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## The national board of Science for Life Laboratory

### Minutes from board meeting no 51, 19 May 2021

#### Present members

Carl-Henrik Heldin (UU)(chair), Fredrik Elinder (LiU), Anders Gustafsson (KI), Anders Karlhede (SU), Göran Landberg (GU), Lotta Ljungqvist (Cytiva), Katrine Riklund (UmU)(until 16.00), Stellan Sandler (UU), Annika Stensson Trigell (KTH)

#### Other participants

Olli Kallioniemi (Director), Mia Phillipson (Co-Director), Annika Jenmalm Jensen (Infrastructure Director), Gunilla Westergren-Thorsson (chair NSC)(until 16.00), Jenny Alfredsson (Acting Head of operations/OO), Elisabet Carlsohn (§ 4a), Thoas Fioretos (§ 4a), Eric Hanse (§ 4a), Lars Johansson (§§ 3, 4a, 6-7), Erik Kristiansson (§ 12a), Anna Lidin (§§ 1-4), Erik Lindahl (§ 12e), Martin L Olsson (§ 4a), Johan Rung (§ 12d), Staffan Svärd (§ 11), Heidi Törmänen Persson (§ 12), Carolina Wählby (§ 12e), Anna Höglund Rehn (secretary)

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#### 1. Meeting formalities

Carl-Henrik Heldin opened the meeting.

The item 4b National nodes was added to the agenda.

#### Decisions:

*The SciLifeLab board appointed Lotta Ljungqvist to approve the minutes of the meeting in addition to the chair.*

*The SciLifeLab board approved the minutes from meeting no. 49 and meeting no. 50.*

#### 2. Update from the Director

Olli Kallioniemi presented the quarterly update from SciLifeLab.

#### 3. IAB visit 2021

VC-2020-0031

The International Advisory Board (IAB) typically visits SciLifeLab every two years. Due to the Covid-19 pandemic, and a number of major changes underway at SciLifeLab, the meeting initially scheduled for the spring of 2021 will take place on October 20-22, 2021. It is still unclear if the meeting will be physical, virtual or a combination of the two.

Olli Kallioniemi informed about the preliminary program for the upcoming IAB visit and the draft outline of the report to be sent to the IAB members.

Decision:

*The SciLifeLab board approved the preliminary program for the IAB visit on October 20-22, 2021.*

*The SciLifeLab board approved the draft outline of the report to be sent to the IAB members.*

**4. SciLifeLab budget 2021**  
VC-2020-0030

**4a. Overview and allocation of additional basic funding to SciLifeLab**

Starting 2021, SciLifeLab will receive more support, both in terms of the amounts and the sources of these funds. All funds to and from SciLifeLab, apart from the SFO funds to Uppsala, are channeled through KTH. Consequently, the complexity of financial control including reporting has increased along with the need for quality control.

SciLifeLab board decided on the budget for Infrastructure and Operations in 2021 at the board meeting no. 47 on Nov 10, 2020. The research proposition (the 'Forskningspolitiska propositionen 2020'), and the basic funding to SciLifeLab, was presented by the government on 17 December 2020, and included both the pandemic preparedness funds and an increase of the baseline budget of 30 MSEK/year in national funding for 2021 as well as an increasing amount for the next four-year period. Following the 'Vårändringsbudget' by the parliament, on 15 April 2021, the additional funds of 30 MSEK were confirmed and will be allocated to SciLifeLab/KTH in June.

Jenny Alfredsson gave an overview of the financial status including the new funding streams and surplus of national funds, while Annika Jenmalm Jensen informed about the plans for the suggested extra basic funding for 2021.

Decision:

*The SciLifeLab board approved the allocation of the additional base budget of 30 MSEK national funds for SciLifeLab during 2021 (appendix 1).*

*When planning the future years, the SciLifeLab board members wished to emphasize the funding for a SciLifeLab national node at Linköping (see below), and adequate funding to the DDD platform*

#### **4b. Launch of national nodes (pilot program)**

One part of the approved allocation of the additional base budget is to support for the build-up of SciLifeLab national nodes. Pilot nodes will be launched in Gothenburg, Lund and Umeå.

Thoas Fioretos, Lund University, and Elisabet Carlsohn, Gothenburg University, presented their ideas on suggested approaches to form local SciLifeLab nodes.

#### **5. Precision medicine lead appointment**

VC-2021-0012

Precision medicine is one of the priorities of the Swedish life science strategy and that of SciLifeLab.

At meeting no 49, 210203, the SciLifeLab board decided to launch a call for a 50% precision medicine lead for a one-year period starting summer 2021.

Mia Phillipson informed about the evaluation process, the outcome of the interviews and presented a suggestion to form a national SciLifeLab Precision Medicine panel consisting of the nominated candidates Petter Brodin, Åsa Johansson, Janne Lehtiö and Päivi Östling (chair), instead of appointing just one scientific lead. The panel members will be initially nominated until the end of the year 2021, during which the panel should define (together with MG), the division of responsibilities among the members, links to DDLS and GMS as well as the main strategies and action items for the next 4 years. The panel members will be initially compensated for a fixed sum to their home departments based on 20% effort each.

##### Decision:

*The SciLifeLab board approved the suggestion.*

#### **6. Infrastructure Platform organization/names and steering documents**

VC-2020-0029

As presented and approved at the board meeting no. 47 on November 10, 2020, the infrastructure from 2021 and onwards is organized into 10 platforms. The platforms have been given the possibility to suggest changes in the names of Platforms and Units (previously termed Facilities) to reflect the technologies and services offered. The names have been approved by the SciLifeLab Management Group.

The general steering document "SciLifeLab Infrastructure General Terms and Conditions for Funding" has been updated, and the Governance section has been modified to reflect the transition to a more platform-centric organization with defined roles and mandate for Platform Directors, Platform Coordination

Officers and Heads of Units.

Annika J Jensen presented the suggested names of platforms and units and the updated steering documents (General terms and conditions for funding, Platform specific terms and conditions for funding and template agreement between SciLifeLab, Heads of Units and Heads of Departments).

