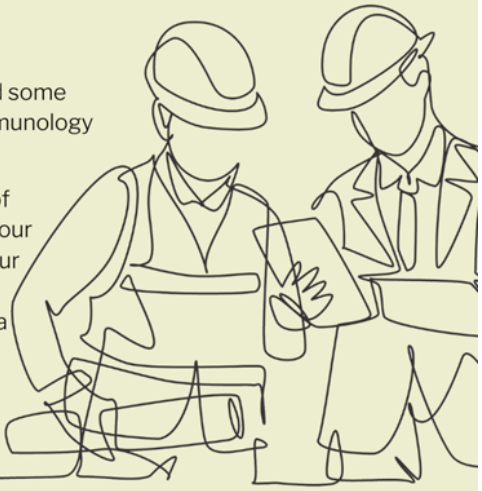
THE IMMUNOLOGS

A Word From The Editor...



If you're based in the Centre for Life Sciences, you might have noticed some construction works going on in the little nook that we know as the Immunology Programme main office. What's in the works?

For one, there will be a new dry lab space and workstations for users of the ITRP's core facilities to crunch their data at. We've also upgraded our meeting room with a laser projector for better image quality during your presentations, and adding more office space. And, of course, we're updating some of the old furniture (so that the office doesn't feel like a time-warp back to the 90s). Don't worry, we're still keeping the cosy hang-out area in front of the editor's desk.

Hmmm....maybe it's time we invested in that Nespresso machine.... what do you think?

New Projects

Dr Lim Hwee Ying has a new project on **'Role of resident arterial LYVE-1 expressing macrophages in preventing atherogenic vascular remodeling and (underlying) mechanisms'**. This project aims to comprehend the functional role of resident arterial LYVE-1 expressing macrophages during atherosclerosis progression and regression.

Dr Chen Kaiwen's project, **'Investigating the role of GSDME-dependent neutrophil lysis in Systemic Lupus Erythematosus'** will investigate the recently identified pore-forming protein, GSDME, in driving neutrophil lysis and the pathogenesis of SLE in mice and humans.

A/Prof Herbert Schwarz will be embarking on a 3-year project on **'Converting the immunoinhibitory ectopic CD137 expression in the tumor microenvironment to an immunostimulatory signal'**

Lastly, A/Prof Liu Haiyan has received a Kickstart grant for **'Harnessing the antitumor function of IL-37 for immunotherapy'**, to develop potential therapeutic agents that can modulate IL-37 signals for cancer immunotherapy.

Congratulations everyone, and the Programme wishes you every success in your projects!

Upcoming Events

Tuesday | 14 September 2021 | 12PM-1PM

Dr Jiao Huipeng

NUSMED ITRP Seminar Series: Sensing of endogenous Z-nucleic acids by ZBP1 triggers necroptosis and inflammation

Wednesday | 29 September 2021 | 4PM-4.45PM

Dr Isabelle Bonne

NUSMED ITRP Research in Progress: Sept 2021

Thursday-Friday | 7-8 October 2021

YLLSOM Graduate Students Society

OPEN FOR REGISTRATION: 9th Annual Biomedical Scientific Congress

Wednesday | 20 October 2021 | 9AM-5PM

Electron Microscopy Unit, YLLSOM

OPEN FOR REGISTRATION: Immunolabelling for TEM and SEM

Sunday-Wednesday | 31 October-3 November 2021

Federation of Immunological Societies of Asia-Oceania

OPEN FOR REGISTRATION AND ABSTRACT SUBMISSION: FIMSA 2021- Immunology For Humanity

Getting to know... Dr Isabelle Bonne

Maybe you've seen the other-worldly images electron microscopy can produce, but have no idea how or where to start. Dr Isabelle Bonne, our resident Electron Microscopist, tells us a little more on electron microscopy, how it can complement your research, and what makes her tick!

Interviewer (I) : Isabelle, thank you for taking the time to do this! What got you started on Electron Microscopy (EM)?

Isabelle Bonne (IB): My interest in EM started during my PhD, where I studied the fragmentation of actin filaments in macrophages infected by Mycobacterium avium, and their role in the mechanism of intracellular survival of the pathogen. I developed various imaging methods from immunofluorescence and confocal microscopy to immunolabeling and histochemistry imaging through transmission electron microscopy. It was so amazing to be able to "see" inside the cells! That is how I ended up 'infected' with a love for EM ;-) Later, I joined the Electron Microscopy Facility at the Institut Pasteur.

