

NEWSLETTER

SOUTH AFRICAN IMMUNOLOGY SOCIETY



FEATURES

Multi-Country Mpox Outbreak

Interactions between
microbiome and underlying
mechanisms in asthma

More than Three Decades of
Bm86: What We Know and
Where to Go

AWARENESS

World Asthma Day - 7 May

World Lupus Day - 10 May

World Multiple Sclerosis
Day - 30 May

SAVE THE DATE

IUIS-FAIS-SAIS
IMMUNO-SOUTH AFRICA

MESSAGE FROM THE EDITOR

Dear SAIS Members,

Welcome to the fourth edition of our SAIS newsletter!

We are excited to advertise a comprehensive comparative immunology course, on page 3. This is hosted by a collaboration between the International Union of Immunology Societies' Education Committee, Veterinary Immunology Committee, Federation of African Immunology Societies and South African Immunology Society. **Applications are now open and close on 24 June 2024.**

We shed light on various awareness days including World Asthma day (7 May), World Lupus Day (10 May), and World Asthma Multiple Sclerosis Day (30 May). For your interest, we have highlighted a paper on interactions between the microbiome and underlying mechanisms in asthma.

Our featured editorials for this month include an outbreak alert on Mpox, which has surfaced in South Africa, part of the larger outbreak caused by the West African clade of the monkeypox virus. Our Veterinary Immunology team share a community spotlight on an interesting review paper about advances in tick vaccine development over the past three decades alongside the development of biotechnology, where existing gaps and future directives in the field are highlighted.

As always, we hope you've learned something new and please feel free to reach out to us to share any thoughts or ideas!



Happy reading!

With warm regards,
Thanusha Pillay



CONTACT US!

Feel free to send us your recent publications so that we can showcase them in our Community Corner. If you are hiring/recruiting, let us use our various platforms, the newsletter and our social media, to advertise for you. If you have any webinars, seminars, or conferences, we would be more than happy to add it to the newsletter. You can simply email the editorial team at newsletter@saimmunology.org.za by the 20th of each month to be featured in our next newsletter.



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South African Immunology Society
(SAIS)



[@SAlmmunologySociety](https://www.facebook.com/SAlmmunologySociety)



[@SAlmmunology](https://twitter.com/SAlmmunology)



IUIS-FAIS-SAIS IMMUNO-SOUTH AFRICA

Pretoria, South Africa | 30 September – 4 October 2024

ONE HEALTH – ZONOSIS AND COMPARATIVE IMMUNOLOGY

ABOUT THE COURSE

A collaboration between the International Union of Immunology Societies' (IUIS) Education Committee, IUIS Veterinary Immunology Committee (IUIS-VIC), Federation of African Immunology Societies (FAIS) and South African Immunology Society (SAIS) brings you a comprehensive comparative immunology course with a focus on zoonotic infections within a One Health approach. The intricate mechanism of immune responses to bacterial, viral and parasitic pathogens will be delved into. The main learning objective of the course is to create awareness of inter-connectiveness between human, animal, and environmental health and the impact on zoonotic disease control and prevention to address the complexities of today's global health landscape. The course consists of 8 weeks of self-study of pre-course material followed by 1-week interactive in-person engagement.

APPLICANT SELECTION

The course is open to 50 graduate students, post-doctoral fellows and early career academics with an interest in or working on zoonotic diseases. Applicants will be requested to provide a letter of motivation, a short CV, a letter of support from their supervisor, and an abstract to be presented as a poster. Selected students will receive partial or full funding for accommodation, meals and travel. Applicants are encouraged to apply for other sources of funding as the budget is limited. All selected participants must complete an online pre-course on [Immunopaedia.org.za](https://www.immunopaedia.org.za) starting the week of **5 August 2024**. Applicants accepted to the course will be notified by **22 July 2024**. **Applications are now open and close on 24 June 2024.**

MAIN TOPICS

The main topics of this course include:

- Introduction to Zoonotic Infections and One Health
- Immune Response to Bacterial Zoonotic Infections
- Immune Response to Viral Zoonotic Infections
- Immune Response to Parasitic Zoonotic Infections
- One Health Approach in Zoonotic Disease Research

