

Antimicrobial Resistance (AMR)

Switzerland, 3 – 8 March 2024 Global Business Innovation Programme

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Welcome

As part of our Global Business Innovation Programme (GBIP), Innovate UK are delighted to bring to Switzerland a delegation of some of the UK's leading Antimicrobial Resistance (AMR) businesses, building solutions with AMR at the core of their value proposition.

AMR is a globally escalating hidden pandemic causing serious human and social impact with the highest burdens in low-resource settings. It has been estimated that in 2019 some 4.95 million deaths were associated with bacterial AMR, including 1.27 million deaths attributable to bacterial AMR¹.

Antimicrobials are becoming more and more ineffective and infections more difficult to treat. This is also putting modern medicine at risk with cancer chemotherapy, stem cell therapy, caesarean sections and other surgeries dependent on antimicrobials to prevent infection. In addition, previously treatable illnesses such as pneumonia, tuberculosis, and even minor wound infections are becoming increasingly difficult to address.

This GBIP contributes to Innovate UK's ongoing commitment to tackle the AMR crisis by driving research, development and commercialisation of novel antimicrobials, preventives such as vaccines and AMR diagnostics in the UK's AMR industry through joint innovation and international collaboration with Switzerland.



Dr. Phil Packer Innovation Lead Innovate UK



Bita Najafi Project Manager Innovate UK EDGE

Our delegation of 14 ambitious UK AMR companies will use the innovation visit to Switzerland as an opportunity to build business relations with key stakeholders from the global AMR industry, engage with other professionals and initiate forward-focused collaboration. The combination of commercial expertise, creative excellence and technological innovation across the UK and Switzerland will generate a significant value add for companies who operate in AMR markets and add to the global curbing of AMR.

We invite you to share insights, thoughtprovoking ideas and make new connections with the UK AMR companies that can open new business opportunities and result in further mutual growth and improved control of AMR. On behalf of the GBIP organisers, we would like to thank our gracious hosts, attendees, delegates and all our partner organisations for their invaluable contributions to this programme.

Thank you for your support.



Rocky Moore Innovation & Growth Specialist Innovate UK EDGE

Global Business Innovation Programmes

Global Business Innovation Programmes, organised by Innovate UK, bring together cohorts of up to 15 innovative UK businesses looking to grow and scale globally. Each programme focuses on a specific country, a technology or sector area, and enables the businesses to build global collaborations and partnerships to explore innovation opportunities.

Innovative UK businesses will tap into complementary knowledge, skills and facilities in the chosen country and develop understanding, cultural insight, and networks.

It will support businesses with a structured three-phase programme: getting ready for the market, visiting the market and exploiting the opportunity, together with harnessing the expertise of an Innovate UK EDGE Innovation & Growth Specialist to maximise the opportunities and impact for the business.

This brochure details the businesses that are taking part in the Antimicrobial Resistance Global Business Innovation Programme with Switzerland and gives an overview of their business and objectives for this visit.

Antimicrobial Resistance within Switzerland and the UK

Switzerland and the UK have unique capabilities and technologies that can assist other nations to address AMR. There is a wide and deep expertise in this UK business delegation and the global AMR 'markets' offer significant opportunities to join forces and help bring forward the development of novel antimicrobial strategies, diagnostic tools, preventives and more.

The Swiss and UK governments have both made strategic commitments to addressing AMR.

The Swiss methodology to tackle AMR is a One Health approach, as described in their national strategy (STAR). This highlights a deep understanding of, and commitment to the problems of AMR. The Swiss Life Sciences industry, particularly in the Basel region, is a world leader and the driving force of the Swiss economy, housing some 800 Life Sciences companies including the headquarters of major pharma firms such as Roche and Novartis.

The UK national action plan to tackle AMR sets out a 20-year vision to combat AMR through

lowering the burden of infection and better treatment of resistant infections, development and optimal use of antimicrobials and good stewardship across all sectors. This is promoting access to safe and effective antimicrobials and the implementation of new diagnostics, vaccines and interventions. The UK boasts a strong research base, a thriving innovation climate and a large number of groundbreaking companies focused on developing new antibiotics, AMR diagnostics and preventives such as vaccines.

