TEL*Mab*Net

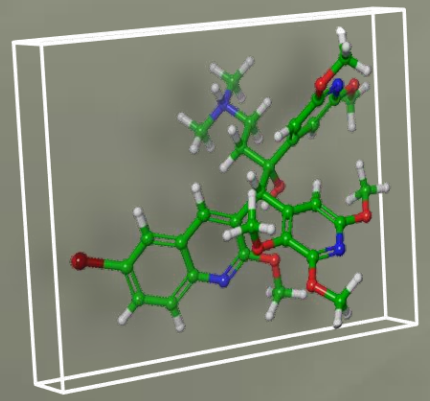
Targeting energy of life for the development of drug combinations to eradicate antibiotic-tolerant *Mycobacterium abscessus*, a clinical nightmare - **Net**work

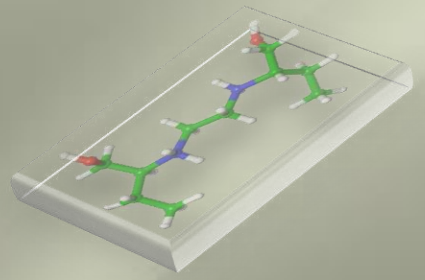
4th Annual Symposium

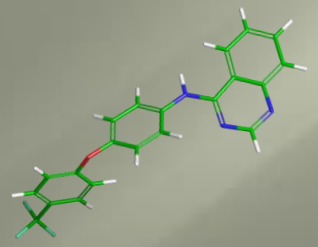
Mycobacteria 2026:
Translating Biology into Cures

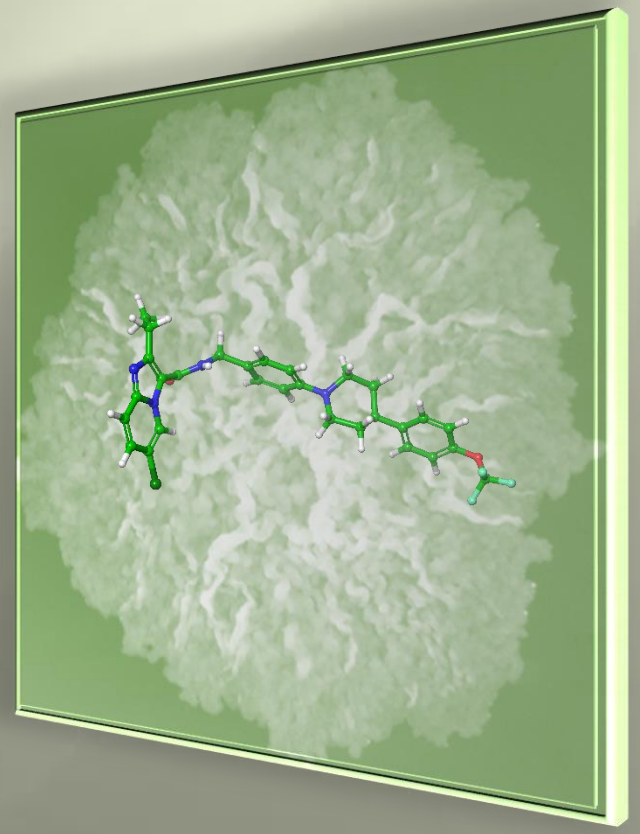
25th - 26th May 2026

School of Biological Sciences
Nanyang Technological University, Singapore









Mycobacteria 2026: Translating Biology into Cures
4th Annual Symposium | 25–26 May 2026 | Nanyang Technological University, Singapore

Tuberculosis (TB) and non-tuberculous mycobacteria (NTM) remain two of the world's most urgent infectious disease challenges.

Tuberculosis (*M. tuberculosis*) still claims over **1.25 million lives annually**, with **10.6 million new cases** in 2023 alone. Following the COVID-19 pandemic, TB has once again become the **leading infectious killer worldwide**.

NTM pulmonary disease presents an even bleaker picture: treatments are long, toxic, poorly tolerated, and often unsuccessful.

