The Royal College of Pathologists
- The Association of Clinical Pathologists

Get to know the trainer: John Cole

The BSI is delighted to have a longstanding collaboration with John Cole (Glasgow Bioinformatic Core), to equip wet-lab immunologists, clinical scientists and other life scientists with the skills and confidence to perform their own bioinformatic data analysis. The course has had over 3,000 attendees since 2019, with a mean rating of 9.5/10 for content and delivery. We caught up with John to discuss what makes these courses so popular and what the future holds.



Tell us a little about yourself; when did you start working with bioinformatics?

I've had quite an unusual career: I left school at 16 and trained to be a landscape gardener, and then studied genetics in Glasgow, but didn't like the wet lab so I then became a chef for a while. I realised that I love science but don't like the wet lab, so I went into bioinformatics and did a master's degree about 16 years ago. I went on to work in the field of cancer research, so I did quite a lot to do with ageing and cellular senescence and eventually moved into immunology. Eventually, I moved on to managing a small bioinformatics unit and training others.

Something I noticed very early on was that there are a lot of misconceptions and fear about learning how to do bioinformatics, but also how important it is for people from a range of research areas to learn it. Because even though I was a good bioinformatician, I couldn't do everything – I didn't know a lot of the biology and didn't have time to learn it.

Wet-lab immunologists often don't have a coding background and view bioinformatics as quite daunting. How do you tailor your training to support those people?

The important thing is to understand where people are coming from. I didn't learn to code until I was nearly 30. So, I can remember that feeling of starting something new that is very different. Coding, like any skill, you can learn. It is the application of logic and that's what scientists do all day long.

What's key is making well-structured, well thought through content that is consistent in how it's delivered. It's always a lecture followed by a tutorial. The lecture is not there for anything other than context around what the code is supposed to do and then you code it yourself with the demonstrators there. Any lesson that's important is repeated, but from a different angle, so you're seeing the same thing from lots of different viewpoints and start to build up a working understanding: how R works, what you're trying to achieve and how you do it, and how to make beautiful plots.

The main thing to remember is that it takes three or four days to get over the hump. That's why people often end up using Excel, Prism or GraphPad, because you can do it immediately. With coding, you have to put a solid few days in until you really start to see the effects, and maybe a full week until you're making beautiful plots. What we try and do is lower the difficulty in getting to that point by keeping it friendly, by taking it slow, by explaining everything in great detail; what every little bracket does, why you're doing it, and how to think about it.

What we do differently from other bioinformatics courses is that at the beginning we demonstrate why it's worth learning. Another thing we do differently is that we don't teach chronologically. The coding you need to know to do processing is the most difficult to learn. We start at the analysis, that's when you're doing actual biology and making plots. It's very easy to engage.

> ‘Beyond wet-lab research, industry still needs bioinformatics expertise. If you're moving into industry, or even sales you might need to sell something which needs that to some degree; it's useful.’

How many people would you say you have trained at this point?

Over 3,000 PhD students, postdocs and PIs, and I think for masters, students and undergraduates, it's probably another 2,000. It's getting quite a big number now!

Big data approaches are becoming more prevalent across biology. Where do you see the biggest skill gap in immunologists?

I'd say the obvious answer is finding immunologists that are experienced to do a good job of omic analysis. It is less of a problem than 5 years ago because leaning it is viewed as important now. Glasgow is perhaps a little ahead of the curve in terms of bioinformatic training for students, but other universities maybe aren't quite there yet.

There's also a big gap in terms of experienced informaticians. There are now quite a lot of people that have six months to a year, but it is harder to find people who are very experienced. Having someone to talk to that knows exactly what they're doing is also very important. That's something we offer as part of our courses, too. We run Q&A drop-ins once a week for most of the year, and you can come and talk to me or one of my colleagues who really know what we're doing.

At what career stage would you encourage people to attend bioinformatics training?

It's open to any career stage. I'd say the main thing is to learn bioinformatics before you need it. If you're planning an omic project or think it might be important to your PhD or next postdoc, or something you're planning on putting into your next grant, then you should learn it, right? Even if you decide that coding is not for you and it's for people in your lab, it's still very useful to understand. You will come across so many examples in papers, and have to understand or review them, so it's useful to be familiar with these base concepts.

Does learning bioinformatics and the concepts behind it help with career prospects for those who don't stay in academia?

Absolutely. Beyond wet-lab research, industry still needs bioinformatics expertise. If you're moving into industry, or even sales you might need to sell something which needs that to some degree; it's useful. I think people that learn coding can then go on to other things. When I studied bioinformatics, it was a one-year master's, and half the class went off to become programmers. One of the people went off to work for an investment bank. So, there's lots of opportunity that it opens up. It's not a huge investment where you might discover something that you really enjoy in its own right. So, I wouldn't say that bioinformatics is relevant outside medical science; but coding and data sciences absolutely is a sought after skill.

In terms of the people that have attended your training and the feedback you've received, how have you shaped and evolved the courses as time has gone by?

We've run the course more than 50 times now and used feedback to hone it as time has gone on. Certainly, in the beginning, there were questions like, should we run it for one-week full-time or should we run it for two weeks of mornings? What works best for a busy scientist?

We've also reviewed which bits are not explained so well, and refined what was not clear in the tutorial book. What we also have is a kind of bonus section, where if there's something that attendees often ask, but its not in the course, we add it. For example, producing a rock curve; then we provide bonus code and a tutorial. So, we've tried to include other helpful things that we can't fit into the main thread of the course.

And this year we will be offering a self-paced learning option in addition to the live formats that already exist. How are you feeling about that?

It's exciting to offer a range of things for a range of different people. People think in different ways, so it's exciting to try and accommodate as many different people as we can. There are also plenty of people that can't commit to two weeks of mornings, especially PIs, clinical people, and so on; that's difficult. We find that when we've run courses for groups of people self-paced only, most of them just get on with it and do it no problem whatsoever.