INTERNATIONAL ORGANISERS

- **IUIS Education Committee:** Clive Gray, Dieter Kabelitz, Oliver Boyer, Roslyn Kemp
- **IUIS-VIC:** Alejandra V. Capozzo, Claire Rogel-Gaillar, Yolandy Lemmer

LOCAL ORGANISERS

- **University of Pretoria:** Theresa Rossouw, Sven Parson, Ivy Tshilwane, Chris Marufu

FACULTY

- Renowned scientists, both local and international, will be teaching this course

WORKSHOPS

- Grant writing
- Poster sessions



APPLY NOW

With sponsorship from IUIS and SAMRC

<https://www.immunopaedia.org.za/course-applications/immuno-sa-2024>



AWARENESS



World Asthma Day
• May 7, 2024 •

ginasthma.org | @ginasthma



ASTHMA EDUCATION EMPOWERS

Information is Key

10 MAY, 2024

GET READY FOR

WORLD LUPUS DAY

WORLDLUPUSDAY.ORG

#MAKELUPUSVISIBLE
#WORLDLUPUSDAY



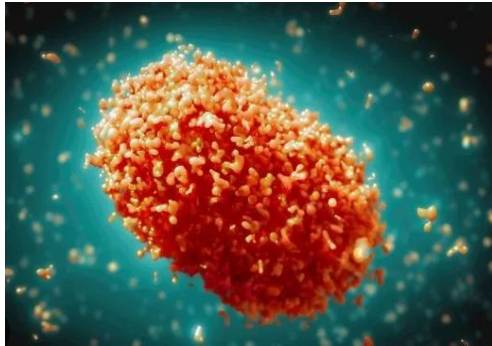
worldMSday
30 MAY



OUTBREAK ALERT!

Multi-Country Mpox Outbreak

Beyond Our Borders



Mpox, formerly known as monkeypox, is caused by the monkeypox virus, which is divided into two clades: clade I (Congo Basin clade) and clade II (formerly West African clade). Clade II is further split into clade IIa and IIb. A global mpox outbreak has been ongoing since 2022, spreading to over 100 countries and associated with the clade II sub-lineage. Between January 1, 2022, and May 8, 2024, there have been 95,912 mpox cases reported from 118 countries, with 185 deaths as of March 31, 2024. The Americas alone reported 139 deaths. Since 2023, the Democratic Republic of

the Congo (DRC) has faced an mpox outbreak primarily due to clade I, which is more virulent and fatal than clade II. From January 2024 to May 12, 2024, the African region reported 6,089 mpox cases and 336 deaths, resulting in a 5.5% case fatality rate. The cases were reported in Cameroon (14 cases, 1 death), Central African Republic (93 cases, 0 deaths), DRC (5,900 cases, 335 deaths), Republic of the Congo (78 cases, 0 deaths), and Liberia (4 cases, 0 deaths).