For both TB and NTM lung disease, the obstacles are strikingly similar—**high pill burden, prolonged treatment, limited efficacy, toxicity, drug–drug interactions, and rising resistance**. The urgent need is clear: **shorter, safer, more effective regimens.**

About the Symposium

The **4th Annual Symposium "Mycobacteria 2026: Translating Biology into Cures"** will bring together leading scientists, clinicians, and innovators from around the globe to share the **latest breakthroughs in TB and NTM research and drug discovery**.

This event is designed to:
- Showcase cutting-edge science and novel therapeutic strategies
- Foster open dialogue across academia, industry, and clinical research
- Engage early-career researchers and students in shaping the next generation of cures

Join us in Singapore for two days of inspiring talks, dynamic discussions, and new collaborations driving the field forward.

Organized by **TELMabNet**, an excellence cluster supported by the **Singapore National Research Foundation**.

Organizers



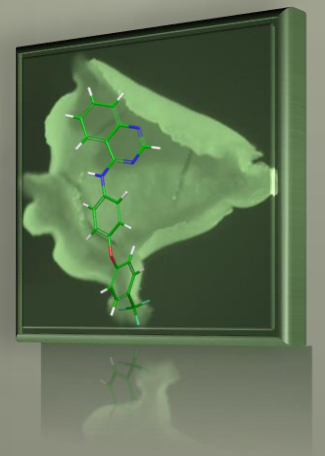
Gerhard Grüber
Lead-PI of TEL*Mab*Net
Nanyang Technological University, Singapore



Thomas Dick
Center for Discovery and Innovation, Hackensack Meridian Health, USA



Albert Y. H. Lim
Tan Tock Seng Hospital, Singapore



Programme schedule

Monday 25th May

8:30 – 9:10 **Registration**

9:10 – 9:20 **Opening Remarks**
Eduard Ruge, *First Secretary and Head of the Science, Technology, and Education Department – German Embassy Singapore*

9:20 – 9:30 **Welcome Address**
Prof. Louis Phee, *Vice President (Innovation & Entrepreneurship) of NTU, Singapore*

Session I: **Chair Gerhard Grüber**, *School of Biological Sciences, NTU, Singapore*

9:30 – 10:00 ***Innovation led new drug discovery for tuberculosis – beyond bedaquiline?***
Anil Koul, *London School of Hygiene and Tropical Medicine, UK*

10:00 – 10:30 ***Targeting mycobacterial cytochrome oxidases with potent small molecule inhibitors***
Garrett Moraski, *Montana State University, USA*

10:30 – 10:50 **Coffee / Tea break**

Session II: **Chair Stefan Oehlers**, *A*STAR Infectious Diseases Labs, Singapore*

10:50 – 11:20 ***Iron and drug transport in mycobacteria***
Markus Seeger, *Institute of Medical Microbiology, University of Zurich, Switzerland*

11:20 – 11:50 ***Biochemical and structural characterization of GpsI – an essential RNA degrading enzyme in Mycobacterium tuberculosis***
Peter Sander, *Institute of Medical Microbiology, University of Zurich, Switzerland*

11:50 – 12:20 ***Redefining priorities in new TB drug development***
Digby Warner, *University of Cape Town, South Africa*

12:20 – 12:35 ***Exploiting respiratory vulnerabilities to enhance pretomanid activity in tuberculosis***
Samsher Singh, *Institute for Digital Molecular Analytics and Science, NTU, Singapore*

12:35 – 13:15 **Lunch break and poster session**

Monday 25th May

Session III: **Chair Thomas Dick**, *Center for Discovery and Innovation, Hackensack Meridian Health, USA*

13:15 – 13:45 ***From hits to candidates: the power of collaboration in advancing a TB drug discovery pipeline***
Laura Cleghorn, *Dundee Drug Discovery Unit, Dundee, UK*

13:45 – 14:15 ***High throughput screening to Hit in TB drug discovery***
Christine Roubert, *Evotec, Lyon, France*

14:15 – 14:45 ***Pantothenate Antimetabolites that kill Mycobacterium tuberculosis through corruption of CoA metabolism***
Anthony D. Baughn, University of Minnesota, *USA*