This innovation visit will also include access to both days of the prestigious 8th AMR Conference in Basel, focusing on novel Antimicrobials and AMR Diagnostics. This will provide opportunities to hear from world leading AMR experts, as well as 1-to-1 matchmaking meetings to find new collaborators and partners for business growth, and to participate in several networking events.



Innovate UK and Innovate UK EDGE

Innovate UK

Innovate UK drives productivity and economic growth by supporting businesses to develop and realise the potential of new ideas.

We connect businesses to partners, customers and investors who can help them turn ideas into commercially successful products and services that drive business growth.

We fund business and research collaborations to accelerate innovation and business investment into Research and Development. Our support is available to businesses across all economic sectors, value chains and UK regions.

Innovate UK is part of UK Research and Innovation.

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Innovate UK EDGE

Innovate UK's business growth service, Innovate UK EDGE, offers intensive growth and scaling support tailored to the needs of ambitious, highgrowth, innovation-driven small or medium sized businesses.

Each client's leadership team collaborates with an Innovation & Growth Specialist to hone its commercial strategy and identify targeted action to:

- Exploit their innovation to grow and scale
- · Source funding and finance
- Enter global markets

We bring in wider ecosystem resources to enable clients to capitalise on their IP, find commercial and Research and Development partners, access cutting-edge facilities and convene in growth-stimulating Peer Networks.

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Leading the Visit

Dr. Phil Packer Innovation Lead Innovate UK

Phil is the Innovation Lead for AMR and Vaccines at Innovate UK, and the Senior Responsible Officer for PACE (Pathways to Antimicrobial Efficacy).

Innovate UK have a One Health approach to AMR, funding SMEs and industry to develop new vaccines, antimicrobials and therapies for infectious disease in both humans and animals. In addition, capabilities and technologies are supported in Infection, Prevention and Control to reduce further spread of antimicrobial resistance in the Human Health, Environment and Agri-sectors.

Phil is responsible for developing and delivering funded calls, supporting workshops and strategy, including a £40M programme of work developing vaccines for diseases that have outbreak potential as part of the DHSC UK Vaccine Network programme.

Bita Najafi

Project Manager Innovate UK EDGE

Bita joined Innovate UK EDGE in 2021 and is supporting SMEs in achieving their international business objectives and to help them expand into new markets.

She holds a Master's Degree in Medical Genetics and an MA in Counselling and psychotherapy.

Bita has over 20 years of experience in the medical and healthcare sector and has successfully set up and grown businesses. She has also invested in a number of early stage MedTech companies. During her career she has worked in international markets and supported her clients to grow significantly.

Bita leads on the delivery of Global Business Innovation Programmes with Innovate UK.



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Leading the Visit

Rocky Moore Innovation & Growth Specialist Innovate UK EDGE

Rocky is an Innovation & Growth Specialist and has been supporting SME growth for many years. Before delivering the Innovate UK EDGE service, he was a successful entrepreneur, enabling him to understand what business owners go through to achieve business growth.

One of Rocky's key attributes to supporting SMEs is his ability to connect and develop reciprocal relationships ensuring they link in with long term strategies. He has particular experience in AMR from working on the AMR GBIP with Germany and Switzerland in 2023.

He is keen to help our UK SMEs develop their international markets through the Global Business Innovation Programmes.

Dr. Maarten van Dongen Director

AMR Insights BV

Maarten is a widely recognised AMR expert and founder of AMR Insights BV. He is a Molecular and Medical Microbiologist by origin.

Maarten has worked for the international Pharma and Biopharma industry and has advised on Life Sciences and Innovation for some 20 years. In 2017, he founded AMR Insights to combat AMR by informing, educating and connecting professionals. It has set up a network of over 600 Ambassadors in some 65 countries and has developed into a global information platform and competence centre on AMR

Maarten is committed to eliminating AMR because he does not accept that millions of people need to die as a result of resistant bacteria.



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Leading the Visit

Martina Novakova

Science and Innovation Adviser Science and Innovation Network, British Embassy Berne

Martina is part of the Science & Innovation Network and is based at the British Embassy in Berne. In her role, she maintains the UK government's science and innovation interests in Switzerland and facilitates bilateral collaboration in research and innovation working closely with Swiss government and S&I actors. Through her work, she supports the delivery of the UK Swiss Memorandum of Understanding on Collaboration in Research and Innovation. Her sectoral priorities cover Life Sciences and Global Health, Emerging Technologies and Climate.