Decision:

*The SciLifeLab board approved the infrastructure organization and names of platforms and units (appendix 2).*

*The board approved the "next-to-final" general steering document SciLifeLab Infrastructure General Terms and Conditions for Funding (appendix 3)*

*The board delegated to the Director and Infrastructure Director to finalize the documents (General and Platform Specific Terms and Conditions for funding) to be made effective during 2021.*

*The board delegated to the Director and Infrastructure Director to finalize the agreements between SciLifeLab, Heads of Units and Head of Departments to be signed during 2021.*

**7. Platform Directors, Platform Co-Directors, and Platform Coordination Officers appointments**  
VC-2021-0034

At the board meeting no 49 on February 10, 2021, interim Platform Director (PD) (and Platform Co-Director), as well as interim Platform Coordination Officer (PCO), for each of the 10 platforms were approved by the board until May 30, 2021. Through discussions with the platforms, permanent PDs and PCOs have been suggested for formal appointments 2021–2024.

Annika J Jensen presented the suggested Platform Directors, Co-Platform Directors, and Platform Coordination Officers.

Decision:

*The board approved the suggested Platform Directors, Co-Platform Directors, and Platform Coordination Officers appointments from June 1, 2021, until December 31, 2024 (appendix 4).*

**8. SciLifeLab COVID-19 efforts - reflections from 2020 and ahead**  
VC-2020-0032

During the COVID-19 pandemic, the role of SciLifeLab as a national hub for Life Science researchers and infrastructure was leveraged in the work to fight the pandemic.

Mia Phillipson presented an overview of the actions taken and the difficulties that were exposed, lessons learned and how to take these into account in an effort to build better pandemic preparedness in the future, as part of the national task assigned to SciLifeLab for the years 2021-2024.

**9. COVID-19 vaccine call – revision of project on vaccination effects**

VC-2020-0017

At the board meeting no 49 on February 3, 2021, the board decided to fund ten projects. One of the projects: “The Stockholm 65PLUS-cohort - A prospective longitudinal study of immune responses induced after Covid-19 vaccination” by Anna-Lena Spetz, SU, cannot be performed as originally planned.

A revised project plan based on a collaboration with another funded project from the vaccine call was resubmitted. The revised project was evaluated by Jan Holmgren, Gothenburg, the chair of the evaluation committee for the vaccine call. Jan Holmgren recommends to lower the budget from 5MSEK to 3MSEK.

Mia Phillipson informed about the revision of the project and suggested to approve the lowering of funding.

Decision:

*The board approved to fund the revised project “Covid-19 vaccination in a MS-cohort - A prospective longitudinal study of immune responses induced after Covid-19 vaccination” by Anna-Lena Spetz, with 3MSEK for the years 2021-2022.*

**10. COVID-19 second step**

VC-2020-0032

The 34 COVID-19 research grants awarded in January, 2021, (call 1-3) allowed the continuation of projects from the national SciLifeLab-KAW COVID-19 research program initiated in the spring 2020, as well as inclusion of new projects, and studies on the impact of the different COVID-19 vaccines. Several of the projects funded in 2021 are based on collaborations between PIs previously in the program, while others include new project partners.

Mia Phillipson informed about the new phase for the SciLifeLab-KAW COVID-19 research program including both the projects funded in 2020 and new studies, in total 101 projects. The program will have a new structure that will promote collaborations and interactions across the whole program with joint program activities and close links to the SciLifeLab management and the SciLifeLab infrastructure, which since March 2020 has prioritized COVID-19 related projects.

## **11. Pandemic laboratory preparedness**

In December 2020, SciLifeLab was commissioned by the government to build capacity to be equipped to assist in future pandemics, supported with additional governmental funding to SciLifeLab (40 MSEK in 2021 and 30 MSEK per year 2022-2024, in total 130 MSEK). The assignment was to optimize SciLifeLab operations to support and complement other societal functions such as authorities, municipalities and regions in pandemic laboratory preparedness. The development of these activities should take place in consultation with the Swedish Public Health Agency (FoHM).

### **11a. Call - proposals for funding**

VC-2021-0036

To meet the aims above, SciLifeLab invited suggestions (Letters of intent, LOI) for proposals on how SciLifeLab should develop services and capabilities to detect and monitor COVID-19, and how to manage and develop pandemic preparedness, in a national open call. 17 Letters of intent were received.

Staffan Svärd, Pandemic Laboratory Preparedness Scientific Lead, informed about the evaluation process and the suggested funding.

#### Decision:

*The SciLifeLab board approved to fund eight proposals with a total of 39 MSEK (appendix 5) that together form an integrated capability for a national laboratory pandemic preparedness.*

The funding is regulated via Conditions for funding.

### **11b. Budget 2021**

VC-2021-0014

Staffan Svärd informed about the proposed Pandemic Laboratory Preparedness budget 2021.

#### Decision:

*The SciLifeLab board approved the proposed Pandemic Laboratory Preparedness budget for 2021.*

*The SciLifeLab board emphasized that in the future years, it will be important to update and build on SciLifeLab infrastructure capabilities to assist in future pandemics.*

	2021
<b>PANDEMIC PREPAREDNESS</b>	
<b>Calls, Initiatives and Public Authority Collaborations</b>	
Scientific Lead	400
Coordination	376
	0
Reimbursement reviewers Call 4.	31
<b>Call 4. Laboratory preparedness for pandemics</b>	39 000
	0
Public Authority Collaborations	0
Other	0
<b>Total costs</b>	<b>39 808</b>
<i>Funding</i>	40 000
<b>Sum</b>	<b>192</b>

## 12. SciLifeLab and Wallenberg program for Data-driven Life Science (DDLS) VC-2020-0034

Olli Kallioniemi gave introductory remarks and reviewed progress in the launch of the DDLS program.

### 12a. DDLS-WASP joint call VC-2021-0037

This paragraph was approved immediately at the meeting, see appendix.

