

SciLifeLab Day

Gothenburg, April 17, 2023
Conference Centre Wallenberg



SciLifeLab

SciLifeLab Day

Contents

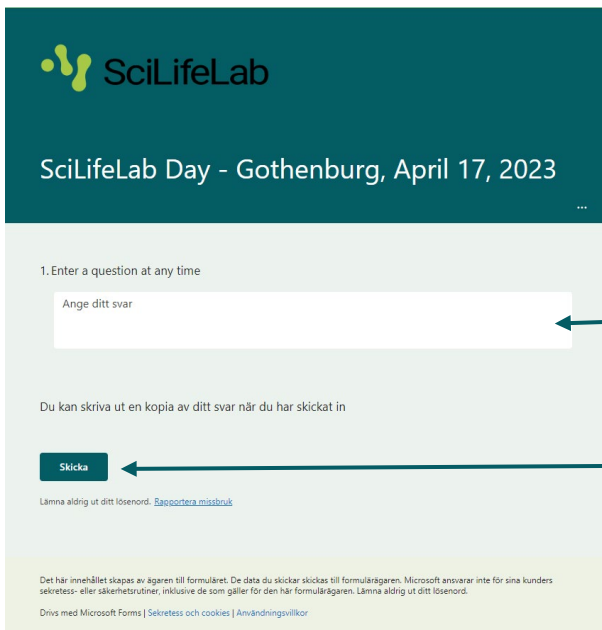
Instructions for questions during plenary session	p. 3
Program overview	p. 4-5
Plenary session program	p. 6-8
Pandemic Laboratory Preparedness session	p. 9-10
Planetary Biology session	p. 11
Precision Medicine session	p. 12
Map: Medicinareberget (Medical Hill)	p. 13
Map: Conference Centre Wallenberg	p. 14
Posters and Exhibitions	p. 15

SciLifeLab Day

Instructions for questions during plenary session

Please, use this form for questions during the plenary session:

<https://forms.office.com/e/x5D1peedK3>



1. Enter your question

2. Press the submit button



3. Send another question

Program overview

Venue: Conference Centre Wallenberg, Medicinaregatan 20, Gothenburg

08:30 Coffee & Registration

09:00 Welcome words

Carina Mallard, Univ. of Gothenburg, and Ann-Sofie Cans, Chalmers Univ. of Technology

09:10 Overview of SciLifeLab: Technology- and data-driven life science

Olli Kallioniemi, Director SciLifeLab

09:25 SciLifeLab infrastructure in the overall infrastructure landscape in Sweden

Annika Jenmalm Jensen, Infrastructure Director SciLifeLab

09:35 SciLifeLab Gothenburg – Site Presentation

Elisabet Carlsohn, Site Director, and Maria Smedh, Site Coordinator

09:45 High-resolution NMR Spectroscopy reveals the activation and allosteric regulation of the pro-apoptotic HtrA2 protease

Björn Burmann, Univ. of Gothenburg

10:05 The fecal metabolome as a biomarker for gastrointestinal diseases

Lena Öhman, Univ. of Gothenburg

10:25 Coffee break

11:00 SciLifeLab & Wallenberg National Program for Data-Driven Life Science (DDLS)

Margit Mahlapuu, Univ. of Gothenburg

11:10 National services for data and bioinformatics within DDLS and SciLifeLab

Stephan Nylander, NBIS, and Sara El-Gebali, SciLifeLab Data Centre

SciLifeLab Day

Program overview

11:30 Data Science Nodes - a local perspective on the new national research infrastructure services for data-driven life science

Thomas Svensson, NBIS/Chalmers

11:40 User success story 3: Spatial multiomic studies of the human thymus

Viktoria Hennings, Univ. of Gothenburg

12:00 User success story 4: Mucin utilization by gut microbiota - recent advances on characterization of key enzymes

Ana Sofia de Jesus Vaz Luis, Univ. of Gothenburg

12:20 Training and lifelong learning from SciLifeLab - the SciLifeLab Training Hub and the DDLS research school

Nina Norgren, SciLifeLab Training Hub, and Ulrika Wallenquist, SciLifeLab/Uppsala University