Prior to joining the Science and Innovation Network, she worked for HMG in various roles, including in Policy and Consular Affairs. Her academic background lies in international relations

Janet Geddes

Deputy Director – Global Innovate UK

Janet leads Innovate UK's international team and international engagement. Throughout her 10 years at Innovate UK, she has designed, led and managed a series of programmes to support hundreds of innovative UK businesses to engage globally and work with their peers and counterparts in other countries to advance their R&D and market applicability. She has worked with partners across many regions of the world, including Latin America, India and other parts of Asia.

Prior to Innovate UK, Janet spent several years working in international development in various sectors including water and sanitation, agricultural development, urban development, health and wellbeing. This included 10 years living and working in India for various grassroots non-profits as well as for the professional services firm KPMG.

Janet also sits on the Investment CommiQee for SIS Ventures, a Scotland-based impact investment fund aiming to support and grow high-impact organisations through access to mission-aligned investment.



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Overview of Companies

BrigID Biologics

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Glox Therapeutics

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Medusa Pharmaceuticals

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RapidX Bio

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Rostra Therapeutics Ltd

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BrlgID Biologics

BrIgID Bio is a biotech spin-out from the University of Aberdeen, developing novel, first in class antibody-based drugs as safer and efficacious treatment solutions for highrisk and drug resistant fungal infections.

BrIgID Bio utilises a unique and proprietary platform where the identification of pathogen specific cell wall markers provides an opportunity to develop targeted therapies. Combining the scientific expertise of two world leading centres of excellence - Aberdeen Fungal Group and Scottish Biologics Facility, they have developed fully human antibodies (mAbs) that target key cell wall markers which are unique to fungal pathogens and critical for infection and resistance. The cell wall targets they have identified are completely novel and have never been used in drug discovery, offering a strong IP protection. Their lead, fully human antibodies have demonstrated superior therapeutic efficacy in a 'clinically predictive' mouse model of invasive candidiasis

The BrIgID team brings a unique combination of globally recognized scientific expertise in fungal cell wall biosynthesis, antifungal drug resistance, antibody engineering, pre-clinical drug development and commercial experience in biotech partnering, product launch and exit.

✓ Visit objective

Connecting with the biotech cluster in Switzerland for strategic collaborations. Raising company profile and widening the network of funders, policy makers and regulatory bodies. Socialising their story and pharma engagement.

BrlgID Biologics

Safe, effective and tailored antifungals

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Industry: Drug discovery and development



Cytecom

Cytecom is developing a rapid diagnostic test using their patented optical electrophysiology technology to reduce the time for targeted antibiotic selection from days to seconds.

Clinical samples, such as blood or urine, are exposed to a range of antibiotics before being subjected to a quick electrical stimulation to detect resistant bacteria, which light up in response to the shock in just 45 seconds! Robust data analysis at the single-cell level provides enhanced antibiotic susceptibility results in unbeatable timescales.

The current prototype is ready for research and development applications with a scalable consumable supply chain to facilitate this. Packaged into a toaster sized device, this cutting-edge approach is being co-developed with the UK's National Health Service. Cytecom's initial focus is on the unmet high value market of blood infections and sepsis, providing £100 million in savings over three years.

With the recent endorsement of a £1.5 million UK government contract, Cytecom is bringing a new era of antimicrobial susceptibility testing. Promising to transform patient care and confront the global threat of AMR, Cytecom is looking for Swiss partners.

✓ Visit objective

Gain insights into clinical diagnostics challenges and opportunities; explore UK-Switzerland synergies and contrasts; and identify collaborators for bilateral innovative projects: machine learning experts, drug developers seeking companion diagnostics and clinical trials partners.



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Evolvere Biosciences

Evolvere Biosciences is developing a precision antibiotics platform oriented around dual revenue from therapeutic assets and licensed AI tools. They developed a new modality of protein antibiotic therapies that prevent bacterial drug resistance and precisely target pathogenic bacteria, without harming commensal microbes or human cells.