### 12b. DDLS budget 2021 VC-2020-0034

Olli Kallioniemi informed about the DDLS budget for 2021. The budget structure contains both the total allocated KAW funds and the required co-funding for each of the main DDLS operational areas in Phase 1.

The Phase 1 operational areas are:

- DDLS Fellow Recruitments
- Data support and databases
- Interaction with WASP
- Advanced bioinformatics (WABI) including Cryo-EM
- Program coordination, networking and research school

When the DDLS budget for 2021 is approved by the Board it will be sent to KAW for final approval. Once approved by KAW, the costs for 2021 can be requisitioned according to budget.

#### Decision:

*The SciLifeLab board approved the DDLS budget for 2021 (appendix 6).*



**12c. DDLS strategy document**  
VC-2021-0038

As stated in the document DDLS steering and organization, approved by the Board on Feb 3, 2021, the DDLS steering group should develop a strategy for the DDLS program. The strategy sets out the direction of the DDLS program and describes what DDLS wants to achieve in the coming 10 years and why. It describes the motivation of the program, specific aims, an overall strategy, and the priorities of the four research areas (Cellular and Molecular Biology, Evolution and Biodiversity, Epidemiology and Infection Biology, and Precision Medicine and Diagnostics).

Olli Kallioniemi informed about the process and the content of the strategy document and that it will be a living document that will now be made available for comments to the national community. The strategy will be updated next year based on the comments received and the feedback from the IAB.

Decision:

*SciLifeLab board approved the DDLS 10-year strategy for publication and active sharing to the national research community (appendix 7).*

**12d. DDLS data platform**

The “Data support and databases” part of the DDLS program will establish a national data science platform providing Swedish life science researchers with tools and services, as well as a platform for technical development of methods and software. The platform will function as a national hub, bringing researchers and developers around the country together.

Johan Rung, head of Data Centre, presented the plans for the data platform of the DDLS program.

**12e. DDLS Fellows' subject area descriptions (ämnesområden)**  
VC-2021-0035

As part of the DDLS program, there is a plan to recruit 39 internationally pre-eminent young group leaders in the following four areas:

- Cell and molecular biology
- Evolution and biodiversity
- Precision medicine and diagnostics
- Epidemiology and infection biology

At the meeting on Feb 3, 2021, the SciLifeLab board approved the recruitment process and conditions for funding for the recruitment of DDLS Fellows in phase 1. One part in the process was that SciLifeLab board should approve all position



descriptions before advertisement.

Erik Lindahl, DDLS recruitments working group, informed about the universities' suggestions of DDLS Fellows' subject area descriptions.

Decision:

*The SciLifeLab board approved the attached profiles (appendix 8), and required all universities to use the original titles for positions as specified in the donation letter.*

*The SciLifeLab board supported the DDLS steering group's request that host universities and departments should not add too strong requirements about documented previous teaching experience, in particular experience from teaching in Swedish. However, all nominated fellows will be encouraged to engage in teaching and training activities after being nominated.*

*The SciLifeLab board approved the presented recruitment timeline.*

**12f. Implementering av DDLS kompetens i grundutbildning - letter from KAW**  
VC-2021-0031

Knut and Alice Wallenberg Foundation (KAW) has asked for a report about measures planned by the universities engaged in DDLS to implement the new DDLS competences in their education system.

Olli Kallioniemi informed about the letter.

Decision:

*The SciLifeLab board decided to delegate to the DDLS steering group to prepare an answer for chair Carl-Henrik Heldin to send to KAW.*

**13. SciLifeLab steering documents**

Olli Kallioniemi summarized available knowledge about the process underway at KTH to revise the steering documents by the end of the year. The board is hoping to review and decide on the steering documents at the November 2021 board meeting. A working group has been formed for revision of the SciLifeLab steering documents with the board members Annika Stensson Trigell (chair), Anders Gustafsson, Anders Karlhede and Stellan Sandler participating. SciLifeLab management and Operations Office were asked to bring up any issues from the community that concern potential needs for revisions in the steering documents.

#### **14. Prolongation of assignment as acting Head of Operations, assignment as acting vice-Head of Operations**

VC-2020-0018

In June 2019, the board assigned Jenny Alfredsson as acting Head of Operations for SciLifeLab from August 1, 2019 until July 31, 2020.

In May 2020, the board decided to prolong Jenny Alfredsson's assignment until new decisions are made, but no longer than July 31, 2021. At the same meeting in May 2020, Susanna Appel was assigned as acting Vice Head of Operations for the same period. This time period was set with the plan that the revision of the steering documents should be finished, and the situation would be clarified, so that long-term assignments for these two key roles at the Operations Office could be considered.

As the revision of the SciLifeLab steering documents is delayed, and Susanna Appel has left SciLifeLab, new decisions are needed for both extending the acting head and a new assignment for an acting vice head of operations. Work is also underway at KTH to arrange for an acting 'Enhetschef' for the SciLifeLab Administration for the same time period.

Olli Kallioniemi informed about the suggestion.

##### Decision:

*The SciLifeLab board decided to prolong Jenny Alfredsson's assignment as acting Head of Operations for SciLifeLab from August 1, 2021 until new decisions are made, but no longer than March 31, 2022.*

*The SciLifeLab board decided to assign Sandra Falck as acting Vice Head of Operations for SciLifeLab from June 1, 2021 until new decisions are made, but no longer than March 31, 2022.*

#### **15. Other issues**

##### **15a. Board meetings in the future**

Carl-Henrik Heldin raised the question about how to handle the augmented work load for the board meetings that has occurred as the SciLifeLab activities have expanded. The discussion will continue at upcoming meetings.