What also is very good is if people sign up together in the same group, then they can talk to each other. Being part of a group chatting to each other and empowering each other is a great way to learn. And there will always be the drop-ins, so people can come and speak to us. We set up a relaxed, camaraderie style place where you can talk to us. So, if it's not working, then you just have to talk to us to get over the hump, until you get onto something you find easier.

Interview by **Laura Cox**

Glasgow Bioinformatic Core

Building a career as a carer: an interview with Laura Pallett and Laura Carter, Carers in STEMM

In autumn 2024, the three researchers behind Carers in STEMM (science, technology, engineering, mathematics and medicine) – Prof Laura Carter, University of Leeds, Dr Laura Pallett, University College London, and Dr Laura Wolz, University of Manchester – conducted a sector-wide survey of UK researchers with caregiving responsibilities to understand the lived experiences of those balancing an academic career and caring responsibilities. We spoke to Laura Carter and Laura Pallett to discuss the key findings of the report, their next

Please could you start by introducing Carers in STEMM?

Laura Carter

We met at a Future Leaders Fellows event in Cardiff in 2023 where we found ourselves comparing challenges we'd each navigated just to attend the meeting. It turned out we all had very similar stories and were experiencing very similar challenges in our careers. After meeting again at another event we decided to join forces and advocate for better support for those balancing caring and academic careers.

We started off by writing an article for *Nature Careers* where we highlighted these barriers and put forward some recommendations, but we were very aware that this was our thinking and it doesn't necessarily reflect the community or challenges that others are facing. And as scientists, we thought it was important to collect the data on this, so we applied for funding from the Future Leaders Fellow Development Network to run a sector-wide survey to capture the lived experiences of other carers in in STEMM. We wanted to capture experiences from across disciplines and different forms of caring responsibilities, as the needs and challenges may look very different for different people.

Prior to this, how much data was there out there around carers in STEMM?

Laura Pallett

Data on many protected characteristics gets collected on grants, on panels, even in terms of paper citations. But as far as we could tell, there was no systematic data that was capturing caregiving – whether that's of a younger child, an elderly parent, or an adult with additional needs. It was important to us to get a handle on just how many carers there are, how much of the share of caring they were responsible for and the implications that has for them and their career. Travel is embedded and integral to a STEMM career; 94% of our respondents had travelled at least once in a two-year period. This covers travelling for vivas, research collaborations, conferences and meetings to learn new techniques, etc. And all of this underpins your career. The original survey had a focus on travel, but now we're starting to widen this out to explore further issues.

For instance, we've had people reaching out to us to highlight the fact that tax-free childcare is not available for PhD students. The cost of childcare is phenomenal and caring for an elderly individual costs even more. We are keen to build on our momentum and continue to advocate for carers tackling areas identified as barriers to those balancing caring and careers.

The profile of Carers in STEMM has grown since you published the results of the survey. You were recently invited to engage with government and policymakers on the barriers women arefacing in research. How did that go? What were some of your key takeaways from that meeting?

Laura Carter

It was an excellent platform to discuss some of the findings from the report. While the survey was looking at carers more generally, the results revealed that 64% of carers who responded were women, so a lot of the findings were relevant to discuss in this forum.

I found the conversation really focused on progressive approaches to addressing many of the barriers that we have known for quite a number of years, including longer-term solutions like shifts in cultural expectations, but also what can we do in the short term to have easily identifiable solutions and implement those.

Laura Pallett

We came away thinking it was a productive and positive conversation. There was a willingness from everyone in the room to

be quite open about the barriers. We put forward one of the barriers that we foresee, which is caregiving, but other barriers were extensively discussed too, and I really do hope that those conversations continue.

A key question that came out of our report and was discussed at the roundtable was what role do institutions and employers in STEMM play? And by extension what role do learned societies play? A striking finding from the report is the significant financial burden individuals face in order to meet their caregiving responsibilities while doing their jobs. Many people in academia are required to work outside standard hours and must arrange additional childcare to make this possible.

What we found is that that lots of funders and societies are quite progressive: many funders are allowing caregiving costs to be to be included, for example. But there's an institutional barrier. Institutional policies trump funder policy and T&Cs. The BSI is a great example, with flexible carer grants, but to be eligible you have to be a member. We're calling on institutions to look inward and update policies to align with funders, share best practices and make care grants fit for purpose.

Laura Carter

Some of the feedback we had from the survey respondents was around the barriers to apply for grants, and the administrative burden that went on top of it. Some forms are very lengthy, and there isn't a guarantee that you would get that reimbursement. And a lot of care is informal – you're not going to get a receipt from the babysitter down the road. Allowing people to choose their care in a flexible way would help expand the coverage of these grants to be more useful.

You've mentioned that the majority of carers from your survey results were women. Are there any other groups of carers that are most affected in STEMM environments?

Laura Carter

One thing that's important to highlight is that carers can also have dual caring responsibilities – for example looking after young children while supporting elderly parents or relatives. The care demands are very different, and I think quite often we assume care to be related to parental care. Supporting adults or children with additional needs adds further complexity, as their care needs can often not be met away from home.

It's also important to acknowledge the impact of caring responsibilities early in an academic career. A postdoc, PhD student or early-stage lecturer, may be planning to start families or anticipating future caring roles at exactly the stage when their employment is most precarious. The combination of short-term contracts, uncertain career progression, and emerging care responsibilites can create significant barriers to remainining and progressing in academia.

Laura Pallett

We also realised quite quickly that some places have used some solutions as tick boxes. For example, crèches in conferences: our survey revealed that it's a minority of people who benefit from this. Once your children reach school age, it's no longer feasible to take them out of school to attend a conference with you. And for those caring for elderly relatives, there are no equivalent care options like nurseries to rely on.

We therefore propose that the upfront costs typically allocated for event crèches be redirected into more flexible care funds.