Founded in 2021 by a team of engineers and biologists from Oxford, the company leverages expertise in bioengineering, Al, and evolutionary biology. Their platform subjects large libraries of antibiotic candidates to iterative rounds of mutation and selection for enhanced antibacterial activity and resistance minimization. This survival-of-the-fittest strategy pushes candidates along an accelerated evolutionary path to produce therapies that stay ahead of bacteria's ability to develop resistance. Promising leads are then computationally optimized and fused to bactericidal effector domains, yielding potent precision antibiotic therapies.

They have demonstrated proof-of-concepts against several WHO priority pathogens including *E. coli, Pseudomonas, Klebsiella*, and *Staphylococcus* species. The platform itself is adaptable to any bacterial pathogen and so they are looking to understand what pathogens are most attractive for big pharma.

In parallel, they are building AI models to predict evolutionary trajectories and engineer resistant-minimized biologics, to be licensed to partners across various modalities. For example, the engineering of antibodies against infectious diseases to minimize variant escape.



Contact

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Industry: TechBio and Therapeutic Development

✓ Visit objective

Initial discussions about Letters of Intent for their AI tools or Therapeutic Assets; advisors on clinical development, regulatory pathways, and pre-clinical technologies; and R&D Partnerships.



FluoretiQ

Over 250 million times a year we expect our doctors to treat us for infections without knowing the cause, nor the most effective treatment. At FluoretiQ, they develop fast and accurate diagnostics that can be used at the point of care, to help clinicians make their first antibiotic prescription, the right antibiotic prescription.

FluoretiQ's solutions ensure effective and sustainable use of antibiotics by answering 2 key questions:

- Is the infection treatable with antibiotics?
 NANOPLEX is an advanced latex agglutination test that
 can be used to rapidly identify and quantify the cause of
 bacterial infection within 15 minutes.
- Which antibiotic will be the most effective?
 FluoretiQ's SCFI technology is a phenotypic and label-free antibiotic susceptibility test that determines the most effective antibiotic within 30 minutes.

This year FluoretiQ are launching VERI-5: a compact hardware and single use cartridge system to quickly detect bacteriuria at the point of care. Please contact James Preece (j.preece@fluoretiq.com) if your organisation would be interested in joining their early access program.

Visit objective

FluoretiQ's objective is to identify opportunities for collaboration (clinical evaluations, codevelopment projects, distribution partners) in European markets.



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Glox Therapeutics

Glox Therapeutics is developing precision antibiotics based on engineered protein bacteriocins, which are potent narrow-spectrum antibiotics.

Their newly developed strategies for engineering bacteriocins will enable Glox to produce targeted antibiotics that harness the activity of bacteriocins within a single entity thus enabling a simple and cost-effective drug-development program.

Relative to wild-type bacteriocins, the engineering strategies will reduce the frequency of resistance development, provide a route to new IP, enhance species coverage and enable building of bacteriocins designed to target Gram-negative pathogens of choice.

Visit objective

The objectives are to increase the visibility of the company and to meet new potential collaborators and investors.



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Industry: Biotechnology



LightOx Ltd

LightOx develops new light activated treatments for infection in wounds.

LightOx have developed a new class of drug compound that is capable of being directly applied to a wound, ulcer or surgical site and targets microbial species that cause complications and lengthen the wound healing recovery time.

LightOx compounds are unique in their mode of action, and only affect the area where the compounds are applied. Due to this the microbial species are not able to gain resistance to these compounds, and the patient does not suffer form further off target effects commonly associated with systemic delivery mechanisms. Complications with wound healing add significant costs and complications, as well as require repeat visits and wound dressings to be applied. LightOx looks to reduce the complications caused with microbial infections in wound sites.

✓ Visit objective

To partner and develop their technology to new fields, application areas and regions where they see common objectives and to look to fund the product through regulatory programmes and look for clinical and investment partners.



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Industry: Drug development / wound care



Medusa Pharmaceuticals

Medusa Pharmaceuticals is an Imperial College London spinout, developing innovative synergistic combinations of repurposed drugs to overcome antimicrobial resistance (AMR).

Rather than trying to discover a new drug (which can be prohibitively expensive and high risk, particularly in the absence of a clear pricing and reimbursement model), Medusa Pharmaceuticals is developing a novel approach to tackle this substantial and rising threat.