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### Upcoming meetings

- Wednesday September 22, 10.00-15.00 in Solna or by Zoom
- Thursday November 11 (preliminary) in Solna

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Anna Höglund Rehn, secretary

Minutes approved by:

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Carl-Henrik Heldin

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Lotta Ljungqvist

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## The national board of Science for Life Laboratory

### Minutes from board meeting no 51, 19 May 2021

#### Present members

Carl-Henrik Heldin (UU)(chair), Fredrik Elinder (LiU), Anders Gustafsson (KI), Anders Karlhede (SU), Göran Landberg (GU), Lotta Ljungqvist (Cytiva), Katrine Riklund (UmU)(until 16.00), Stellan Sandler (UU), Annika Stensson Trigell (KTH)

#### Other participants

Olli Kallioniemi (Director), Mia Phillipson (Co-Director), Annika Jenmalm Jensen (Infrastructure Director), Gunilla Westergren-Thorsson (chair NSC)(until 16.00), Jenny Alfredsson (Acting Head of operations/OO), Elisabet Carlsohn (§ 4a), Thoas Fioretos (§ 4a), Eric Hanse (§ 4a), Lars Johansson (§§ 3, 4a, 6-7), Erik Kristiansson (§ 12a), Anna Lidin (§§ 1-4), Erik Lindahl (§ 12e), Martin L Olsson (§ 4a), Johan Rung (§ 12d), Staffan Svärd (§ 11), Heidi Törmänen Persson (§ 12), Carolina Wählby (§ 12e), Anna Höglund Rehn (secretary)

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#### 1. Meeting formalities

Carl-Henrik Heldin opened the meeting.

##### Decisions:

*The SciLifeLab board appointed Lotta Ljungqvist to approve the minutes of the meeting in addition to the chair.*

*The SciLifeLab board approved the minutes from meeting no. 49 and meeting no. 50.*

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#### 12. SciLifeLab and Wallenberg program for Data-driven Life Science (DDLS) VC-2020-0034

Olli Kallioniemi gave an update from the DDLS steering group.

##### 12a. DDLS-WASP joint call VC-2021-0037

In the donation letter regarding DDLS from The Knut and Alice Wallenberg foundation (KAW), funds have been allocated for collaboration with another KAW financed research program, Wallenberg AI, Autonomous Systems and Software Program (WASP). The goal is to form multi-disciplinary collaborations and to bridge the gap between life science and data science communities.

Erik Kristiansson, DDLS steering group, informed about the process and the timeline for the call.

Decision:

*The SciLifeLab board approved the call text and the process.*

*The SciLifeLab board delegated to Director to finalize any remaining issues with the call text and in agreement with the joint work group appoint reviewers.*

*How decisions regarding grant applications are to be made will be decided at the next board meeting.*

*This paragraph was approved immediately at the meeting.*

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Anna Höglund Rehn, secretary

Minutes approved by:

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Carl-Henrik Heldin

2021-05-19

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Lotta Ljungqvist

2021-05-19

## SciLifeLab Budget additional basic funding 2021 and tentative budget 2022

	2021	2022*
<b>PLATFORMS</b>		
<b>Bioinformatics</b>	<b>2 300</b>	<b>2 800</b>
BioImage Informatics	800	800
AIDA Data Hub (Candidate)	500	1 000
<i>Strategic Platform budget</i>	1 000	1 000
<b>Genomics</b>	<b>1 200</b>	<b>1 200</b>
<i>Strategic Platform budget</i>	1 200	1 200
<b>Clinical Genomics</b>	<b>400</b>	<b>400</b>
<i>Strategic Platform budget</i>	400	400
<b>Clinical Proteomics and Immunology</b>	<b>1 450</b>	<b>1 450</b>
Glycoproteomics (Candidate)	1 000	1 000
<i>Strategic Platform budget</i>	450	450
<b>Metabolomics</b>	<b>1 750</b>	<b>1 250</b>
Exposomics (Candidate)	1 500	1 000
<i>Strategic Platform budget</i>	250	250
<b>Single Cell and Spatial Biology</b>	<b>4 650</b>	<b>3 500</b>
Cell Profiling	1 000	500
In Situ Sequencing	1 400	900
National Resource for Mass Spectrometry Imaging (Candidate)	1 000	1 000
Advanced FISH Technologies (Candidate)	850	700
<i>Strategic Platform budget</i>	400	400
<b>Cellular and Molecular Imaging</b>	<b>3 550</b>	<b>2 550</b>
Biochemical Imaging Centre Umeå (BICU)/Umeå Core Facility for Electron Microscopy (UCEM) (Candidate)	1 000	500
Centre for Cellular Imaging (Candidate)	1 000	500
Cryo-EM	1 000	1 000
<i>Strategic Platform budget</i>	550	550
<b>Chemical Biology and Genome Engineering</b>	<b>450</b>	<b>450</b>
<i>Strategic Platform budget</i>	450	450
<b>Integrated Structural Biology</b>	<b>1 250</b>	<b>1 250</b>
Targeted and Structural Proteomics (Candidate)	1 000	1 000
<i>Strategic Platform budget</i>	250	250
<b>Drug Discovery and Development</b>	<b>2 000</b>	<b>4 000</b>
Oligonova	1 000	2 000
Launch of new modality	1 000	2 000
<b>Launch of Capabilities</b>	<b>2 200</b>	<b>4 650</b>
Precision Medicine	1 500	3 000
Other capabilities	700	1 650
<b>National nodes</b>	<b>1 500</b>	<b>3 000</b>
LU coordinator	500	1 000
GU coordinator	500	1 000
UMU coordinator	500	1 000
Platform centric Technology Development Projects	7 200	
Infrastructure Expensive Instruments		3 000
Education and training	100	500
<b>Total costs</b>	<b>30 000</b>	<b>30 000</b>
<i>Funding</i>	30 000	30 000