I: Yes, I've seen some of the images it can produce! Sometimes, it looks like an alien landscape. I have to admit, though, I'm a bit of a Luddite (full disclosure: the interviewer last touched science 22 years ago, and it was for an exam). So...what am I actually looking at when I'm viewing an EM image, how does it work, and how does EM enhance research outcomes?

IB: EM makes investigations of tissue organisation and individual protein structures possible, and reveal a fascinating miniature world that is too small to be seen with the naked eye. EM complements light-confocal microscopy by allowing us to observe very thin biological samples containing miniscule constituents, such as cell organelles, bacteria, virus and even proteins, at ultra-high resolutions. So EM is used in biomedical research to investigate the detailed structure of tissues, cells, organelles and macromolecular complexes.

I: Let's say I have a project that I want to apply EM to. What can I expect when I go to the Electron Microscopy Unit, and during consultations with you?

IB: The Electron Microscopy Unit at NUS is a world-class facility, with state-of-the-art scanning and transmission electron microscopes, sample preparation and ultramicrotomy equipment, and a core of highly skilled and experienced staff to provide training and support for staff and students to learn and apply EM in their work.

My role as an imaging specialist is to assist and coordinate activities with research labs and core facilities, provide scientific and technical support, and advice on experimental design and data analysis. We will have a discussion before each project, where we evaluate feasibility and propose the most appropriate EM method, whether it's negative staining, cellular EM, cryo-microscopy, correlative microscopy or Volume EM.

I: What if I'd like to learn how to do EM? Are there any courses coming up?

IB: The Electron Microscopy Unit is organizing a workshop in Immuno-Gold staining in EM on 20 October 2021. In this course we cover both the theoretical and practical aspects of the latest methods and applications for electron microscopy, to give you a thorough understanding of Immuno-Gold staining techniques. Best of all, it's free and open to everyone. Registration is open now!

I: Alright, before we go, tell me a little bit more about yourself, and 1 thing you really enjoy doing outside of work!

IB: I'm mum to two lovely young adults, which means more free time, so I'm increasingly involved in helping others through various associations!
I'm also an active member of the Pint of Science Festival in Singapore. Pint of Science brings scientists together to share and discuss their findings with people in their local pub, bar, café.... I really enjoy it, and the interactions I have with people around a casual drink! We welcome anyone who loves talking science, and, of course, beer ;-)

Many thanks again to Dr Bonne ! If you'd like to have a chat with her on how EM can work for you, you can email her at lsigebim@nus.edu.sg. You can also register for the EMU workshop at the link on the front of this newsletter, and also join us for Research in Progress, where she will share more on her EM projects!

Programme Publications

A Mishra, GC Lai, LJ Yao, TT Aung, N Shental, A Rotter-Maskowitz, E Shepherdson, Gurmit Singh SN, R Pai, A Shanti, RMM Wong, A Lee, C Khyriem, CA Dutertre, S Chakarov, KG Srinivasan Nurhidaya binte Shadan, XM Zhang, S Khalilnezhad, F Cottier, ASM Tan, G Low, P Chen, Y Fan, PX Hor, AKM Lee, M Choolani, D Vermijlen, A Sharma, G Fuks, R Straussman, N Pavelka, B Malleret, N McGovern, S Albani, JKY Chan, and F Ginhoux (Jun 2021) Microbial exposure during early human development primes fetal immune cells. *Cell*
DOI: 10.1016/j.cell.2021.04.039

P Zareie, C Szeto, C Farenc, SD Gunasinghe, EM Kolawole, A Nguyen, C Blyth, XYX Sng, J Li, CM Jones, AJ Fulcher, JR Jacobs, Q Wei, L Wojciech, J Petersen, NRJ Gascoigne, BD Evavold, K Gaus, S Gras, J Rossjohn, and NL La Gruta (Jun 2021) Canonical T cell receptor docking on peptide–MHC is essential for T cell signaling. *Science*
DOI: 10.1126/science.abe9124

K Luu, H Schwarz, and A Lundqvist (Jun 2021) B7-H7 is inducible on T Cells to regulate their immune response and serves as a marker for exhaustion. *Frontiers in Immunology*
DOI: 10.3389/fimmu.2021.682627