Beyond travelling for conferences, are there any other structural features of STEMM workplaces that make caring challenging?

Laura Carter

Contracts in early stages of the career can be really difficult. I had my first child when I was a postdoc and only came back to a contract with a few months remaining on it. That puts you in a very challenging situation to try and find the next position to progress your career, while also simultaneously adjusting to being a parent.

We also see many people go on maternity leave during short-term contracts, and in some cases, they are not eligible for full maternity leave provisions at all because their contracts are so brief. This can have a significant influence on whether someone feels able to start a family or continue a career in academia, simply because the systems in place don't align with the realities of early-career academia.

Laura Pallett

Another thing we need to think about it is the short notice of out of hours activity that happens a lot in STEMM. Whether it's conferences, networking events or other more social events like inaugural lectures, so much networking activity in STEMM takes place outside of nine to five hours. For a carer, if you don't have enough notice, you just can't rearrange it.

I think one of our survey respondents hit the nail on the head when they said a one-day event is almost the same as a two-day event. You still need to organise drop offs beforehand, or deliver some medication to your elderly relative, or whatever it may be. It doesn't really matter what the length of the event is, you still often have to rearrange stuff.

What more can institutions and societies do to support carers?

Laura Pallett

One thing that came out of the survey is that carers want the additional load associated with caring to be acknowledged. Line managers in research are so often focused on research output and tend to miss some of the easy adaptations. Something as simple as conferences or meetings that start at 10am rather than 9am can make such a difference. With learned societies, flexible care grants are an example of best practice. And some institutions have started to offer enhanced parental funds. So you could apply to have a technician (or postdoc) in your place when you're on maternity leave. UKRI has been very progressive in their wording for fellowships and for grants to allow for caregiving costs to be to be covered. The issue is that no one knows about that. Our survey found that 75% of people had no idea what their funder or institutional policy was when it comes to caregiving.

Interviewed by **Laura Cox**

Some key findings from the survey:

581
UK-based respondents

38.2%
at Early Career stage

94%
missed at least one travel opportunity due to caregiving

48%
cancelled travel at least once in 2 years

>£62k
estimated minimum financial outlay for out-of-pocket expenses

Find out more

Download the full Carers in STEMM Survey Report: The Dual Demands of Academic Travel and Caregiving here:

Get to know the trainer: Derek Davies

In 2024 the BSI, in collaboration with leading flow cytometry trainer, Derek Davies, launched a new training opportunity for immunologists looking to upskill in designing, running and analysing multiparametric flow cytometry experiments. Here, we catch up with Derek about why flow cytometry is such an important technique in immunology and how he runs the course.

Tell us a little about yourself; how long have you been working with flow cytometry?

II first started in cytometry rather than flow cytometry in 1980. In fact, on my second working day, I came across a static cytometer, which was used to measure DNA content in cells on slides. I got into flow cytometry in 1985, which was a good time to get into it because it wasn't commercially available at that point. So, people were floundering a little bit in terms of how it worked. There was a lot of self-help in the early days, which was great.

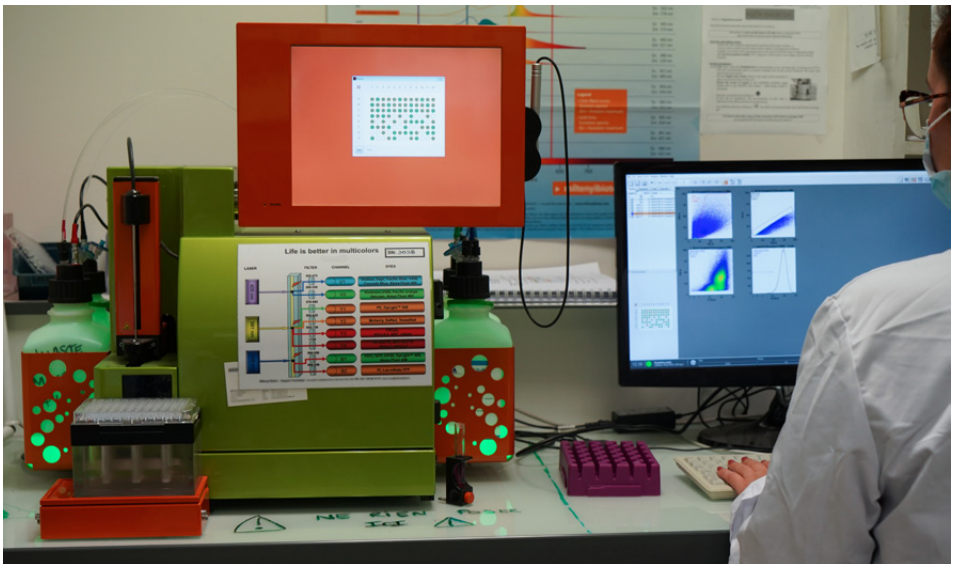
At that time, I was part of an MRC-funded project to look at whether you could use flow cytometry to pre-screen cervical specimens. Turns out you can't really, but it showed me that flow cytometry was a very versatile technique, and I realised that this was something that immunologists in particular would find useful because they were spending a lot of time looking at fluorescently labelled cells under a microscope. I got the idea that flow cytometry would be a good technique to be a core technology, and I ended up moving to what was then the Imperial Cancer Research Fund in London, which had one of the first core facilities in the country, and I was there for over 20 years, eventually running the facility. The institute was one of the founding bodies of the Francis Crick Institute, so I spent a lot of time building a new facility, and towards the end of my career I took on an internal role where I was looking at training and setting up training procedures in all of our core facilities.

How many people would you say you've trained in your entire career?

Probably somewhere approaching 10,000, I would think. You know, virtually every PhD student will use flow cytometry to some degree. And it's a very widespread technology now.

How has flow cytometry's role in modern immunology changed?