12:40 User success story 5: In vivo imaging of brain function in zebrafish

Lars Westberg, Univ. of Gothenburg

13:00 Lunch

14:00 Parallel Sessions for the capabilities

- Pandemic Laboratory Preparedness
- Planetary Biology
- Precision Medicine

15:30 Exhibition and poster session

Mingle, food and wine from 16:00

~17:30 End of program

Plenary session program

Venue: Wallenberg hall, Conference Centre Wallenberg

09:00 Welcome words

Carina Mallard, Univ. of Gothenburg, and Ann-Sofie Cans, Chalmers Univ. of Technology

09:10 Overview of SciLifeLab: Technology- and data-driven life science

Olli Kallioniemi, Director SciLifeLab

Over the past few years, SciLifeLab has undertaken several new developments that will be summarized. These include an increasing national impact, such as the launch of SciLifeLab sites in Gothenburg, Lund, Linköping and Umeå, launch of data-driven life science (SciLifeLab-KAW DDLS) program in collaboration with the technology-driven national infrastructure, and impact on society via precision medicine, pandemic preparedness and planetary biology capabilities.

09:25 SciLifeLab infrastructure in the overall infrastructure landscape in Sweden

Annika Jenmalm Jensen, Infrastructure Director SciLifeLab

The SciLifeLab National Research infrastructure was launched in 2013 with the mission to provide advanced technology services to all researchers in Sweden on equal terms. Current infrastructure and its relation to other national and local infrastructures will be discussed as well as strategies to keep the research infrastructure cutting edge.

09:35 SciLifeLab Gothenburg – Site Presentation

Elisabet Carlsohn, Site Director, and Maria Smedh, Site Coordinator

The SciLifeLab site in Gothenburg is part of the University of Gothenburg and Chalmers University of Technology and has a strong connection to Sahlgrenska University Hospital. We will give a brief overview of the infrastructure units and present the newly appointed SciLifeLab Group Leaders in Gothenburg.

09:45 High-resolution NMR Spectroscopy reveals the activation and allosteric regulation of the pro-apoptotic HtrA2 protease

Björn Burmann, Univ. of Gothenburg

Using high-resolution protein NMR-Spectroscopy we revealed the dynamical basis of the activation and allosteric regulation of the large 110 kDa Htra2 protease. Our data revealed an previously undetected dual allosteric pathway leading to a refined understanding of its pro-apoptotic role. Altogether our findings set the stage for future studies into larger complexes by integrated structural biology approaches such as cross linking massspectrometry and also cryo-electron microscopy.

Plenary session program

10:05 The fecal metabolome as a biomarker for gastrointestinal diseases

Lena Öhman, Univ. of Gothenburg

An altered composition of the intestinal microbiota and the products of their metabolism, i.e. metabolites, have been linked to numerous gastrointestinal disorders, including inflammatory bowel disease. The intestinal metabolite profile reflects the interaction between the microbiota and host metabolism and fecal metabolome may potentially serve as a biomarker for disease.

10:25 Coffee break

11:00 SciLifeLab & Wallenberg National Program for Data-Driven Life Science (DDLS)

Margit Mahlapuu, Univ. of Gothenburg

The DDLS program, financed by Wallenberg Foundation and hosted by SciLifeLab, aims to create a unique framework for data-driven life science in Sweden to improve the quality of life of humans and to safeguard biodiversity. The program involves eleven Swedish research universities and is synergized with SciLifeLab's national research infrastructure. Furthermore, the DDLS program will closely collaborate with other Wallenberg initiatives like the Wallenberg Centres for Molecular Medicine (WCMM) and the Wallenberg AI, Autonomous Systems and Software Program (WASP).

11:10 National services for data and bioinformatics within DDLS and SciLifeLab

Stephan Nylander, NBIS, and Sara El-Gebali, SciLifeLab Data Centre

Learn about services and support for data management and bioinformatics available for researchers and infrastructure throughout the research data life cycle!

11:30 Data Science Nodes - a local perspective on the new national research infrastructure services for data-driven life science

Thomas Svensson, NBIS/Chalmers

11:40 User success story 3: Spatial multiomic studies of the human thymus

Viktoria Hennings, Univ. of Gothenburg

This talk presents how we use the spatial platforms, 10x Visium spatial transcriptomics and protein co-detection by indexing (CODEX), in collaboration with SciLifeLab to explore sex differences in the different morphological compartments of the human thymus.