P Tang, S Virtue, JYG Goie, CW Png, J Guo, Y Li, H Jiao, YL Chua, M Campbell, JM Moreno-Navarrete, A Shabbir, J-M Fernández-Real, S Gasser, DM Kemeny, H Yang, A Vidal-Puig, and Y Zhang (Jun 2021) Regulation of adipogenic differentiation and adipose tissue inflammation by interferon regulatory factor 3. *Cell Death & Differentiation*
DOI: 10.1038/s41418-021-00798-9

CEZ Chan, SGK Seah, DH Chye, S Massey, M Torres, APC Lim, SKK Wong, JJY Neo, PS Wong, JH Lim, GSL Loh, D Wang, JD Boyd-Kirkup, S Guan, D Thakkar, GH Teo, K Purushotorman, PE Hutchinson, BE Young, JG Low, PA MacAry, H Hentze, VS Prativadibhayankara, K Ethirajulu, JE Comer, CTK Tseng, ADT Barrett, PJ Ingram, T Brasel, and BJ Hanson (Jun 2021) The Fc-mediated effector functions of a potent SARS-CoV-2 neutralizing antibody, SC31, isolated from an early convalescent COVID-19 patient, are essential for the optimal therapeutic efficacy of the antibody. *PLoS One*
DOI: 10.1371/journal.pone.0253487

S Nakamizo, C-A Dutertre, A Khalilnezhad, XM Zhang, S Lim, J Lum, G Koh, C Foong, PJA Yong, KJ Tan, R Sato, K Tomari, L Yvan-Charvet, H He, E Guttman-Yassky, B Malleret, R Shibuya, M Iwata, B Janela, T Goto, SL Tan, MBY Tang, C Theng, V Julia, F Hacini-Rachinel, K Kabashima, and F Ginhoux (Jul 2021) Single-cell analysis of human skin identifies CD14+ type 3 dendritic cells co-producing IL1B and IL23A in psoriasis. *Journal of Experimental Medicine*
DOI: 10.1084/jem.20202345

YW Leong, EQH Lee, L Rénia, and B Malleret (Jul 2021) Rodent malaria erythrocyte preference assessment by an ex vivo tropism assay. *Frontiers in Cellular and Infection Microbiology*
DOI: 10.3389/fcimb.2021.680136

S Svenningsen, P Nair, RL Eddy, MJ McIntosh, M Kjarsgaard, HF Lim, DG McCormack, G Cox, and G Parraga (Jul 2021) Bronchial thermoplasty guided by hyperpolarised gas MRI in adults with severe asthma: a 1-year pilot randomised trial. *ERJ Open Research*
DOI: 10.1183/23120541.00268-2021

Y Cheng, B Gunasegaran, Harsimran D Singh, C-A Dutertre, CY Loh, JQ Lim, JC Crawford, HK Lee, XM Zhang, B Lee, E Becht, WJ Lim, J Yeong, CY Chan, A Chung, BKP Goh, PKH Chow, JKY Chan, F Ginhoux, D Tai, J Chen, SG Lim, W Zhai, SP Choo, and EW Newell (Jul 2021) Non-terminally exhausted tumor-resident memory HBV-specific T cell responses correlate with relapse-free survival in hepatocellular carcinoma. *Immunity*
DOI: 10.1016/j.immuni.2021.06.013

Q Chen, SM Lai, S Xu, Y Tan, K Leong, D Liu, JC Tan, RR Naik, AM Barron, SS Adav, J Chen, SZ Chong, LG Ng, and C Ruedl (Jul 2021) Resident macrophages restrain pathological adipose tissue remodeling and protect vascular integrity in obese mice. *EMBO Reports*
DOI: 10.15252/embr.202152835

JM Low, Y Gu, MSF Ng, Z Amin, LY Lee, YPM Ng, Bhuvaneshwari D/O Shunmuganathan, Y Niu, R Gupta, PA Tambyah, PA MacAry, LW Wang, and Y Zhong (Aug 2021) Codominant IgG and IgA expression with minimal vaccine mRNA in milk of BNT162b2 vaccinees. *npj Vaccines*
DOI: 10.1038/s41541-021-00370-z

Looking For A Job?

1) The Alonso Lab has 1 **Research Assistant** position available for a research project aiming to study the molecular mechanisms involved in EV71 neuropathogenesis. Animal models and in vitro assays will be used to identify key viral determinants and host factors.

You should have:
- a Bachelor's degree in Life Sciences (biomedical sciences preferred)
- at least 1 year's work experience in a research lab
- Expertise in mouse work would be a plus
- Hardworking, dedicated, tidy and organized
- a team player's mindset and be open-minded.