\* Tentative Platforms budget 2022

## Appendix 2. Infrastructure Platforms and Units from 2021

Old Platform Name	New Platform Name	Old Facility Name	New Unit Name	Host(s)
Bioinformatics	Bioinformatics	Support and Infrastructure / Long-term Support / Systems Biology	Support, Infrastructure and Training	Chalmers, GU, LiU, LU, KI, KTH, NRM, SLU, SU, UmU, UU
		Compute and Storage	Compute and Storage	UU
		BiImage Informatics	BiImage Informatics	UU, KTH
		AIDA Data Hub (Candidate)	AIDA Data Hub	LiU
Genomics	Genomics	Ancient DNA	Ancient DNA	UU, SU
		Microbial Single Cell Genomics	Microbial Single Cell Genomics	UU
		National Genomics Infrastructure	National Genomics Infrastructure	KI, KTH, SU, UU, UmU
Diagnostics Development	Clinical Genomics	Clinical Genomics Gothenburg	Clinical Genomics Gothenburg	GU
		Clinical Genomics Linköping	Clinical Genomics Linköping	LiU
		Clinical Genomics Lund	Clinical Genomics Lund	LU
		Clinical Genomics Stockholm	Clinical Genomics Stockholm	KI, KTH
		Clinical Genomics Umeå	Clinical Genomics Umeå	UmU
		Clinical Genomics Uppsala	Clinical Genomics Uppsala	UU
		Clinical Genomics Örebro	Clinical Genomics Örebro	ÖRU
Proteomics and Metabolomics	Clinical Proteomics and Immunology	Autoimmunity Profiling	Autoimmunity and Serology Profiling	KTH
		Plasma Profiling	Affinity Proteomics	KTH
		Proximity Proteomics		UU
		Mass Cytometry	Cellular Immunomonitoring	KI, LiU
		Proteogenomics	Global Proteomics and Proteogenomics	KI
		Glycoproteomics (Candidate)	Glycoproteomics	GU



Old Platform Name	New Platform Name	Old Facility Name	New Unit Name	Host(s)
Proteomics and Metabolomics	Metabolomics	Swedish Metabolomics Centre	Swedish Metabolomics Centre	UmU, SLU, Chalmers
		Exposomics (Candidate)	Exposomics	SU
N/A	Spatial and Single Cell Biology	Eukaryotic Single Cell Genomics	Eukaryotic Single Cell Genomics	KI
		Cell Profiling	Spatial Proteomics	KTH
		In Situ Sequencing	In Situ Sequencing	SU
		Advanced FISH Technologies (Candidate)	Advanced FISH Technologies	KI
		National Center for Mass Spectrometry Imaging (Candidate)	Spatial Mass Spectrometry	UU
		<i>Spatial Transcriptomics</i>	<i>Spatial Transcriptomics</i>	KTH
Cellular and Molecular Imaging	Cellular and Molecular Imaging	Cryo-EM	Cryo-EM	SU, UmU
		Advanced Light Microscopy / Biochemical Imaging Centre Umeå (BICU)/Umeå Core Facility for Electron Microscopy (UCEM) (Candidate) / Centre for Cellular Imaging (Candidate)	Integrated Microscopy Technologies	KTH, GU, UmU
N/A	Integrated Structural Biology	Swedish NMR Centre	Swedish NMR Centre	GU, UmU
		Structural Proteomics (Candidate)	Structural Proteomics	LU
Chemical Biology and Genome Engineering	Chemical Biology and Genome Engineering	Chemical Biology Consortium Sweden	Chemical Biology Consortium Sweden	KI, UmU
		Chemical Proteomics	Chemical Proteomics	KI
		High Throuput Genome Engineering	CRISPR Functional Genomics	KI
		Genome Engineering Zebrafish	Genome Engineering Zebrafish	UU
Drug Discovery and Development	Drug Discovery and Development		No changes suggested	KI, KTH, SU, UU, LU



SciLifeLab board 210519

**Appendix 3**

# **SciLifeLab Infrastructure**

## **General Terms and Conditions for Funding**

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# Introduction

SciLifeLab (Science for Life Laboratory) is a national centre for life science research in the field of molecular biosciences. The mission includes offering researchers from across Sweden access to advanced technical analyses of samples, support for data analysis and specialist expertise in molecular biosciences. SciLifeLab is regulated by a special governmental ordinance (förordningen (2013:118) om Nationellt centrum för livsvetenskaplig forskning) and university directives (regleringsbrev) to KTH and UU. In addition, there are steering documents that describe the agreements among the Host Universities on how to manage SciLifeLab (see [www.scilifelab.se](http://www.scilifelab.se)).

The SciLifeLab Infrastructure is operated with funding from the National SciLifeLab budget and is available to all Swedish researchers. The Infrastructure is organized into technology Platforms, which are further composed by Units. The Platforms and Units are approved by the SciLifeLab Board based on international evaluations and national discussions carried out every four years. The Infrastructure is organized, financed, managed, and developed with a long-term view to promote high quality interdisciplinary research in Sweden within and between academic institutions, industry, and healthcare.

This document aims to clarify the conditions and expectations linked to the appointment of Platforms and Units as part of the SciLifeLab Infrastructure, the criteria for services provided, funding issues, governance, organizational structure, and other operational principles and policies.

## General

Each Infrastructure Unit is hosted by and integrated with one or several departments within one or several universities. The Units are part of the Host Department operations and must follow applicable rules of procedure, delegation of authority and guidance of its Host University and Department.

National SciLifeLab funding that the Board approves is provided to the specific Host Department at the Host University of the Unit or Unit Node. The funding must remain at the specific Host Department and cannot not be transferred to any other University. The Head of the Host Department will agree in writing to the terms and conditions of the SciLifeLab funding, including the financial, HR, legal and reporting requirements.

SciLifeLab follows the directives of the Host Universities, for example that all employees and students must be treated with respect and be given the opportunity to work and study on equal terms regardless of sex, transgender identity or expression, ethnicity, religion or other belief, disability, sexual orientation, age, or social background. Equal opportunities are a quality issue for the organization and a justice issue for the individual as regulated in the Higher Education Act (SFS 1992:1434), Discrimination Act (SFS 2008:567).

This *Terms and Conditions for Funding* document applies by default to all SciLifeLab Platforms and Units. Exceptions may be described in a separate version of this document.