SciLifeLab Day

Plenary session program

12:00 User success story 4: Mucin utilization by gut microbiota - recent advances on characterization of key enzymes

Ana Sofia de Jesus Vaz Luis, Univ. of Gothenburg

In the colon, secreted mucus creates a physical barrier that separates the microbiota from the intestinal epithelium. Mucus is mainly composed of mucins glycoproteins containing ~102 different O-glycan structures. Some microbiota members are able to utilize mucins as a nutrient source. However, it remains unclear which bacterial enzymes initiate degradation of the complex O-glycans found in mucins. Through a combination of biochemical, glycomics and genetic approaches, we identified several key enzymes involved in mucin degradation. The characterization of these enzymes provides novel insights into the mechanism of mucin degradation by the commensal microbiota, an important process for both normal microbial gut colonization and diseases such as inflammatory bowel disease.

12:20 Training and lifelong learning from SciLifeLab - the SciLifeLab Training Hub and the DDLS research school

Nina Norgren, SciLifeLab Training Hub, and Ulrika Wallenquist, SciLifeLab/Uppsala University

SciLifeLab has recently launched various efforts aiming to provide Sweden with excellent knowledge and skills across the technology- and data-driven life science disciplines. Efforts such as the newly launched Training Hub, with the aim to support training and lifelong learning across the SciLifeLab ecosystem, and the DDLS programme, aiming to foster next generation data-driven life science researchers with initiatives such as the DDLS research school, which will educate both PhD students and post-docs in data-driven life science. These initiatives aim to put Sweden at the forefront in technology- and data-driven life science research and innovation, across academia, industry and health care.

12:40 User success story 5: In vivo imaging of brain function in zebrafish

Lars Westberg, Univ. of Gothenburg

Our research group uses the zebrafish model to understand the role of the neuropeptide oxytocin and other neurotransmitters in social interactions and in the development of the social brain. Preliminary results from our recent experiments using a transgenic zebrafish line expressing green fluorescent protein (egfp) in oxytocin neurons to investigate i) how life-long social isolation affects oxytocin neurons, ii) how the number of oxytocin neurons increases during development, and iii) how oxytocin may be affected by drug treatments, will be presented.

13:00 Lunch

Venue: Asien, Conference Centre Wallenberg

The Swedish PLP program- going from basic research to infrastructure integrated pandemic laboratory preparedness

The COVID19 pandemic has shown that we need extra laboratory support structures to handle samples for diagnosis and research during pandemics. The SciLifeLab Pandemic Laboratory Preparedness (PLP) program started early 2021, in consultation with the Public health agency of Sweden (Prop. 2020/21:60). The program acts to meet society's need for efficient use of resources, training, education, propagate skills, and setting up technologies and equipment. The PLP program currently involves seven out of ten SciLifeLab platforms and it aims at creating long-term capabilities for fighting future pandemics.

The initial network of SciLifeLab capabilities has been extended to include Governmental agencies and Clinical Microbiology labs. These capabilities have worked as a collaborative network integrated with the SciLifeLab infrastructure to form a stable foundation for PLP work.

The PLP program optimizes SciLifeLab operations to support and complement other societal functions such as authorities, municipalities and regions in pandemic laboratory preparedness, through research (focused on diagnostics, analysis of infection, immunity, and resistance development related to viruses, bacteria and other disease-causing organisms), competence, education, and technology development (focused on sequencing, genetic analysis, immunological methods and management of big data).

Pandemic Laboratory Preparedness Session

PLP SESSION PROGRAM

14:00-14:15

Welcome & Introduction of SciLifeLab Pandemic Preparedness Program, PLP

Staffan Svärd, SciLifeLab Scientific Director

14:15-14:30

Gothenburg Initiative for Pandemic Laboratory Preparedness (GILP)

Magnus Lindh and Johan Ringlander, Univ. of Gothenburg

14:30-14:45

Register-based large-scale national population study to monitor Covid-19 vaccination effectiveness and safety (RECOVAC)

Fredrik Nyberg, Univ. of Gothenburg

14:45-15:00

Immune responses to COVID-19 vaccination in unexposed, previously infected and immunosuppressed individuals

Anna Lundgren, Univ. of Gothenburg

15:00-15:20

Panel discussion (what can be done in PLP nationally and in Göteborg)

Magnus Lindh, Fredrik Nyberg, Anna Lundgren, Staffan Svärd

15:20-15:30

Wrap up

Staffan Svärd, SciLifeLab Scientific Director

SciLifeLab Day

Planetary Biology session

Venue: Antarktis, Conference Centre Wallenberg

Planetary Biology (PB) represents a transformative scientific inquiry approach to accelerate exploration and discovery in the ecosystem- to planetary-scale life science research by integrating diverse and cutting edge technology platforms to link molecular-scale understanding to ecosystem function and biodiversity.