Interested parties can send their CV to Prof Alonso at micas@nus.edu.sg.

2) Prof Goh Boon Cher from the Experimental therapeutics laboratory at the Cancer Science Institute is looking for a **Postdoctoral Fellow** to develop cancer vaccines, specifically targeted at treatment of nasopharyngeal carcinoma using various delivery platforms. The position is available from September onwards, with a project duration of 3 years.

Interested parties should submit applications that include (1) a cover letter, (2) a detailed CV, including education qualification, employment history, and research track record, and (3) the contact details (telephone and emails) of 2 referees to Prof Goh at phcgbc@nus.edu.sg or Prof Schwarz at phssh@nus.edu.sg

3) Abcam, a rapidly growing life science company specialising in the production and sales of antibodies and related products, is looking for a **Scientific Support Specialist** to join their newly-established Singapore regional office. If you love providing an excellent level of technical support to researchers, troubleshooting problems with antibody-based applications and other protein detection-related products and tools, optimising solutions, and are constantly looking to improve yourself, you might be the one for the job!

You should have:
- at least an M.Phil (or M.Sc.) in a life sciences field (Ph.Ds are also welcome)
- 2 years' additional laboratory research experience using antibodies and related reagents in antibody-based applications. Experience must include western blotting or immunohistochemistry.
- At least 1 year's working experience in the life science industry or related field.

Interested applicants can apply at https://careers.abcam.com/careers/scientific-support-specialist-singapore-singapore-singapore-65453/, and email Ryan.Chong@abcam.com.

Other positions in customer service and customer order management are also available.

4) Hummingbird Bioscience is looking for a **Research Associate** in Cellular Immunology. You will design, execute, and analyse laboratory experiments using standard techniques in immunology, molecular, cell biology and biochemistry, maintain cell culture under aseptic conditions., establish, develop, and validate new assays/technologies in the laboratory when required, and adapt new methods to existing procedures and modify current experiments through scientific knowledge and intuition, among other duties.

You should have:
- a diploma or degree in Biology or related field
- a minimum of 2 years' experience in a biology research laboratory
- proficiency in Microsoft Excel, PowerPoint, and Word
- discipline, a positive attitude, be well-organised, as well a fast learner and proven ability to work independently
- the ability to communicate results and thoughts concisely and clearly in a timely manner.

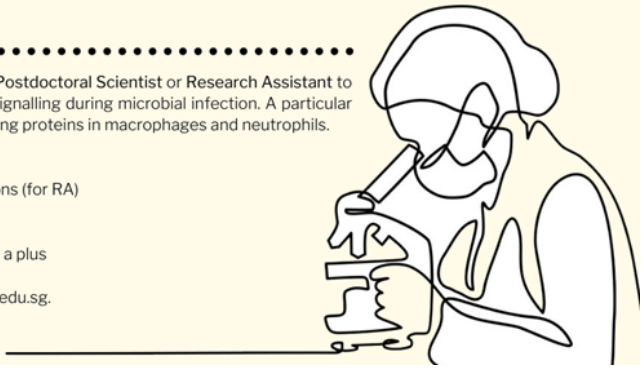
Experience with immunology assays, isolating immune cells, mammalian cell culture lines, flow cytometry and/or ELISA is a plus. To apply for the above role, please send a maximum 2-page resume in PDF format, detailing your education and relevant experience, and a cover letter with your motivations for applying for this position through https://hummingbirdbio.bamboohr.com/jobs/view.php?id=71

They are also looking for a Research Scientist or Senior Research Scientist to join their Pharmacology team. More information on this position is available at https://hummingbirdbio.bamboohr.com/jobs/view.php?id=8

5) Dr Chen Kaiwen's lab is seeking a highly motivated and enthusiastic **Postdoctoral Scientist** or **Research Assistant** to investigate the fundamental biology of cell death and innate immune signalling during microbial infection. A particular focus of the lab is to understand the regulation of gasdermin pore-forming proteins in macrophages and neutrophils.

You should have:
- a PhD in Immunology or related discipline (for postdoc); BSC with Hons (for RA)
- Expertise in innate and cell death signalling
- Experience in genome editing and molecular cell biology
- Experience in animal handling and microbial infection models will be a plus

Interested candidates should send their CV to Dr Chen at mickaiw@nus.edu.sg.



Best wishes,
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