14:45 – 15:15 **Coffee / Tea break**

Session IV: **Chair Amit Singhal**, *A*STAR Infectious Diseases Labs, Singapore*

15:15 – 15:45 ***Innate immune cell diversity in TB pathology***
Dhiraj Kumar, *International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi, India*

15:45 – 16:15 ***Morphology based assay for cell cycle research and antimycobacterial drug discovery***
Anne Marie Wehenkel, *Institute Pasteur Paris, France*

16:15 – 16:35 ***Exploring mycobacterial phenotypic heterogeneity: Insights into emergent behavior***
Neeraj Dhar, University of Saskatchewan, Canada

16:35 – 18:15 **Poster session with refreshments**

Programme schedule

Tuesday 26th May

Session I: **Chair Albert Y. H. Lim**, *Tan Tock Seng Hospital, Singapore*

9:15 – 9:45 ***Treatment versus watchful waiting in MABC-PD: patient-reported outcomes, microbiology, and genomics***
Dorothy Hui Lin Ng, *Singapore General Hospital and Duke-NUS Medical School, Singapore*

9:45 – 10:10 ***Discovery of novel first in class DprE1 inhibitors for the treatment of NTM infections***
Radha Krishan Shandil, *Foundation for Neglected Disease Research, Bangalore, India*

10:10 – 10:45 **Coffee / Tea break**

Session II: **Chair Florian Maurer**, *Basilea Pharmaceutica, Basel, Switzerland*

10:45 – 11:25 ***Towards New treatments of mycobacterial infections***
Daniel Ritz, *BioVersys, Basel, Switzerland*

11:25 – 11:55 ***Next-generation rifamycin for the treatment of mycobacterial lung disease***
Thomas Dick, *Center for Discovery and Innovation, Hackensack Meridian Health, USA*

11:55 – 12:25 ***Development of phage cocktails for the treatment of Mycobacterium abscessus***
Pablo Bifani, *Lee Kong Chian School of Medicine, Nanyang Technological University, and A*STAR IDL, Singapore*

12:25 – 13:10 **Lunch break and poster session**

Tuesday 26th May

Session III: **Chair Thomas Dick**, *Center for Discovery and Innovation, Hackensack Meridian Health, USA*

13:10 – 13:40 ***Drug repurposing in NTM, the clofazimine and tigecycline stories***
Jakko van Ingen, *Radboud University Medical Center, Nijmegen, The Netherlands*

13:40 – 14:10 ***Synthesis and Characterization of RNA Polymerase and ATP Synthase Inhibitors with Activity Against Resistant Mycobacteria***
Adrian Richter, *Martin-Luther-Univeristy Halle-Wittenberg, Germany*

14:10 – 14:40 ***Insights into the mycobacterial OXPHOS pathway provide specific inhibitors to eradicate NTM***
Gerhard Grüber, *School of Biological Sciences, NTU, Singapore*

14:40 – 15:05 **Coffee / Tea break**

15:05 – 15:50 **On Stage Discussion**

Moderator: Albert Y. H. Lim, *Tan Tock Seng Hospital, Singapore*
Panelists: Anil Koul, *London School of Hygiene and Tropical Medicine, UK;* **Vladimir Marshansky,** *Neuro-Horizon Pharma, Cambridge, USA;* **Florian Maurer,** *Basilea Pharmaceutica, Basel, Switzerland;* **Daniel Ritz,** *BioVersys, Basel, Switzerland;* **Christine Roubert,** *Evotec, Lyon, France*

15:50 – 16:00 **Closing remarks**
Christian Wolfrum, *Deputy President and Provost of NTU, Singapore*

16:00 – 16:45 **Cocktail Reception**

Invited Speakers



Anthony D. Baughn
University of Minnesota, USA

Biosketch: Anthony Baughn is an Associate Professor in the Department of Microbiology and Immunology within the University of Minnesota Medical School, USA. He received his PhD from Tufts University in 2004, where his studies focused on understanding key aspects of carbon and energy metabolism in the gut-commensal bacterium *Bacteroides fragilis*. Dr. Baughn conducted his post-doctoral training at the Albert Einstein College of Medicine, where he studied mycobacterial metabolism and drug discovery.