## Criteria for Funding of SciLifeLab Infrastructure Units

Nominations as SciLifeLab Infrastructure Unit and funding decisions are made by the SciLifeLab Board, after recommendations from the Director and the Management Group. The decisions will be based on international evaluations, internal discussions in the Management Group, as well as discussions with Host University representatives and the National SciLifeLab Committee (NSC). Below are the most important criteria that a SciLifeLab Infrastructure Unit should ideally meet:

- **Facilitate** world-leading research in molecular life sciences.
- **Enable** research that otherwise would not be possible in Sweden.
- Provide high-quality services to **academic researchers, industry, healthcare, and other organizations in Sweden.**
- Serve **multiple research groups** in high-quality research projects **across the nation.**
- **Function in** a high-quality research environment supporting continuous development of the technologies and services

- Provide **internationally competitive** services.
- Have a **long-term plan** for instrumentation renewal, technology development, data management and sharing, scientific domains and user communities being served, as well as for a sustainable and versatile funding base.
- Provide complementary and **synergistic opportunities** within and across SciLifeLab Platforms.
- Participate in **national coordination** of similar facilities at other universities in Sweden (when applicable)
- Promote **translational implementation** of research findings into healthcare, industry, and society (when applicable)

## Evaluation and Decisions on Funding

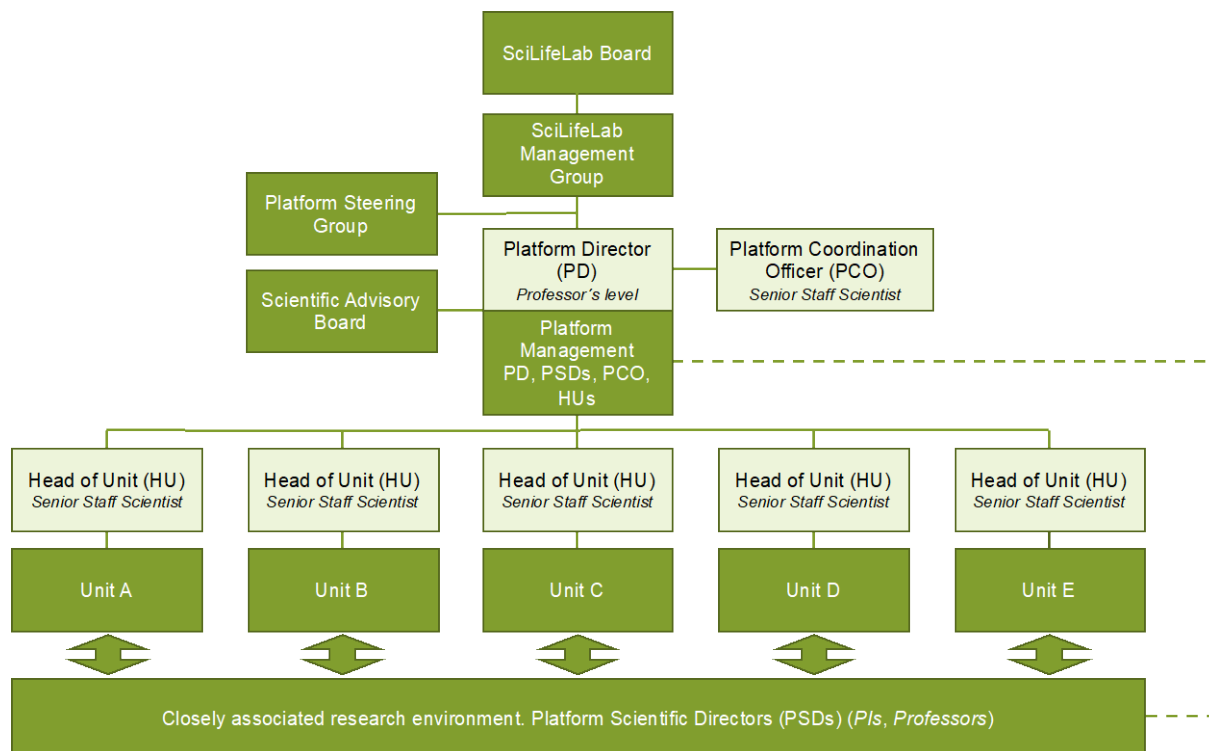
SciLifeLab Platforms and Units are evaluated by international panels every four years (2016, 2020, 2024 and so on) complemented by strategic discussions with representatives from the Host Universities and the National SciLifeLab Committee (NSC). Based on the outcome of the evaluations and discussions, the SciLifeLab Board decides on the organization and funding of Platforms and Units for the next two + two years. A midterm check-up of Platforms and Units will be performed halfway through the four-year funding period to ensure that conditions, expectations, and suggestions given to Platforms and Units have been acted upon. Based on the check-up, the SciLifeLab Management Group and the Board will decide upon the continued funding for the second two-year period. This may involve adjusting the funding or undertaking organizational changes to Platforms or Units.

## Phasing out of Funding

If the SciLifeLab Board decides to phase out funding of an Infrastructure Unit, funding is decreased to 80% level compared to the previous funding year for an 18-months phase-out period after the decision. The Unit should provide service corresponding to the funding level during the entire phase-out period and deliveries should be reported for the first year of the period. Once the SciLifeLab funding ends (after the 18-months period), the SciLifeLab brand/name cannot be used in association with the Unit. Units may also be merged or reorganized across Platforms. In exceptional circumstances, such as gross negligence of good infrastructure practice or proven scientific misconduct, funding to a Unit may be withdrawn immediately based upon a Board decision (see below).

## Governance

Based on research area, technologies provided, and synergies with respect to user base, the SciLifeLab Infrastructure Units are divided into Platforms that are organized according to the figure below. Special terms and conditions may apply for some Platforms, and deviations from the generic Platform organization scheme can be approved by the Board, if appropriate.