During the first decade of its existence, for a variety of reasons, the majority of SciLifeLab efforts were aligned with interests of biomedical research. Establishment of the PBC, however, will enable our infrastructure to fill the current gap by drawing more attention to the well deserving “ecocentric” biology field. By ensuring complete transparency and reciprocal exchange between SciLifeLab and researchers within the PBC area of expertise, we hope to establish a relationship based on trust.

PB SESSION PROGRAM

14:00 - 14:30

Planetary Biology Capability: what it is and what is it for

Olga Vinnere Petterson, Stefan Bertilsson, PB Scientific leads

14:30 - 15:00

Plenary discussion - community input session

All participants

15:00 - 16:00 **Time for personal consultations and meeting the capability leads**

Precision Medicine session

Venue: Wallenberg hall, Conference Centre Wallenberg

This session will introduce the recent work to establish a SciLifeLab RoadMap for Precision Medicine and other ongoing activities related to precision medicine at SciLifeLab. We will also hear examples of ongoing precision medicine research in Gothenburg, and discuss local and national challenges in the field and how SciLifeLab can contribute to solving these challenges.

PM SESSION PROGRAM

14.00-14.15 **Introduction to Precision Medicine capability**

Päivi Östling, Scientific Lead for Precision Medicine, SciLifeLab

14.15-14.30 **Patient-tailored disease monitoring in acute myeloid leukemia**

Linda Fogelstrand, Associate Professor and Senior Consultant, Sahlgrenska Academy, University of Gothenburg

14.30-14.45 **Tissue subtyping for treatment decision and future of clinical proteomics**

Carina Sihlbom, Head of Proteomics Core Facility, Sahlgrenska Academy, University of Gothenburg

14.45-15.30 **Panel discussion - how can SciLifeLab contribute to precision medicine nationally and in Gothenburg?**

Moderator: Åsa Johansson, Scientific Lead for Precision Medicine, SciLifeLab

Panelists

Lars Ny, Associate Professor and Senior Consultant, Sahlgrenska Academy, University of Gothenburg

Linda Fogelstrand, Associate Professor and Senior Consultant, Sahlgrenska Academy, University of Gothenburg

Lars Palmqvist, Professor and Senior Consultant, Sahlgrenska Academy, University of Gothenburg, and Scientific Director at Clinical Genomics Gothenburg, SciLifeLab

Carina Sihlbom, Head of Proteomics Core Facility, Sahlgrenska Academy, University of Gothenburg