Pablo Bifani
*Lee Kong Chian School of Medicine, Nanyang Technological University, and A*STAR IDL, Singapore*

Biosketch: Professor Pablo Bifani completed his PhD at the Sackler Institute of Graduate Biomedical Sciences, New York University, on molecular epidemiology and drug resistance in Mycobacterium tuberculosis. He continued working on tuberculosis and infectious diseases in France, Belgium, UK and Singapore. In 2008, he joined the Novartis Institute for Tropical Diseases (NITD), Singapore, first in TB drug discovery "Hit to Lead" and subsequently he established and headed the Malaria Biology team (2011-2017). He returned to academia 2018. Presently he holds a joint Professorships with the Lee Kong Chian School of Medicine (LKC), Nanyang Technological University (NTU) and the A*STAR Infectious Diseases labs, Singapore. His interests are on mechanisms of drug resistance and drug discovery. He has participated on various drug discovery project on TB and malaria, some in phase 2b and phase 3 clinical trials (Telacebec and Ganaplacid). In recent years his lab has pivoted to working on applied phage biology with focus on phage therapy.



Radha Krishan Shandil
Foundation for Neglected Disease Research, Bangalore, India

Biosketch: Dr Shandil is Director and Co-founder of Foundation for Neglected Disease Research (FNDR) a "Not for profit company" in Bangalore, India. He co-founded FNDR in 2014 and has managed discovery programs across bacterial, viral, fungal pathogens and AMR therapeutics with a network of several academic and Industrial partners. In the past, he held several key positions over >20 years at AstraZeneca R&D in Bangalore and lead discovery programs that delivered TB and Malaria drug candidates. Dr. Shandil is co-inventor of two TB drug candidates: AZD5847 that completed Phase2A and TBA 7371 a novel DPrE1 inhibitor that has now completed phase2A clinical trial. Currently, he manages translation programs and clinical trial portfolio of FNDR.

Invited Speakers



Laura Cleghorn
Dundee Drug Discovery Unit, Dundee, UK

Biosketch: Dr Laura Cleghorn is a Reader in the Drug Discovery Unit (DDU) at the University of Dundee's School of Life Sciences. She joined the DDU at its inception in 2006 as a medicinal chemist, initially focusing on Human African Trypanosomiasis. In 2013, she shifted her research focus to tuberculosis (TB), becoming the TB Portfolio Leader in 2019. Her work involves leading multidisciplinary teams and international collaborations to identify and develop new chemical entities targeting TB, with the goal of progressing them toward pre-clinical drug candidates.



Thomas Dick
Center for Discovery and Innovation, Hackensack Meridian Health, USA

Biosketch: Dr. Thomas Dick is a Professor at Hackensack Meridian School of Medicine and Georgetown University, and a Member at the Center for Discovery and Innovation. With over 20 years of experience in mycobacteriology and antimycobacterial drug discovery, he has published over 200 papers. His research focuses on developing treatments for lung diseases caused by Tuberculosis (TB) and Non-Tuberculous Mycobacteria (NTM), particularly *M. abscessus*. His work aims to accelerate the delivery of all-oral, curative regimens for patients suffering from NTM lung disease.



Jakko van Ingen
Radboud University Medical Center, Nijmegen, The Netherlands

Biosketch: Jakko van Ingen, MD, PhD, is a consultant clinical microbiologist, associate professor of Medical Microbiology and head of the mycobacteriology reference laboratory at Radboud University Medical Center in Nijmegen, the Netherlands. He has authored over 280 papers on mycobacterial disease in peer-reviewed scientific journals and is consulted on diagnosis and treatment of tuberculosis and nontuberculous mycobacterial disease from all over the world. His research group focuses on the pharmacodynamics of antimycobacterial drugs and development of new treatment regimens for tuberculosis and nontuberculous mycobacterial disease.

Invited Speakers



Daniel Ritz
BioVersys, Basel, Switzerland

Biosketch: Dr. Daniel Ritz is the Chief Scientific Officer of BioVersys. He joined the company in 2025 and is leading Research portfolio focusing on identifying new antibiotics to combat AMR caused by Gram-negative and mycobacterial infections as well as identifying new antivirulence compounds against Staphylococci. Previously, Dr. Ritz held Research positions at Idorsia, Actelion and Cubist Pharmaceuticals with more than 20 years of industry expertise in small-molecule drug discovery and infection biology. He had been in charge of initiating new discovery programs, lead candidate identification and optimization, targeting Gram-positive and Gram-negative infections. During that time, he advanced multiple projects from inception through preclinical development including the discovery and development of cadazolid for the treatment of *C. difficile* infections.