In terms of immunology, it's always been a technique that immunologists have wanted to use. But if we go back 40 odd years, the cytometers weren't as capable as they are today. We didn't have as many fluorescent reagents as we have today. So, the principles are the same; it's just that we've managed to up the number of things that we can measure.



And of course, that's a big advantage if you've got a heterogeneous population like you often have in peripheral blood. You can look at many, many different cells subsets very quickly. And not only that, you can start asking them questions. So, you can look at cytokine production, you can look at phosphoprotein signalling, and so on. And we can do that now all in one tube.

What are the most common misconceptions immunologists have about flow cytometry?

Immunology is probably the biggest driver of flow cytometry. I always get a list of applications during training and phenotyping is right up there. In terms of the biggest misconception, people will read a paper where they're looking at 20 or 30 different markers and think they're going to be able to do that the following day. So, there's a lot of management of expectations.

You need to understand, first of all, how the machines work. You need to understand how you can combine fluorochomes. And there's a need for data analysis as well.

The basic principles of any experiment are always the same. You need to think about your biological question, you need to think about the reagents that you have, and you need to think about the cytometer that you have. But the trouble is that those

three things are different for every person.

If you turn up in a lab, somebody gives you a protocol, and it works – that's brilliant. But as soon as it goes wrong, you've got to troubleshoot that. Designing flow experiments is a lot like plate spinning. There are a lot of things you've got to think about, and they all interact with each other.

Beyond the lab, how does flow cytometry expertise open doors for people in their careers?

Flow is a fantastic transferable skill. If you're in the biomedical research world, you'll come across flow cytometry, and it's available in all walks of life, not just in the research environment. Clinically, it's used for diagnostic purposes. You have cytometers in the brewing industry, water companies, and so on.

It also opens doors if you don't necessarily want to be a career scientist. We now have a lot of core facilities in most institutes, and if you've got that flow aptitude, that's exactly what I'd be looking for in staff. And because it's big business, of course, you've also got that opportunity to move into industry, whether it's application specialists or selling reagents or working in a pharma or CRO company.

You've been working with the BSI to deliver flow cytometry for immunologists for nearly two years now. What are some of the common challenges immunologists have in designing or analysing cytometry experiments?

We're aiming the course at people who are relatively new. Ideally, they'd have a little bit of knowledge of flow cytometry, but the courses are about designing panels.

We have an online portal where delegates can look at some videos before they come on the course, which gives them an idea of the principles, how flow cytometers work, and so on. Then in the main part of the course, we focus on the experimental design. But I think in general, it's maybe in the first six months of your career, you've done a little bit and you want to consolidate that knowledge and get a little bit extra knowledge.

There's also a live element to the training where people bring their questions to try and make it as interactive as possible. So it's a combination of didactic teaching and breakout rooms, which have been very successful. The feedback is very good around those.

What would you encourage people to specifically look out for when choosing a training course?

If you're looking for a course, I think you want something that is a little bit interactive that allows you to speak with the trainers. With any course that I run, there's always a needs assessment beforehand. We send out questionnaires in advance to understand the skill level and the expectations that the delegates have.

If you're an immunologist, you want people who are going to be able to answer immunologically relevant questions. You're looking for people with experience; you're looking for a course that isn't just sitting in front of a screen and listening to somebody for three hours.

Immunologists need to constantly learn new skills, particularly with new technologies such as AI. Do you have any advice for what immunologists should look to do to stay competitive?

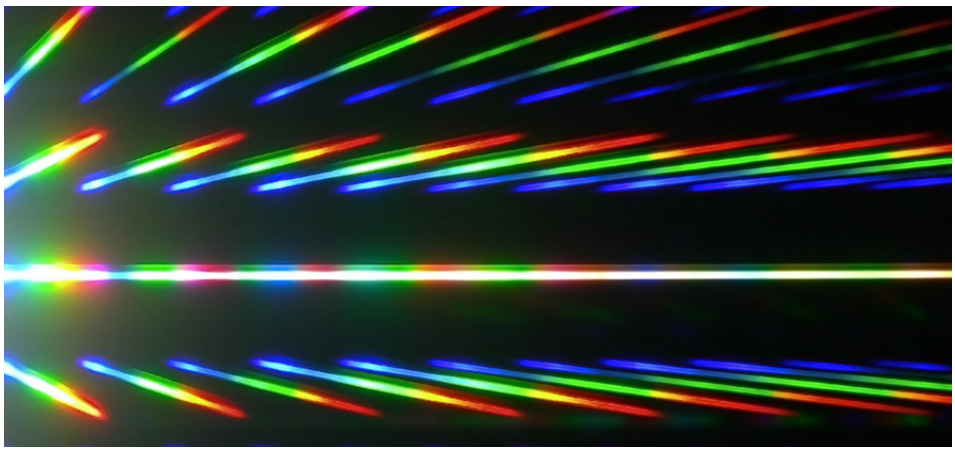
Well, I think that they do need to be a little bit more au fait with programming languages, particularly R and Python. The people working with genomics are producing lots of data as well. So, it's really knowing how to deal with that data and put it into context of your biological question.

We don't want to get to the stage where you press a few buttons and AI pops something out at the other end. You've got to make sure that that the answers make sense at the end of it. There will always be a need for understanding the basic principles, what you've done, and how you apply that to the data that you've got. There's much more integration now. Thirty-odd years ago, you would just do a flow cytometry experiment and publish that. But now you've got to integrate that with all sorts of multi-omic technologies, each of which has its own particular challenges.

What kind of techniques have you employed throughout your training career to help people learn better?

Traditionally, training would all be done through classroom-based sessions, because there was no other way of delivering it. But now, we have lots of different ways of doing it, including face-to-face, virtual training and there's also just YouTube videos.