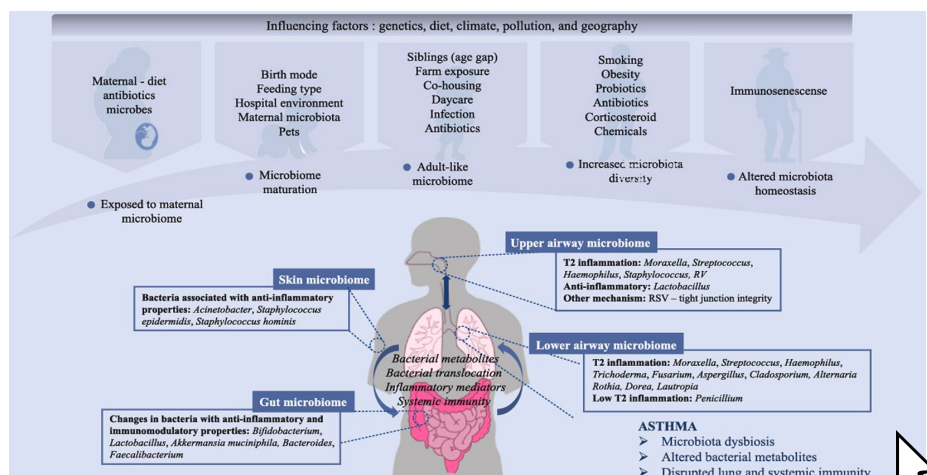
DISEASE OF THE MONTH

Interactions between microbiome and underlying mechanisms in asthma

Abstract adaptation

The microbiome influences host innate immunity starting in utero and is crucial for the immune system's development and function throughout life. The interaction between the microbiome and the immune system maintains mucosal homeostasis. Disruptions in microbial communities can lead to dysregulated immune responses and contribute to immune-mediated diseases such as asthma. Asthma patients often exhibit microbial imbalances in mucosal environments like the airways, skin, and gut, which are associated with more severe asthma symptoms and exacerbations.

Research into the microbiome aims to identify hidden microbes, their functions, and the immunoregulatory effects of bacterial metabolites. This review examines the environmental and genetic factors affecting the microbiome, as well as the role of microbiome metabolites and skin microbiota in regulating immune responses in asthma.





More than Three Decades of Bm86: What We Know and Where to Go Community Spotlight



Pathogens Review

By Laura Jane Bishop, Christian Stutzer, and Christine Maritz-Olivier

Tick and tick-borne disease control have been a serious research focus for many decades. In a global climate of increasing acaricide resistance, host immunity against tick infestation has become a much-needed complementary strategy to common chemical control. From the earliest acquired resistance studies in small animal models to proof of concept in large production animals, it was the isolation, characterization, and final recombinant protein production of the midgut antigen Bm86 from the Australian cattle tick strain of *Rhipicephalus (Boophilus) microplus* (later reinstated as *R. (B.) australis*) that established tick subunit vaccines as a viable alternative in tick and tick-borne disease control. In the past 37 years, this antigen has spawned numerous tick subunit vaccines (either Bm86-based or novel), and though we are still describing its molecular structure and function, this antigen remains the gold standard for all tick vaccines. In this paper, advances in tick vaccine development over the past three decades are discussed alongside the development of biotechnology, where existing gaps and future directives in the field are highlighted.

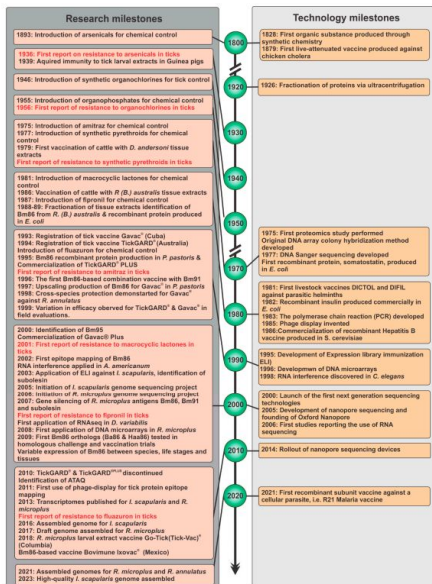
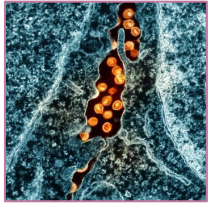


Table 1. A summary of Bm86-based vaccines that have been evaluated in bovine vaccination trials achieving an efficacy of 50% or above. Vaccines are listed in chronological order within categories of: Bm86-based recombinant antigen vaccines (indicated in blue), Bm86-based epitope vaccines (indicated in orange), and combination vaccines with Bm86 (indicated in green).