**Platform Director (PD).** Each Platform is managed by a Platform Director (PD). The PD should be a researcher on Professor's level or have equivalent experience from infrastructure work, healthcare, or industry, with a strong scientific knowledge of the Platform technologies and their research applications. The PD should exhibit excellent leadership qualifications and be a skilled team leader. The PD should also have a genuine interest in developing and improving research infrastructures and devote at least 10% of working time on Platform operations. A flat-rate compensation corresponding to an effort of 0.1 FTE for the PD may be covered by SciLifeLab funding via a Board decision, while any additional compensation must be covered by the Platform Units' budget. The PD is appointed by the SciLifeLab Board on a two + two-year basis via an open call, or through a letter of interest procedure among the Platform Management Group members. Replacement of PD must be approved by the SciLifeLab Board. The SciLifeLab Director may nominate a temporary PD until the next Board meeting. The PD reports to the SciLifeLab Management Group (MG).

The PD is responsible for:

- Leading the work in the Platform Management Group (see below) according to Mission and Specific Terms and Conditions for SciLifeLab funding to the Platform and its Units given in a separate document
- Platform strategy and operational plans, including participation in cross-Platform service offerings ("capabilities")
- Platform budget (for any dedicated SciLifeLab funding on Platform level)
- Overall Platform deliverables (KPIs)
- Representing the Platform at SciLifeLab meetings, in communication with the MG and the Board, as well as in external communication and outreach
- Assembling feedback reports and material on Platform level requested for evaluations by the International Evaluation Committee (IEC) and International Advisory Board (IAB)
- Communication with the Platform Steering Group (see below) on strategic and operational issues on a regular basis
- Annual Platform reporting to SciLifeLab

**Co-Platform Director (Co-PD).** Optionally, Platforms can appoint a Co-PD if shared leadership of the Platform is desirable and appropriate. The profile of qualification for the Co-PD is equal to that of the PD, as well as the procedure for appointment.

**Platform Coordination Officer (PCO).** Each Platform must appoint a Platform Coordination Officer (PCO) that reports to the PD. The PCO role is to assist the PD in coordinating the Platform operations and should devote at least 20% of working time on Platform related activities. A flat-rate compensation corresponding to an effort of 0.2 FTE for the PCO may be covered by SciLifeLab funding via a Board decision, while any additional compensation must be covered by the Platform Units' budget. The PCO should preferably be a senior staff scientist, with strong scientific knowledge of the Platform technologies and their research applications and be a skilled team leader. The PCO may be a Head of Unit (see below), or a senior staff scientist with the above-described qualifications from any of the Platform Units. The PCO is appointed by the Platform Management Group (see below) and approved by the SciLifeLab Director on a two + two-year basis in conjunction with the funding decision. Replacement of PCO must always be reported to the Infrastructure Coordinator at the SciLifeLab Operations Office and be approved by the SciLifeLab Director and Infrastructure Director.

The PCO is responsible for:

- Organizing Platform Management Group meetings on a regular basis and making sure that meeting minutes are recorded, appropriately stored, and made available to all Platform staff as well as the Infrastructure Director/Coordinator.
- Communication on the Platform including all staff at the Units
- Executing and following-up on the Platform operational plan and Platform Management Group decisions
- Representing the Platform at SciLifeLab meetings, in communication with the Operations Office and the MG, as well as in internal and external communication and Platform outreach.
- Assisting the PD with feedback reports and material on Platform level requested for evaluations by the International Evaluation Committee and International Advisory Board (IAB)
- Assisting the PD with annual Platform reporting to SciLifeLab
- Assisting the PD in coordination of Platform equipment inventory and applications to SciLifeLab internal instrument calls
- Maintenance of the SciLifeLab Platform webpage
- Coordinating user workshops and courses on the Platform level
- Data management and user guidance on the Platform level together with Data Centre on open access, FAIR and GDPR requirements

**Head of Unit (HU).** Each Unit of the Platform is managed by a Head of Unit (HU) that reports directly to the PD. Units may have operations at several departments and can have one or more co-HUs. The HU should devote at least 50% of working time on Unit and Platform related activities. The HU should preferably be a senior staff scientist, have a strong scientific knowledge of the Unit technologies and their research applications, and be a skilled team leader.

The HU is responsible for the budget and everyday operations at the Unit, including project management and allocation of Unit resources. The HU is, together with corresponding PSD (see below), also responsible for the scientific and the strategic development of the Unit, in line with the operational plan of the Platform. The HU should always be accessible for communication with the PD, MG, and OO. The HU is appointed by the Platform Management Group and approved by the SciLifeLab Director on a two + two-year basis in conjunction with the funding decision. For Units with several sources of funding, the HU should be jointly appointed by the SciLifeLab Director and other significant external funding bodies. Replacement of HU must always be reported to the Infrastructure Coordinator at the SciLifeLab Operations Office and be approved by the SciLifeLab Director and Infrastructure Director.

The HU is responsible for:

- Management of staff
- Unit operational plan
- Unit budget and build-up of economy structure according to instructions from Operations Office
- Annual reporting to SciLifeLab
- Coordinating the Unit's financial reporting with the SciLifeLab Financial Coordinator at the Host University
- Outreach and communication with users
- Coordination and prioritization of project applications in agreement the Platform Operational Plan
- User fee models for academic users and for full cost models applicable for industry and healthcare users
- User agreements



- User workshops and courses
- Unit deliverables (KPIs)
- Ensuring high-quality and reproducible data production
- Training and competence development of Unit staff
- Collaboration with surrounding research group(s) on technology development, and instrument plans and use.
- Technology development and implementation of new methods and protocols
- Data management and user guidance together with Data Centre on open access, FAIR and GDPR requirements
- Maintenance of the SciLifeLab Unit webpage, including list of services

**Platform Scientific Directors (PSDs).** Each Unit should ideally have established a formal association with at least one, preferably co-located, research group. The association should be based on mutual scientific synergies in terms of technology focus, development of new techniques, and sharing of instruments. The PI of the associated research group(s) should be offered to be a member of the corresponding Platform Management Group (see below) with the title of Platform Scientific Director (PSD). PSDs are appointed by the Platform Management Group/PD and approved by the SciLifeLab Director on a two + two-year basis in conjunction with the funding decision. The role of the PSD is to actively contribute to the strategic development of the Platform and serving as scientific expert in the technology field of their respective associated Unit.