I've been focused on developing a proper e-learning system which is a combination of didactic teaching videos and live forums. That then gives everybody an opportunity to access information. Obviously since the pandemic, everybody is much more used to looking for things online or getting that information online. But I also like the idea of building a network of experts who could deliver courses locally so that in-person live course content would be the same, but it would be run at different places, meaning people wouldn't have to travel.



FUTURE FOCUS

Neuroimmunology in physiology and disease: from fundamental concepts to hands-on training

Last year, Stavroula Piliou, PhD student at the University of Cambridge was awarded a BSI Career Enhancing Grant to attend the 2025 Cajal Advanced Neuroscience Training Course in Bordeaux, France. Here, she reflects on her experience.

I was thrilled to receive the Career Enhancing Grant from the British Society for Immunology (BSI) to attend the 2025 Cajal Neuroimmunology Course in Bordeaux, an immersive training programme that brings together researchers from across the globe to explore cutting-edge advances in neuroimmunology. I applied for the grant because my PhD research at the University of Cambridge, Department of Pathology, focuses on developing AAV-based gene therapies for multiple sclerosis. The course offered an ideal opportunity to deepen my understanding of neuroimmune interactions, gain hands-on experience with new experimental techniques, and connect with experts in the field to help guide my future research and career.

The Cajal course exceeded all expectations. It featured world-leading speakers who presented state-of-the-art research on microglia, border-associated macrophages, meningeal immunity and the meningeal lymphatic system. I was particularly fascinated by discussions on neuroimmune crosstalk, cellular metabolism, and the dynamics of CNS immune populations in health, disease and development. The lectures provided new insights into disease mechanisms and highlighted how changes in microglial function and meningeal immunity can influence neuroinflammation. These findings are highly relevant for understanding neuroinflammatory conditions, such as multiple sclerosis, and suggest potential therapeutic avenues for modulating neuroimmune activity.

A major highlight of the course was the hands-on research projects, which I undertook in teams of three. I participated in two projects that provided highly practical experience. The first, 'Following the steps for the creation of human microglia xenograft models', led by Dr Renzo Mancuso, focused on the challenges of studying microglia in animal models or *in vitro*. We learned how to generate mouse xenografts with iPSC-derived human microglia and assess engraftment using flow cytometry and immunofluorescence. The second, 'Neuroimmunometabolism: approaches and hypothesis-driven research', led by Dr Luca Peruzzotti-Jametti, explored immunometabolism. We used BV2 cells for immunocytochemistry and Seahorse metabolic assays, extracted and cultured primary microglia from mouse pups and macrophages from bone marrow, and analysed metabolomic and publicly available single-cell datasets. These projects taught me new technical skills and emphasised the critical role of metabolism and species-specific differences in microglia, knowledge I plan to integrate into my PhD, as understanding chronic microglial activation could open new avenues for treating progressive multiple sclerosis.

One of the most valuable aspects of the course was the opportunity to interact with instructors, keynote speakers and peers. The open and supportive environment encouraged questions and collaborative discussions, turning many lectures into dynamic scientific dialogues. I also received mentorship and guidance on potential future research projects, including training opportunities in specialised techniques, collaborations on aspects of my PhD research, and advice on applying for UK-based and European fellowships to support postdoctoral work. These interactions provided invaluable insights, practical opportunities and inspiration for the next steps in my career.

The course also included memorable social and collaborative events. Informal evening discussions and poster sessions created a friendly, open atmosphere where participants could share ideas, discuss ongoing projects and build long-lasting professional connections. At the end of the week, each team presented the results of their projects, explaining their approaches and answering questions from instructors and peers. These presentations were both challenging and rewarding, providing an excellent opportunity to consolidate what we had learned, receive feedback and practice communicating our findings clearly. Overall, these interactions were enjoyable and instrumental in expanding my scientific network and learning from colleagues across different labs and countries.

Attending the Cajal Neuroimmunology Course has been a transformative experience for my career. I acquired a wide range of new skills and deepened my conceptual understanding of neuroimmunology. The course also provided mentorship and networking opportunities that will directly influence the next stages of my research and career development. I am confident that the knowledge, skills and connections gained through this grant will enable me to design more sophisticated experiments in my PhD and explore innovative approaches for treating neuroinflammatory diseases like multiple sclerosis.

I am extremely grateful to the British Society for Immunology for supporting my attendance. This experience has enhanced my technical and scientific expertise and inspired me to think creatively about my research and future career. I would wholeheartedly recommend the Cajal Neuroscience Course to anyone seeking an immersive, hands-on and collaborative experience at the forefront of the field.

Congratulations

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

New Year Honours

Congratulations to **Derek Davies**, Senior Researcher, Francis Crick Institute, and BSI training partner (you can find out more about this on page 20) who received a British Empire Medal this year. He was recognised for services to Technical Support in the Life Sciences.

Derek Davies

BSI Communication and Engagement Grant

Congratulations to all those successful in the latest round of our grant:

- **Dr Asma Ahmed Hassan Elshiekh**, University of Glasgow/ CRUK Scotland Institute: Demystifying Cancer Immunology at the Glasgow Science Festival
- **Dr Katia Ribeiro de Jesus**, Imperial College London: Day of Immunology – Regulatory T Cells: Guardians of Immunity

Veterinary Immunology Collaboration

We would like to acknowledge the achievements of BSI members **Dr Wilhelm Gerner**, Pirbright Institute, and **Professor Dirk Werling**, Royal Veterinary College, for their participation in an innovative collaboration seeking to develop and validate new lab-based models for studying animal health and disease. This Biotechnology and Biological Sciences Research Council-funded initiative aims to strengthen research on non-animal technologies to reduce or replace the use of farmed animals in research.

New Director of the Roslin Institute

We would like to extend our congratulations to BSI member **Professor John Hammond** who has been named as the new director of the Roslin Institute in Edinburgh. John is an expert in genetics, genomics and immunology, is currently Director of Research at The Pirbright Institute and is expected to start his new role in spring 2026.