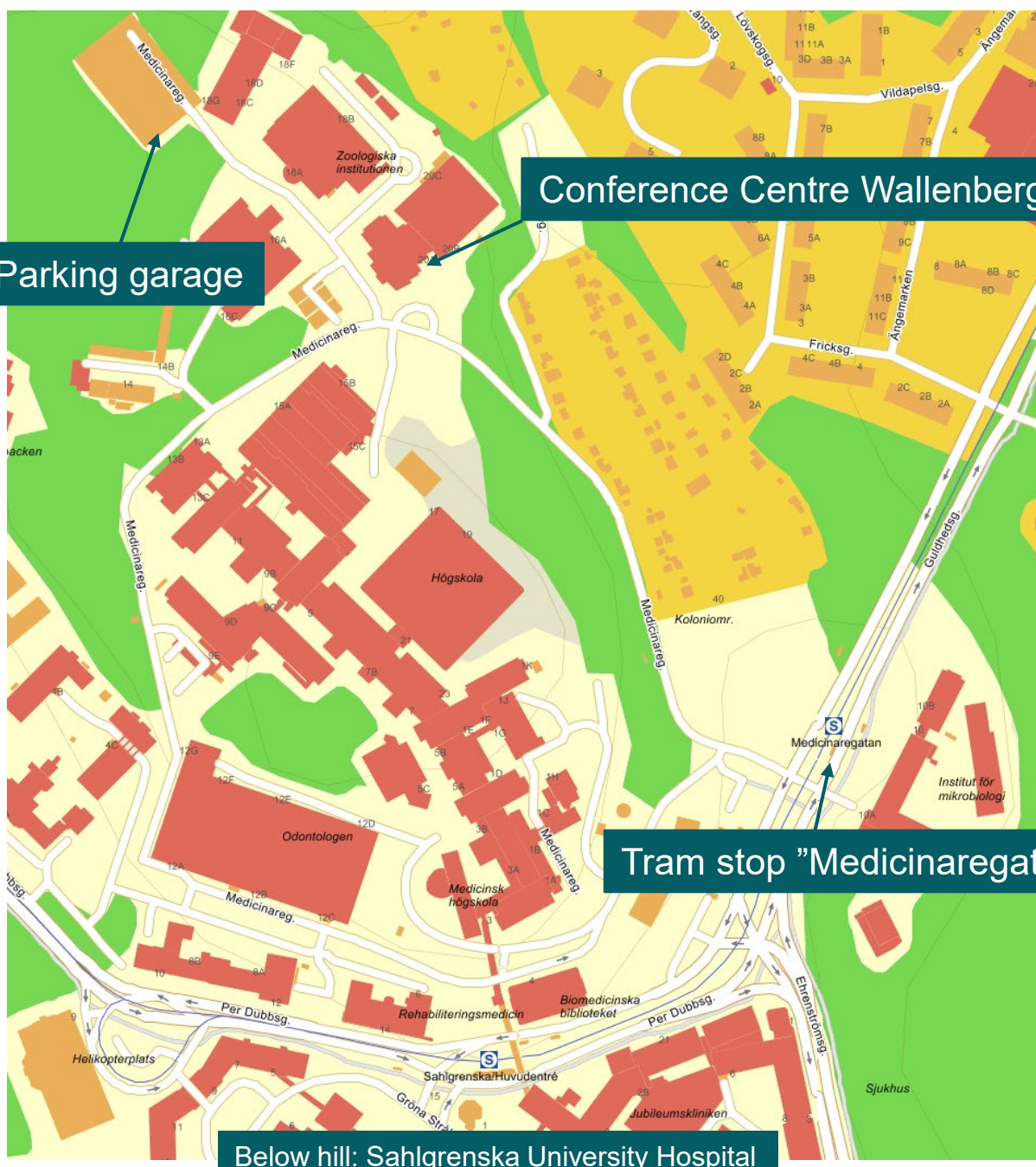
Per Sikora, Head of unit Bioinformatics and Data Centre, University of Gothenburg, and Head Engineer, Sahlgrenska University Hospital

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"Medical Hill" map

Medicinareberget (Medical Hill): Sahlgrenska Academy and Science Faculty at University of Gothenburg.

Conference Centre Wallenberg is located at [Medicinaregatan 20](#)



SciLifeLab Day

Conference Centre map

Plenary session + Precision Medicine



Planetary Biology

Pandemic Laboratory Preparedness

SciLifeLab Day

Posters and Exhibitions

Place	Project/infrastructure
1	Clinical Proteomics and Immunology
2	Proteomics Core Facility
3	Integrated Structural Biology
4	Cell & Molecular Imaging Platform
5	Integrated Microscopy Technologies - Correlative Array Tomography
6	Cryo-EM unit
7	National Genomics Infrastructure (NGI)
8	Spatial Transcriptomics (NGI)
9	Single Cell (NGI)
10	Non-invasive study of protein-DNA contacts using digital UV footprinting
11	The platform Chemical Biology and Genome Engineering – Turning phenotypic observations into mechanistic insights
12	Chemical Biology Consortium Sweden, SciLifeLab
12	Targeted long-read sequencing and epigenetic profiling (SciLifeLab TDP project)
13	CRISPR Functional Genomics
14	Chemical Proteomics
15	Spatial Biology platform and the Spatial Proteomics unit
17	OligoNova Hub / SciLifeLab DDD
18	Paradigm Shift in Oral cancer Screening
20	Högkänslig metod för monitorering av FLT3-ITD-mutation vid akut myeloisk leukemi
21	Exploitation of pseudo-Glucosinolates (psGSLs) in Chemical Biology and Drug Discovery
22	Metabolomics Platform
23	SciLifeLab Lund
24	Support from the Grants and Innovation office
25	Protein Production Sweden (PPS)
26	SciLifeLab Gothenburg
27	Core Facilities Gothenburg
28	Bioinformatics and Data Centre (BDC)
29	NGS research support at Clinical Genomics Gothenburg
30	Clinical Genomics Platform
A	Biobanking
B	Precision Medicine
C	Pandemic Laboratory Preparedness
D	Planetary Biology
E	SciLifeLab Gothenburg
F	Operations Office
G	Data-Driven Life Science
H	Data-Center & NBIS
I	National Genomics Infrastructure (NGI)