Vaccine and Major Antigen(s)	Breed	Adjuvant	Vaccination Regime	Efficacy in Bovine Vaccination Trials	Immune Markers	Reference(s)
Bm86-Based Recombinant Antigen Vaccines						
Bm86			Dosage: -2.3 µg (trial 1); 17 µg (trial 2) [16,45]		Serum antibody levels: Anti-Bm86 mean IgG titres (dilution 1:400); [61]	
TickGARD® and TickGARD® Plus	Hereford (<i>Bos taurus taurus</i>) [19,54,74]	Freund's complete adjuvant [19,45]	Regime: -Three vaccinations at weeks 0, 4, and 8 [16,45]	REF: 20-56%	-Day of 1st injection: 187	Patents: [75,76]
Discontinued Commercial Vaccines (Intervet Pty. Ltd., Bendigo, Australia)	Holstein Friesian (<i>Bos taurus taurus</i>) [60]	Montanide™ (TickGARD®) [54]	-Three vaccinations at weeks 0, 7, and 17; or two vaccinations at weeks 0 and 7 [51]	Total efficacy: Ranges from 0 to >90%	-2 weeks after 1st injection: 646	Literature: [19,45,54,57,60]
		Montanide 888 (9-1) (TickGARD Plus™) [57,60]	-Three vaccinations at weeks 0, 4, and 9 [61]		-2 weeks after 2nd injection: 3533	
					-8 weeks after 3rd injection: 582	
Bm86			Dosage: -100 µg [52,53,59,68,70,71]		Serum antibody levels: Anti-Bm86 mean IgG titre (dilution n.i.): 16,000 [54]	
Gavac®	Holstein Friesian (<i>Bos taurus taurus</i>) [58,70,73]	Freund's complete (1st vaccination) and incomplete (2nd and 3rd vaccination) adjuvant [58]	Regime: -Three vaccinations at weeks 0, 4, and 7 [52,53,59,68,70]	REF: 9-100%	-18 weeks after 3rd injection (dilution n.i.): 6000 [54]	Patent: [78]
Commercially available vaccine (Heber Biovet S.A., Cuba)	Crossbred (<i>Bos taurus</i> × <i>Bos indicus</i>) [57,7]	Montanide™ 888 VG (Gavac®) [55,56,59,68,70,73,77]	-Three vaccinations at weeks 0, 4, and 7 followed in field trials by a maintenance dose approximately every 6 months [60]	Total efficacy: Ranges from 0 to <100%	-Average of 9-pen trials 2 weeks after 3rd injection (dilution n.i.): 6351 ± 578 [5]	Literature: [55,56,59,68,70,73,77]
	<i>Bos taurus</i> , <i>Bos indicus</i> and crossbred dairy and beef cattle (<i>Bos taurus</i> × <i>Bos indicus</i>) [57,60]	Saponin (saponin white pure, Merck [77])	-Three vaccinations at weeks 0, 3, and 7 [71]		-2 weeks after 2nd injection (dilution 1:320): >8000 [61]	
					-5 weeks after 3rd injection (dilution 1:640): 700 ± 1000 [71]	
					-Mean titres 2 weeks after 3rd injection (dilution n.i.): [72]	
					-Total IgG: 23,744	
					-Total IgG: 24,639	
					-IgG1: 11,263	
					-IgG2: 1114	
					Bm86 and Saponin	
					-Total IgG: 24,639	
					-IgG1: 8011	
					-IgG2: 2560	
					Anti-Bm86 mean OD values 2 weeks after 3rd injection (dilution 1:1000): ± 0.3 [77]	

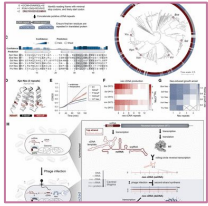
Figure 1. Discovery and development timeline for advancement of tick vaccine development according to date of first research publication. Highlighted are some research and technology milestones from the 1800s to the present. Acaricide resistance development of ticks to different acaricide classes are indicated in red.



Proof-of-Concept Study Shows an HIV Vaccine Can Generate Key Antibody Response in People

NIAID NOW Blog

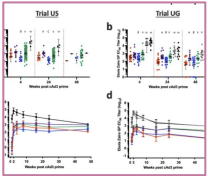
<https://www.niaid.nih.gov/news-events/hiv-vaccine-candidate-generates-antibody-response>



De novo gene synthesis by an antiviral reverse transcriptase

Tang *et al*, 2024. bioRxiv: 2024-05.

doi: 10.1101/2024.05.08.593200



Heterologous cAd3-Ebola and MVA-EbolaZ vaccines are safe and immunogenic in US and Uganda phase 1/1b trials

Happe *et al*, 2024. npj Vaccines, 9(1), p.67.

doi:10.1038/s41541-024-00833-z



Will monoclonal antibodies be a new weapon in the fight against malaria?