John Hammond

New Sir Gustav Nossal Professor of Immunology

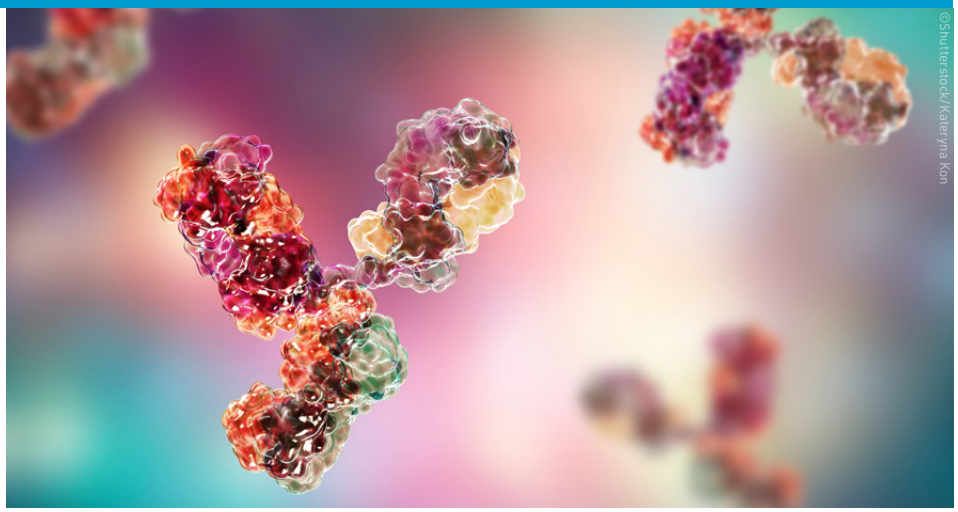
Congratulations to **Professor Laura Mackay FAHMS**, who has been appointed as the inaugural Sir Gustav Nossal Professor of Immunology at the Walter and Eliza Hall Institute of Medical Research (WEHI). Laura will commence this role in April 2026, and will also continue her role at the Doherty Institute in a part-time capacity.

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**.

Diversity in immunometabolism: fuelling, building, regulating and communicating

On 16–17 April 2026, we will be holding our 4th Immunometabolism meeting, **'Fuelling the Immune Response'**, in Newcastle upon Tyne. This biennial meeting brings together scientists from all career stages, with a wide range of interests in the expanding field of immunometabolism, from across the UK and beyond for scientific exchange, collaboration and inspiration.



Over the past decade, immunometabolism has evolved from a relatively small field into an area of interest to many. Initially, immunometabolism research mainly centred on the question of cellular energetics – how immune cells fuel their functional outputs. However, studies have quickly expanded to encompass the role of metabolic pathways in immunity: in building cellular structures, regulating cell differentiation and fate, metabolites being used as signalling molecules for intra-, inter and systemic communication, and the production of metabolite-derived defence molecules to deter pathogens. It has become clear that, apart from cellular regulation, the immune system plays key roles in regulating systemic metabolism, influencing the storage and release of nutrients, and perturbations of these carefully controlled interactions lead to metabolic disorders and/or exacerbate non-communicable as well as infectious diseases. Interactions are intricate and often surprising; cancer cells go as far as 'stealing' mitochondria from immune cells increasing their own energetic capacity, while in the process weakening their adversaries. Equally, pathogens co-opt their hosts' metabolism for their own needs.

Our meeting will explore many of these themes, discussing exciting new discoveries across the range of immune cell types, spanning both innate and adaptive arms of the immune system. Speakers will again share cutting-edge work that illustrates the diversity and depth of the field.

This year's programme features leading scientists whose work spans the core intersections of immunity and metabolism. Professor **Doreen Cantrell** (University of Dundee) is renowned for defining how nutrient and cytokine driven signalling pathways shape T cell development, activation and metabolic programming. Dr **Alex Clarke** (University of Oxford) investigates metabolic regulation in autoimmunity, revealing how autophagy and altered nutrient use impacts B cell dysfunction. Professor **Inés Pineda Torra** (CABIMER/UCL) explores how lipid activated nuclear receptors coordinate lipid metabolism and immune pathways to influence cardiometabolic and autoimmune disease. Professor **Dirk Brenner** (Luxembourg Institute of Health) uncovers how redox balance, metabolic rewiring and mitochondrial control govern immune cell fate, inflammation and anti-tumour responses. Dr **Cécile Benezech** (University of Edinburgh) illuminates immune–metabolic crosstalk in adipose and cardiovascular health, particularly how obesity and ageing reshape B cell biology and infection risk. Dr **Claus Desler** (University of Copenhagen) focuses on mitochondrial bioenergetics and immunosenescence, clarifying how age-related metabolic decline impairs immune activation and drives chronic disease vulnerability. Dr **Hayley Sharpe** (Babraham Institute) investigates how redox regulated phosphatase and kinase signalling integrates metabolic cues to influence immune signalling fidelity, ageing and dysfunction.

Together, these speakers span the full spectrum of immunometabolism – from nutrient sensing and lipid regulation to redox biology and immune ageing – promising a programme rich in mechanistic insight and translational potential.

At the heart of our meeting is the early career researchers showcase. We are excited to provide this platform, highlighting new discoveries and achievements and providing plenty of opportunities for networking and discussion. Submitted abstracts will be considered for oral and poster presentations, and we will once again host a dedicated Bright Sparks session, presenting work from postdoctoral researchers and PhD students.

Looking to the future, we hope this meeting will continue to strengthen the UK's immunometabolism community. By bringing together researchers from across the country and internationally, we aim to cultivate an inclusive network that fosters collaboration, innovation, supports sharing resources and expertise, and propels the field forward.

We look forward to welcoming a diverse group of enthusiastic scientists to Newcastle this April.

Please sign up for our meeting at **immunology.org/immunometabolism-26**.