Anil Koul
London School of Hygiene and Tropical Medicine, UK

Biosketch: Professor A. Koul is a scientist, academic, and innovation leader with over 24 years of global experience in drug discovery, clinical development, and public-sector research leadership. He is former Vice President of R&D at Johnson & Johnson (J&J), where he led infectious disease and global public health discovery and early development research, and served on the Board of Directors of Janssen Pharmaceuticals, the European subsidiary of J&J. He is currently Professor of Translational Discovery at the London School of Hygiene and Tropical Medicine, where his research focuses on translational medicine and infectious diseases. He was part of the team that discovered and developed Bedaquiline (BDQ), the first new tuberculosis treatment in 45 years, now approved in more than 170 countries. For his pioneering work on BDQ, he received many awards, including the prestigious American Chemical Society Prize in 2020.



Dhiraj Kumar
International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi, India

Biosketch: Dr Kumar's major interest is to understand how infection with *Mycobacterium tuberculosis* perturbs the host's innate immune responses. To that end, he employs various molecular biology, Immunology, Cell biology and computational biology techniques to explore the dimensions of host responses. Among the broad areas explored in his group are unconventional cellular niches of *Mtb* in the host, regulation of inflammation and cellular quality control during TB infection and post-transcriptional gene regulation, specifically, RNA splicing upon *Mtb* infection. The observations from his group have the potential to develop novel host-directed therapy against TB.

Invited Speakers



Gerhard Grüber
School of Biological Sciences, Nanyang Technological University, Singapore

Biosketch: Professor G. Grüber has led the National Research Foundation Singapore funded Tuberculosis (TB) excellence cluster TOPNet and is leading the Nontuberculous Mycobacteria (NTM) excellence cluster TEL*Mab*Net. He holds patents on novel anti-TB and anti-NTM targets and inhibitors targeting the mycobacterial cytochrome oxidases and F-ATP synthases. His research focuses on structural biology and the development of drugs to combat infectious diseases, particularly drug-resistant tuberculosis, NTM and *Acinetobacter baumannii*.



Garrett Moraski
Montana State University, USA

Biosketch: Garrett C. Moraski is a medicinal chemist who has worked in three different sectors: industry (Pfizer, Array Biopharma, Thios Pharmaceuticals), academia (Notre Dame, Montana State University), and non-profit (SRI International). He received his Bachelor's degree in Chemistry from the University of Notre Dame in 1997 and is currently a research professor at Montana State University. During his time in industry, Moraski was involved in oncology projects that led to numerous clinical outcomes candidates, most notably: CP-609,754, crenolanib, Mektovi® (binimetinib), and Koselugo® (selumetinib). In 2004, he entered the academic field, working with Marvin Miller (Notre Dame) on innovative antibacterial agents. This resulted in the identification of highly potent imidazo[1,2-a]pyridine-3-carboxyamides and imidazo[2,1-b]thiazole-5-carboxamides as anti-tuberculosis classes. In 2013, Moraski joined Montana State University and collaboratively developed the first *in vivo active M. tuberculosis cyt-bd* inhibitor (ND-11992).



Dorothy Hui Lin Ng
Singapore General Hospital and Duke-NUS Medical School, Singapore

Biosketch: Dr Dorothy Ng is a clinician-scientist and infectious diseases physician at Singapore General Hospital. She graduated from University College London in 2014 with an MBBS-PhD and completed residency training in Internal Medicine and Infectious Diseases through the SingHealth Clinician-Scientist Residency Programme. Her clinical and research interests centre on respiratory infections including nontuberculous mycobacterial (NTM) pulmonary disease, immunology, and lung infection mechanisms. Dr Ng leads translational studies with a focus on developing biomarker-guided strategies to improve treatment outcomes in *Mycobacterium abscessus* complex pulmonary disease.