Abboud, 2024. IAVI Report.

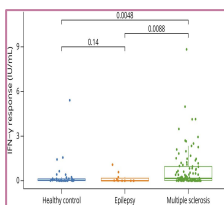
<https://www.iavi.org/iavi-report/monoclonal-antibodies-for-malaria-prevention-iavireport/>



Opinion: Leveraging AI For Africa's Pandemic Preparedness , Africa Day

Alam, 2024. TalkAfrica.

<https://www.talkafrica.co.ke/opinion-leveraging-ai-for-africas-pandemic-preparedness-on-africa-day/>



Disease-Modifying Treatments for Multiple Sclerosis Affect Measures of Cellular Immune Responses to EBNA-1 Peptides

Dungan *et al*, 2024. Neurology, Neuroimmunology, & Neuroinflammation, 11(3).

doi: 10.1212/NXI.0000000000200217



How Bangladesh eliminated its “kala-azar” public health problem

Amin, 2024. GAVI.

<https://www.gavi.org/vaccineswork/how-bangladesh-eliminated-its-kala-azar-public-health-problem>

Post-Doctoral Scholar in Cancer Biology - University of California, San Francisco, USA

Research host: UCSF Helen Diller Family Comprehensive Cancer Center

Job purpose summary: A postdoctoral position is available now at the UCSF Helen Diller Family Comprehensive Cancer Center for an outstanding candidate interested in cancer biology or translational cancer research. Our laboratory is interested in how oncogenes drive cancers and how a deeper understanding of their biology and functions can inform the design of far more effective treatments for patients with cancer. Our interests lie in basic questions of how specific oncogenes are involved in cancer pathogenesis, the molecular basis underlying cellular addiction to oncogenes, and the reasons underlying the success and failure of targeting approaches for specific oncogenes. The work builds on a substantial body of data and model systems already established in our lab. Our work encompasses a wide range of in vitro and in vivo experimental techniques including cell signaling, gene expression or elimination, protein biochemistry, confocal microscopy, flow cytometry, mouse xenograft and genetic models, and interrogation of clinical samples. UCSF is a highly collaborative environment and our laboratory is involved in collaborations with multiple other research programs within the scientific community including programs in structural biology, small molecule discovery, chemistry and chemical biology, and epigenetics. We are also actively engaged in translating our laboratory-derived findings into clinical trials conducted at the cancer center.

How to apply: Highly motivated candidates with an MD or PhD and a strong background in molecular and cellular biology please send CV to Mark M. Moasser, MD at mark.moasser@ucsf.edu, or visit <https://jobs.sciencecareers.org/job/657037/post-doctoral-scholar-in-cancer-biology>.

Closing date: 10 June 2024

Biology Lecturer/Assistant Professor - Wenzhou-Kean University, Zhejiang, China

Research host: College of Science, Mathematics and Technology, Wenzhou-Kean University

Job purpose summary: The College of Science, Mathematics and Technology is seeking highly motivated individuals to join the biology department at WKU. All faculty positions are full-time assignments, effective for the start of the 2024 Spring or the 2024 Fall semester. These positions are full-time assignments appointed on a 3-year contract at the first instance.

A Lecturer is a full-time, 11-month employee who teaches 39 credits per year and provides student and learning support services during the assigned period. Lecturers will be expected to provide high quality teaching, student advisement, and learning support services, as well as service to the university, college, school, program and/or the professional community; and perform related work as required.

A Tenure-track Assistant Professor is a full time, 10-month employee who teaches 24 credits per academic year. Early career researchers with PhD degree in genetics, immunology, organismal biology, cell biology, pharmacology, or related disciplines, obtained within the past 10 years from reputable universities (Carnegie R1 institutions or comparable research institutions with strong academic reputation in the fields), are encouraged to apply. Tenure-track candidates should possess a strong track record for publication and are ready to lead their own research groups independently.

