

■ SPEARHEAD FLAGSHIP PRESS RELEASE

SPEARHEAD launches to address the silent pandemic of antimicrobial resistance (AMR)

Fighting Antimicrobial resistance through rapid digital pandemic response

Basel, Dec 9th, 2021: today, a consortium of 8 public and 4 private Swiss institutions has joined forces to address the silent pandemic of antimicrobial resistance (AMR) by launching the 'Swiss Pandemic & AMR - Health Economy Awareness Detect' (SPEARHEAD) partnership.

AMR is the ability of microorganisms (like bacteria, viruses, and some parasites) to prevent antimicrobials (such as antibiotics, antivirals and antimalarials) from working against them. As a result, many treatments are becoming ineffective against infections that were previously easily treatable.

SPEARHEAD will leverage lessons learnt to address the steadily worsening, silent pandemic of AMR, with potentially 10M deaths per year globally by 2050 (4 x the 2020 COVID-19 death toll) and the related economic impact on society.

SPEARHEAD builds on the partners' existing expertise in COVID-19 and AMR to rapidly deploy digital pandemic responses to address AMR. The project has five main goals:

1. real-time data flow to and from decision-makers
2. better use of big data for risk stratification
3. timely diagnostics that can leapfrog a centralized laboratory infrastructure
4. better and broader citizen and community engagement as well as
5. early attention to the financial implications of the proposed innovations.

These goals will be used to mitigate the expected economic and societal impacts of AMR.

While the COVID-19 pandemic has shown societal vulnerability to infections, it has also highlighted a global capacity to respond, particularly in the digital space and via public-private partnerships.

SPEARHEAD will ultimately contribute to optimised practices in managing AMR that may easily be harnessed to address future emerging infections, ultimately resulting in a more resilient healthcare system and society.

The partnership has been successful in securing funding from Innosuisse, the Swiss Innovation Agency, to build a first-in-class, globally scalable, modular digital platform to improve antibiotic stewardship, with advanced patient stratification techniques and direct access to results from faster diagnostics. Direct citizen engagement will be used to raise awareness about the issue of AMR and pandemic preparedness, and inform the development of the platform.

SPEARHEAD is a first co-operation within the Bio-Campus, the strategic tri-national (Switzerland-France-Germany) initiative by the University of Basel, with its vision of co-creating the future of health and well-being with partners from academia, industry, start-ups, and civil society, driving innovation with global impact on society.

Partners

Research Partners

University of Basel

The University of Basel is the oldest university in Switzerland. As a research-intensive university it works closely with national and international partners to advance sciences and society. The university is regularly placed among the 100 top universities in the world thanks to its research achievements. The Innovation Office of the University of Basel is driving the partnership and ensuring that the societal challenge of AMR is addressed in a sustainable and transdisciplinary way, with long-lasting systemic impact ready to scale. The Department of Pharmaceutical Sciences and the Hospital Pharmacy of the University Hospital Basel contribute their expertise in pharmacoepidemiological research and clinical pharmacy, and started developing a pilot process for the advanced management of antibiotic stewardship. The Institute of Pharmaceutical Medicine has long-standing, in depth expertise in health technology assessment, health economic evaluation studies (model-based and clinical trial-based) and in the analysis of real-world data, in cooperation with public and private institutions.

University Children's Hospital of Basel (UKBB)

UKBB brings clinical expertise in microbiology and AMR diagnosis, as well as in clinical management of AMRs and AMR therapy stewardship (the latter leads the development of Swiss national AMR stewardship activities on behalf of Swissnoso).

SUPSI - Institute of Design

The Institute of Design (IDe) of the University of Applied Sciences and Arts of Southern Switzerland is a research center focusing on cutting-edge and emerging design practices, critically reflecting on the user experiences, behaviors, aesthetics, spaces and technologies, with a particular emphasis on open innovation for social and cultural development. SUPSI FabLab is the laboratory of digital fabrication and open innovation that supports the digital skills development in the sector of architecture, design and creative technologies. It is open to students, researchers, companies, organizations and the civil society to promote the models of open innovation through the use of digital technologies.

Dalle Molle Institute for Artificial Intelligence (IDSIA USI-SUPSI)

The Swiss AI Lab IDSIA (Istituto Dalle Molle di Studi sull'Intelligenza Artificiale) is a non-profit oriented research institute for artificial intelligence. It is a joint institute of both the Faculty of Informatics of the Università della Svizzera Italiana (USI) and the Department of Innovative Technologies of SUPSI. IDSIA is focused on machine learning (deep neural networks, reinforcement learning), operations research, data mining, and robotics.

University Hospitals

Two of the five university hospitals in Switzerland, well-known centers of medical education and research.

Implementation Partners

Resistell AG

Resistell is a clinical stage medtech start-up developing the world's fastest phenotypic Antibiotic Susceptibility Test (AST) for bloodstream infections, using a groundbreaking nanomotion, multi use technology platform.

Novartis

Novartis is reimagining medicine to improve and extend people's lives. As a leading global medicines company, we use innovative science and digital technologies to create transformative treatments in areas of great medical need. In our quest to find new medicines, we consistently rank among the world's top companies investing in research and development. Novartis is an initiating partner of the tri-national BioCampus initiative by the University of Basel. Novartis products reach nearly 800 million people globally and we are finding innovative ways to expand access to our latest treatments. About 108,000 people of more than 140 nationalities work at Novartis around the world. <https://www.novartis.com>.

WAAT Switzerland GmbH

WAAT is a cross-functional digital agency that provides public and private sector organizations with the enterprise-level digital solutions required to deliver their innovation projects. WAAT has successfully delivered over 100 web systems for leading institutions and companies.

Swiss Re

The Swiss Re Group is one of the world's leading providers of reinsurance, insurance and other forms of insurance-based risk transfer, working to make the world more resilient. It anticipates and manages risk – from natural catastrophes to climate change, from aging populations to

cybercrime. The aim of the Swiss Re Group is to enable society to thrive and progress, creating new opportunities and solutions for its clients. Headquartered in Zurich, Switzerland, where it was founded in 1863, the Swiss Re Group operates through a network of around 80 offices globally.