Discovery IMMUNOLOGY

ADVANCES IN VETERINARY IMMUNOLOGY

Led by Professor Jayne Hope, The Roslin Institute, UK

This collection welcomes original research and reviews on a broad range of topics in veterinary immunology, including the structure and function of the immune system in veterinary species, comparative immunology across species, and the activation and regulation of immune responses for disease control, such as vaccine delivery systems.

We also welcome papers exploring novel tools and technologies for understanding veterinary immunology and animal models for translational immunology and improving One Health.

Scan here to find out more

British Society for immunology

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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, Discovery Immunology* and *Clinical & Experimental Immunology*. Members benefit from discounted publication fees and have access to these journals free of charge at **www.immunology.org/journals**. All BSI paper summaries written by Ellie Pearson, who is currently an intern on the BSI staff team.

Clinical & Experimental Immunology

The role of interferon-mediated suppression of monocyte immunothrombosis in infection susceptibility in systemic lupus erythematosus

In this paper, the authors explore the paradoxical relationship between infection risk and thrombosis in systemic lupus erythematosus (SLE). SLE is a systemic autoimmune condition associated with dysregulated immune cell metabolism, increased interferon (IFN) signatures, enriched monocyte populations and a prothrombotic state. Here, the authors highlight the role of monocyte-derived tissue factor (TF) in immunothrombosis, a key antimicrobial defence mechanism that intersects the innate immune and coagulation responses, and is defective in SLE.

This work illustrates the close relationship between monocyte IFN signalling and TF activity. It provides a compelling rationale for the contradictory observations of heightened infection susceptibility and hypercoagulation in SLE, centred around the negative impacts of chronic IFN signalling on TF activity and downstream pathogen control.

The authors integrated observations from SLE patients with secondary antiphospholipid syndrome (APS), who display lower IFN signatures than SLE patients without APS. SLE+APS patients presented markedly increased TF signatures and altered thrombotic profiles, supporting the relationship proposed between the two.

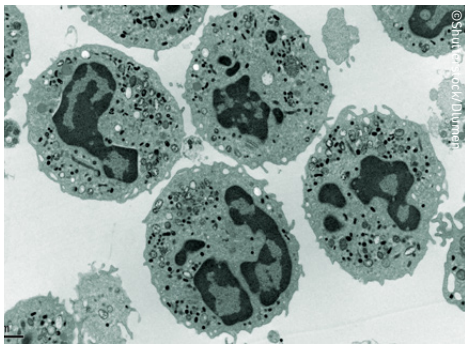
Murphy *et al* 2025 *Clinical & Experimental Immunology* **220** uxaf085, https://doi.org/10.1093/cei/uxaf085

Discovery Immunology

CD40L and IL-4 suppress NK cell-mediated antibody-dependent cellular cytotoxicity through the HLA-E:NKG2A axis

Our understanding of neutrophils and their role within the immune response has changed dramatically. Previously thought of as solely innate immune cells, neutrophils are now recognised as key coordinators of both innate and adaptive immune responses. Able to respond to inflammatory stimuli such as cytokines, and produce their own proinflammatory signals in turn, the role of neutrophils as immune orchestrators is currently far from completely defined.

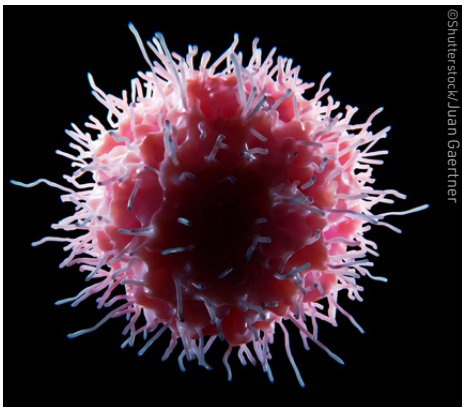
This study is the first of its kind to use RNA sequencing techniques to explore rapid gene expression alterations in human neutrophils. Healthy human neutrophils were exposed to a variety of proinflammatory cytokines to start to unpick the underlying mechanisms of neutrophil activation and regulation within the context of the overall inflammatory response. Expanding our understanding of altered neutrophil gene expression underpinning diseases may provide crucial mechanistic knowledge to facilitate a more personalised clinical approach and could expand therapeutic target options.



Thomas *et al* 2025 *Discovery Immunology* **4** kyaf013, https://doi.org/10.1093/discim/kyaf013

Immunotherapy Advances

Preclinical assessment of MAGE-A4-specific TCR-NK cells against solid tumours



Despite incredible successes of T-cell immunotherapies against many different cancers, their efficacy against solid tumours can be limited. The tumour microenvironment restricts T-cell capabilities to migrate to, and destroy, malignant cells. Conversely, natural killer (NK) cells are perfectly suited for tumour-directed cytotoxicity.

This paper describes the development and preclinical evaluation of a novel category of immunotherapy – NK cells genetically engineered to express functional T-cell receptors (TCRs). The authors insert TCR genes into NK cells using lentiviral vectors and evaluate the potency of this new cell product against the common cancer-associated antigen MAGE-A4. Not only do these TCR-NK cells retain the canonical functions of NK cells, but the presence of the TCR enhances the anti-tumour responses of the NK cell, regardless of MAGE-A4 presence. The TCR-NK cells were also cultured with normal healthy cells without activation, indicating the treatment would be safe for clinical use.