Medusa is translating an academic discovery of a powerful synergy between two classes of drugs, whereby repurposing a cancer drug has been shown to reinvigorate antibiotics to combat resistance, presenting a low cost, low risk and widely applicable solution to the global challenge of AMR. The technology is most effective against certain species of bacteria, including P. aeruginosa, M. tuberculosis and C. difficile, providing a set of primary indications for initial combination therapies to be developed to treat.

✓ Visit objective

Connect with key partners and leaders in AMR, showcase their capabilities/proposition and to establish potential collaborations to test their application of Medusa's technology against key target pathogens.



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Industry: Pharmaceuticals



Microbira Ltd

Microbira has created an Artificial Intelligence-driven solution to microorganism identification – the Microbira Advanced Analytical Platform Infrared, (MAAP-IR).

This infrared, internet-based solution achieves rapid identification of microorganisms directly from microorganism cultures and positive blood cultures. Microbira's platform addresses several healthcare challenges:

Faster microorganism identification: Currently MAAP-IR can identify over 40 species of bacteria and clinical yeasts, including difficult to distinguish pathogens, in under 5 minutes. Bloodstream infections create a significant economic and health burden. MAAP-IR is piloting a process for reducing the time for microorganism identification from blood from days to minutes.

Combatting Antimicrobial Resistance (AMR): Microbira's precise identification technology is a potent tool in selecting appropriate antibiotics, avoiding the need for Gram staining.

Expanding Diagnostic Accessibility: Its low capital cost benefits smaller laboratories and offers improved patient care in remote areas in developing countries removing the need to transport samples long distances.

Cost savings and Sustainability: Microbira's platform is cost effective, compact and reagent free decreasing the overall cost of microbial testing but also aligns with carbon footprint reduction policies by eliminating the environmental costs of plastic disposables.

Across a group of 40 species, their technology has demonstrated an average 99% success rate for Gram identification, an average 92% success rate for correct genus identification and an 84% success rate for species level



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✓ Visit objective

To identify market gaps, find potential distributors and users of their technology and develop partnerships for development of the next wave of data driven in vitro diagnostics.



Oppilotech

Oppilotech's modelling allows accurate mapping of cellular biochemistry at extremely high levels of resolution, which is utilised to identify the best drug targets whilst also confirming that cells cannot bypass their inhibition.

Oppilotech have identified a number of novel antimicrobial drug targets, with a full understanding of the biochemical impact of target inhibition, meaning a higher chance of development success, and a lower chance of unexpected data later in development leading to failures. They have also used their approach in eukaryotic settings, applying their modelling to identify oncology targets.

The company has multiple antimicrobial drug development projects (3 in collaboration with other groups), 2 oncology drug development projects and a CRO modelling, consulting and lab testing services (for which the income is used to fund drug development work).

Their team is made up of a range of experienced scientists with experience in biochemistry, microbiology, med chem, antimicrobial drug development and Al/ML, as well as corporate functionality. Keen to collaborate, they are looking to advance their work.

✓ Visit objective

Looking for networking opportunities, collaborative agreements, offering capabilities as a service (modelling, microbiology) and exposure to current cutting edge research and approaches in the field of anti-infective drug development.



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Industry: Biotech



Oxford SimCell Ltd

Oxford SimCell Ltd. is a biotechnology spinout from the University of Oxford developing vaccines against antimicrobial resistant bacteria.

SimCells® are genome-free bacteria produced by switchable expression of a nuclease that cuts the bacterial genome. This process renders the host bacteria unable to replicate, but preserves important immunogenic cell surface features. SimCells cannot grow but are otherwise identical to their living counterparts, and so are ideal for use as inactivated whole-cell vaccines.

SimCell vaccines can be used as alternative countermeasures against critical bacterial pathogens that don't respond to antibiotic drugs, including *Pseudomonas aeruginosa* and *Staphylococcus aureus*. By providing novel SimCell vaccines that suppress the transmission and evolution of these antimicrobial resistant bacteria, Oxford SimCell Ltd. aims to both improve individual patient outcomes and contribute to solving the growing global challenge of antimicrobial resistance.

✓ Visit objective

Raise awareness of Oxford SimCell Ltd.'s activities and technology, receive feedback on their approach, exchange ideas and expand their expert network, and remain informed on recent developments in the field



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Industry: Biotechnology



Phytoceutical Ltd

UK SME Phytoceutical have developed novel lipid core nano micellar technology improving bioactive delivery. Patents are granted in the EU and UK.