How to apply: Review of applications will begin immediately and continue until the position is filled. Please send cover letter, resume, statement of teaching philosophy, statement of research goals, unofficial transcripts, two most recent peer-reviewed academic publications, and contact information of three professional references by email to Search Committee Chairperson at wkubio@wku.edu.cn. Official transcripts for all degrees and three current letters of recommendation are required before appointment. Visit <https://jobs.sciencecareers.org/job/656773/2024-biology-lecturerassistant-professor> for more information.

Closing date: 1 July 2024



Post-Doctoral Scholar in Cancer Biology - University of Texas MD Anderson Cancer Center, USA

Research host: University of Texas MD Anderson Cancer Center

Job purpose summary: Our laboratory studies molecular mechanisms of genome instability using molecular and exciting novel mouse models for analysis and prediction of disease development and testing of targeted therapy strategies. An example of our mouse models can be seen here <https://www.biorxiv.org/content/10.1101/2020.09.01.277038v1>. The primary purpose of the Research Investigator is to independently perform animal studies including but not limited to blood draw, drug and/or cell injections, anatomical measurements, tissue harvesting and processing downstream, and breed and maintain mouse colonies. Proficiency with standard molecular techniques and tissue cell culture preferred. Understanding of hematological or metabolic disorders and cancer preferred, albeit animal experience in all areas welcomed. The incumbent is responsible for maintaining animal safety standards and protocols, as well as for training other personnel in animal techniques. The position requires independent decision making, judgment and excellent organizational skills, and most of all, a desire and willingness to continue to learn new skills and techniques for this preferably long-term position.

Requirements: Bachelor's degree in one of the natural sciences or related field is required. Master's degree in one of the natural sciences or related field is preferred.

How to apply: Visit the following website

https://jobs.mdanderson.org/search/jobdetails/research-investigator---cancer-biology/4c0ccc1e-db8d-4498-97b7-ce53be792eab?utm_campaign=scimag&utm_medium=job_board&utm_source=science.

Closing date: 8 June 2024

Senior Lecturer - University of the Witwatersrand, South Africa

Research host: University of the Witwatersrand, Department of Immunology

Job purpose summary: Administrative duties will include course coordinator support, and overseeing Departmental administrative staff to ensure that all logistical arrangements for the above responsibilities are in place. To assist with and facilitate the development and organization of undergraduate and postgraduate teaching material for all the degree programmes in the Department of Immunology. Assist with and facilitate undergraduate and postgraduate examinations as directed by the Department. Oversee laboratory related activities. Develop specific laboratory protocols and undertake processing of blood samples. Participate in various academic activities, seminars, lab meetings, journal club and training programs. Computer literacy including competence in Microsoft Office, database development and management and statistical analysis. Prior teaching experience and supervision at postgraduate and undergraduate levels would be an advantage. Assist with the research activities of the department including development of research proposals and grant applications, data gathering, publication of research findings and participation in conferences. The successful candidate will be expected to be actively involved in their own research activities, to maintain continuous professional development and participate in the Departmental academic programme.

Requirements: PHD in health sciences or an equivalent qualification in an appropriate discipline. Evidence of lecturing and postgraduate supervision. Minimum three years' experience in biomedical research laboratory and familiarity with safety requirements. Experience working with human blood samples. Experience performing flow cytometry or other immunoprofiling techniques. Evidence of written work-minimum of 8 original publications demonstrating self-initiated, independent research, the applicant must be first author on at least 4.

How to apply: For more information, please contact Dr Christina Thobakgale; Email: christina.thobakgale@wits.ac.za

Closing date: 5 June 2024



SAIS MEMBERSHIP

The SAIS would like to thank all members for their ongoing support! It is highly appreciated. To continue being a part of our growing community, please keep up to date with your membership.

To update your membership and familiarise yourself with the new renewal process, follow the link below:



RESOURCES TO FOLLOW

Check out these resources for more immunology-related information:



SOCIALS TO FOLLOW

Social media is a great way to stay up-to-date with the immunology community! Why not check out these social media handles:



@theLundLab



@Tcellogic



@DeNardoLabWUSM

Grab a cup of ImmuniTea, and let us know what you think!

The SAIS Newsletter Editorial Team

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