Boieri *et al* 2025 *Immunotherapy Advances* **6** ltaf036, https://doi.org/10.1093/immadv/ltaf036

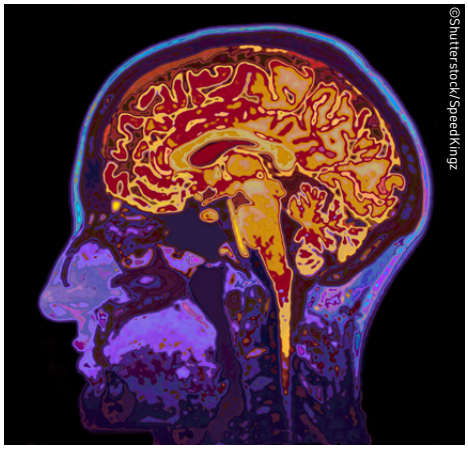
Around the journals

A summary of some of the latest papers from the world of immunology.

Astrocytes upregulate interleukin-15 in response to neuroinflammation during Alzheimer's disease

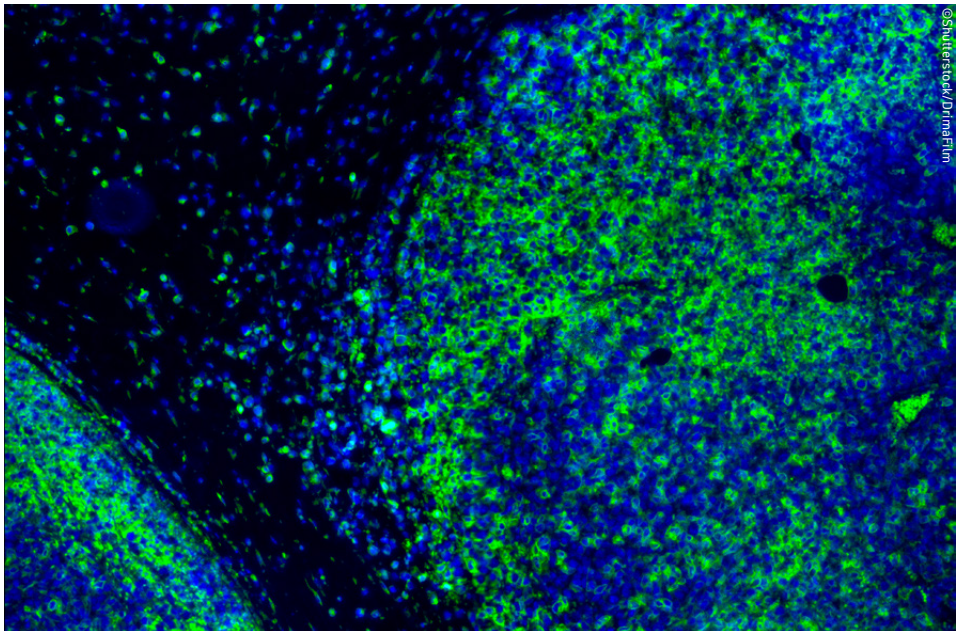
Immune dysregulation is now understood to contribute to the development of Alzheimer's disease (AD); increased expression of IL-15 within the central nervous system (CNS) has been noted as a common feature of several neuroinflammatory disorders, including AD. This paper sought to identify the cellular source of IL-15 within the AD brain and characterise any spatial relationship between IL-15 secretion and amyloid-β(Aβ) pathology. Using brain tissue from both humans and mice, the authors identified astrocytes as the predominant source of IL-15 associated with Aβ plaques. Astrocytes – the most abundant non-neuronal cell within the CNS – have immune capabilities, secreting IL-15 in response to AD-associated proinflammatory cytokines. Additionally, neurons near Aβ plaques displayed increased expression of the cell-surface receptor subunits which bind IL-15.

The crosstalk between IL-15 signalling and Aβ pathology could position the IL-15 axis as a protective strategy employed by neurons in AD, attempting to counter further neuroinflammation and neurodegeneration. This finding therefore presents an interesting potential research avenue into neuroimmune modulation of neurodegeneration in conditions like AD.



Shaw *et al* 2025 *Journal of Alzheimer's Disease* **109**
DOI: 10.1177/13872877251393275

Beyond borders: engineering organ-targeted immunotherapies to overcome site-specific barriers in cancer



This in-depth review explores the current state of organ-specific anti-cancer immunotherapies, focusing on nanovaccines (vaccines with nanotechnological elements) and their use in tumours of organs with distinct immune profiles, such as the brain, liver and lungs. The authors detail the ways in which these nanovaccines can be used to circumvent the common pitfalls of traditional immunotherapies, reprogramming immunosuppressive tumour microenvironments and revitalising exhausted immune responses through delivery of therapeutic compounds or immune adjuvant molecules.

The review calls for continued research into translating nanovaccines into a clinically viable treatment option, emphasising the vast body of work that stands between the technology as it exists today, and therapies ready for clinical use. The authors highlight that use of these nanovaccines may present an example of personalised cancer immunotherapy – something that would serve to greatly improve patient outcomes, and underscores the great potential held within this research field.

Moorthy *et al* 2025 *Drug Delivery and Translational Research* **15** 4217–4259

Adaptive clinical trial designs for rapid vaccine development: developing country vaccine manufacturers' perspective

This paper serves to communicate the benefits of adaptive clinical trial (ACT) designs over more traditional, static trials, for the development of vaccines against infectious diseases. Specifically, the authors aim to create awareness of ACTs among manufacturers, national regulatory authorities, and global collaborators of low- and middle-income countries, with the goal of increasing overall efficiency of vaccine development in instances of public health emergencies and pandemics.

The authors compare the characteristics of, and considerations needed for, conventional clinical trial designs versus ACTs, highlighting ACT benefits and exploring success stories – including vaccine trials from the 2014 Ebola outbreak, and the COVID-19 pandemic. They go on to discuss the regulatory frameworks needed for ACTs, and describe the considerations required for statistical monitoring, participant welfare and data safety.

The authors conclude by providing their recommendations for supporting ACT design, and call to action national regulatory authorities and industry stakeholders, urging them to routinely use ACTs in the vaccine development process.

Mahajan *et al* 2025 *Vaccine* **68**
DOI : 10.1016/j.vaccine.2025.127890

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