The company is developing BioXicol to modify the tissue microenvironment disrupting biofilms with secondary healing, combatting Antimicrobial Resistance (AMR) without the use of existing antibiotics. The University of Surrey have validated the micelles clearing biofilms and controlling two key bacteria of concern to the WHO, *Pseudomonas* and *Staphylococcus*, and demonstrated significant improved wound closure time with 3D cell models. The UK National Physical Laboratory have measured stability and topical delivery of easily degradable bio-actives including vitamin A and analysed the toxicity of the technology and measured fibroblast activation.

Clinical use cases addressed include improved wound closure minimising scar formation, biofilms associated with chronic wounds including in community settings, orthopaedic implant wound prevention and catheter induced urinary tract infections. The technology can be further used as a delivery platform for easily degradable lipophilic active compounds especially where biofilms are a key issue preventing existing treatments being effective. A cosmeceutical vitamin A product is currently being analysed for dermal collagen improvement with CLF at STFC Harwell.

Phytoceutical

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Industry: BioScience

✓ Visit objective

To disseminate the technology and connect with potential partners both for collaborative Swiss UK grant funded projects and to explore funding and licensing opportunities of the technology platform for medical and cosmeceutical applications.



RapidX Bio

RapidX Bio is a Cambridge (UK)-based molecular diagnostic startup aimed at building rapid point-of-care qPCR machines testing for a wide range infectious diseases.

Powered by nanotechnology, RapidX machines are being developed for multiplexing up to 12 genetic targets in under 5 minutes, for bacteria as well as viruses. Some of these targets may be used for genotypic antimicrobial susceptibility testing.

Development is geared toward making this technology for patient-facing use cases through incorporation of automated sample handling and a heavy central focus on affordability.

Visit objective

RapidX Bio is looking for potential scientific/ clinical advisors as well as co-development partners from patient-facing organisations and antimicrobial susceptibility testing PCR assay/genotyping companies.



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Industry: Biotech: Molecular diagnostics/antibiotic

susceptibility testing (AST)



Rostra Therapeutics Ltd

Rostra Therapeutics is an early-stage company with a mission to develop a novel molecular platform technology into medicines to treat infectious diseases and help address the global threat of AMR.

The technology, 2nd generation Strathclyde Minor groove Binders (2G-S-MGBs) has been developed at the University of Strathclyde and preclinical development work completed though the NIAID preclinical services program has shown high activity against fungi including all those highlighted as 'critical' in the WHO Fungal Priority Pathogen List.

Rostra Therapeutics aims to develop its multi-targeted lead molecules into medicines to treat life threatening Invasive Fungal Diseases in immunocompromised patients, and other infections where treatments and patient well being are compromised by AMR.

✓ Visit objective

To meet and develop collaborative relationships with potential drug development partners and investors and increase understanding of future collaborative opportunities in Switzerland.



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Industry: Lifescience



Veraco Ltd

Veraco is revolutionising how healthcare spaces combat the silent threat of environmental contamination. Their antimicrobial touchpoint surfaces stand guard against the spread of bacteria.

They safeguard staff, patients, and the general public. By reducing pathogen transmission, fewer antibiotics will be used.

Imagine a world where door handles, light switches, and bed rails actively repel harmful bacteria and viruses. That's the Veraco reality. Their cutting-edge technology seamlessly integrates and retrofits into existing infrastructure. It forms a 24/7 shield against invisible pathogen threats. Here's how they make a difference:

- Surface hygiene: 99% less microbial contamination on Veraco surfaces between cleaning cycles.
- Improved Cleaning: 99% less microbial contamination on Veraco surfaces after mechanical cleaning.
- Staff Absenteeism: 30% fewer staff sick days due to Colds & Flu.

Veraco is for everyone, and that is their mission. They are for hospitals, care homes, offices, schools, and everything inbetween. They believe every touchpoint deserves protection, and their adaptable solutions fit seamlessly into any environment.

Join the Veraco movement to make a safer world.

Veraco_®

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✓ Visit objective

Veraco is a global company trading all over the world and are always looking for new opportunities and regional partnerships to break into new markets.





Disclaimer

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