Invited Speakers



Markus Seeger
Institute of Medical Microbiology, University of Zurich, Switzerland

Biosketch: Markus Seeger is full professor of Biochemical Microbiology at the University of Zurich. His research focusses on membrane transporters in pathogenic bacteria. In mycobacteria, his lab investigates transporters involved in the shuttling of the mycobacterial siderophore mycobactin. In recent work, his lab investigated how the unusual ABC transporter IrtAB imports and reduces iron-charged mycobactin, and shed light on the molecular organization of MmpL4 and MmpL5 responsible for the export of iron-free mycobatin as well as bedaquiline.



Digby Warner
University of Cape Town, South Africa

Biosketch: Digby Warner is Professorial Director of the Institute of Infectious Disease and Molecular Medicine (IDM) at the University of Cape Town (UCT), South Africa. His research focuses on *Mycobacterium tuberculosis* physiology and metabolism – particularly DNA repair and replication, drug resistance, and vitamin B_{12}-dependent pathways – and the host, microbial, and environmental factors shaping tuberculosis (TB) transmission. He also co-leads the *Africa Microscopy Initiative* and *openScopes Africa*, complementary initiatives which are aimed at making imaging technologies accessible for infectious disease research in low-resource, endemic settings. Beyond the lab, he serves as co-founding director of Eh!woza, a community engagement platform addressing the biomedical and social dimensions of TB in high-burden communities.



Anne Marie Wehenkel
Institute Pasteur Paris, France

Biosketch: Dr Wehenkel heads the Bacterial Cell Cycle Mechanisms Lab at Institut Pasteur (Paris), where we dissect how large multi-protein machineries controlling bacterial division and polar elongation are assembled, regulated, and coordinated in space and time. Trained as a structural biochemist, my group now integrates atomic-resolution insight with mechanistic cell biology to connect molecular detail to cellular function. We focus on *Mycobacteriales*, a suborder of Actinobacteria—including the major pathogen *Mycobacterium tuberculosis*—whose multi-layered cell wall and polar growth demand tight coupling between the septal divisome and polar elongasome. To probe and perturb these systems, we develop chemical and imaging tools and an AI-enabled, morphology-based high-content screen in the non-pathogenic surrogate *Corynebacterium glutamicum*. This platform will be used to understand off-target effects of drugs, uncover modes of action, and discover compounds targeting essential cell-cycle mechanisms. Promising hits will be tested in *M. tuberculosis* to exploit cell-cycle vulnerabilities for new TB antimicrobials.

Invited Speakers



Neeraj Dhar
University of Saskatchewan, Canada

Biosketch: Neeraj Dhar carried out his graduate studies in Biochemistry at the University of Delhi South Campus, New Delhi and his postdoctoral research at The Rockefeller University, New York, where he studied mechanisms of persistence in *Mycobacterium tuberculosis* and initiated approaches for single-cell imaging of mycobacteria. From 2007 till 2021, he worked as a Senior Scientist at Global Health Institute at the Swiss Federal Institute of Technology (EPFL) in Lausanne, Switzerland. In 2021, Dr. Dhar moved to thr Vaccine and Infectious Disease Organization (VIDO) at University of Saskatchewan, Saskatoon, Canada, to establish his research group focused on bacterial persistence and host-pathogen interactions especially in the context of TB infections.



Samsher Singh
Institute for Digital Molecular Analytics and Science, NTU, Singapore

Biosketch: Dr Samsher Singh is a researcher in antimicrobial drug discovery with a focus on tuberculosis and mycobacterial physiology. His work combines chemical biology and microbiology to identify novel drug targets and develop small-molecule inhibitors targeting respiratory pathways and resistance mechanisms. He has contributed to multiple peer-reviewed studies advancing therapeutic strategies against drug-resistant bacterial infections. His research aims to translate mechanistic insights into effective next-generation antimicrobials.

On Stage Discussion

Tuesday afternoon 26th May



Anil Koul
London School of Hygiene & Tropical Medicine

Christine Roubert
Evotec

Daniel Ritz
BioVersys

Florian Maurer
Basilea Pharmaceutica

Vladimir Marshansky
Neuro-Horizon Pharma Inc.

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