**Platform Management Group (PMG).** The PD, PSDs, PCO, HUs, and additional senior staff scientists according to the choice of PD, constitute the PMG. Preferably, representatives from other relevant Platforms should also be part of PMG as adjunct members. The PMG has the overall responsibility for the strategic and scientific development of the Platform according to the SciLifeLab Specific Terms and Conditions for Funding of the Platform and its Units. The members of the PMG should be approved by the SciLifeLab Director on a two + two-year basis in conjunction with the funding decision. The PMG should meet on a regular basis, and the PCO must make sure that notes from these meetings are recorded, stored, and made available for all Platform staff and the Infrastructure Director and Infrastructure Coordinator. Decision-making on Platform level is performed by the PMG members based on the consensus principle. For important proposals, it is essential that all PMG members that cannot attend a decision-making meeting are informed and have the possibility to provide input on beforehand. If there are significant reservations or disagreement among PMG about a proposal, the MG should be consulted and become the decision-making body for the proposal, if applicable.

**Platform Steering Group (PSG).** Each Platform should appoint a Platform Steering Group (PSG) to be approved by the SciLifeLab Board. The PSG should ideally have a broad national representation and consist of SciLifeLab-independent technology experts, and user representatives from academia, healthcare, and industry, with the PD and PCO as adjunct members. For Platforms/Units receiving funding from other bodies (e.g. the Swedish Research Council (VR)), the funder typically expects the appointment of a Steering Group. Such Steering Groups can, if agreed with the SciLifeLab Board, assume responsibility for the steering of SciLifeLab funded operations (according to SciLifeLab terms and conditions for funding). The PSG should meet on a regular basis with the main task to give input to the long-term strategy for the Platform and to approve important major proposals to be decided upon by the SciLifeLab MG and Board.

**Platform Scientific Advisory Board (SAB).** Each Platform are encouraged to appoint a Scientific Advisory Board to advise on long-term scientific development from an international perspective. The SAB should preferably include 3–5 international experts with competences relevant for the Platform research fields and should be selected to cover the range of technologies provided by the Platform.

*If appropriate, alternative arrangement of external bodies can be approved by the SciLifeLab MG and Board, e.g., a combined PSG and SAB, User Reference Groups etc.*

**Project Prioritization.** To ensure user access to services on equal terms regardless of the user's affiliation, Platform and Units should develop, document, and apply appropriate and transparent models for project prioritization. This is especially important when user projects demand significant operational resources. Platforms and Units can appoint a Project Prioritization Committee (PPC) responsible for the prioritizing of project proposals. The PPC function can alternatively be a task of the Platform Steering Group. Project prioritization should primarily be based on scientific quality, technical feasibility, and if applicable, clinical potential. Data handling and data management plan should also be considered, ideally in collaboration with the SciLifeLab Data Centre and the Bioinformatics Platform (see below). The PPC should ensure that services are provided on equal terms to academic users. In addition, all Units should be prepared to allocate up to 15% of the

services to healthcare, industry, governmental agencies, and international users. In Units dedicated to diagnostic development and healthcare services, these percentages can be higher. Units are also encouraged to make sure that project prioritization considers favourably young principal investigators.

## Additional Funding to Platforms and Units

An expectation for a successful and sustainable SciLifeLab Infrastructure Unit is that it continuously receives funding from its Host University(ies), other participating universities or other funding agencies. The Platforms and Units should always contact the SciLifeLab Management Group well in advance before applying for external infrastructure funding, particularly from VR. This is mandatory if the SciLifeLab funding will be used as co-funding in the application since the funding period for the VR grant may exceed the current funding commitment of SciLifeLab.

## User Fees

SciLifeLab Infrastructure Platforms and Units should charge user fees according to pre-defined and documented cost models. Units are responsible for the preparation and implementation of cost models, including a full cost model in accordance with Ekonomistyrningsverket's guidelines "Sätt rätt pris" ([www.esv.se/publicerat/publikationer/2014/satt-ratt-pris](http://www.esv.se/publicerat/publikationer/2014/satt-ratt-pris)). Cost models should specify what costs the user fees are covering and should be aligned with common practice at the Host University.

## Service and Users

The Infrastructure Platforms and Units should provide high quality services to users who are engaged in research projects of high scientific impact. The service should be such that the users can pursue projects without being an expert in the technology. Platforms and Units should define criteria for prioritizing projects primarily based on scientific impact, technical feasibility, and other Unit-specific criteria. The service should be accessible on equal terms to all Swedish academic users including the members of SciLifeLab Board, MG, NSC, PDs, PSDs and SciLifeLab Group Leaders and Fellows. Service should also be accessible to researchers within the private sector, healthcare, and governmental agencies. Part of the capacity, up to 15%, may also be used for service to international users. The users carry the responsibility for any necessary legal or ethical considerations regarding analyses and material (e.g., ethical permits, Nagoya protocol, GDPR etc), and the Unit should make sure the user has understood this responsibility.

The Infrastructure Units are encouraged to actively identify opportunities to participate in large-scale research projects that address grand societal challenges within life science related areas. This includes active participation in the SciLifeLab Research Community Projects as well as interactions with SciLifeLab Fellows, WCMM Fellows, DDLS Fellows, ERC grant recipients and other promising young PIs.

## Technology Development

Up to 20% of SciLifeLab funding provided to an Infrastructure Unit can be used to develop, implement, and adapt new or improved services, methods, and technologies. These efforts should not entail resource building or *bona fide* research projects. Method and technology development may involve collaboration with national and international academia, industry, healthcare, and governmental agencies, with young PIs to be considered favourably in research collaborations. SciLifeLab and Host Universities will in addition support technology development through Technology Development Project (TDP) grants.

## Quality control

SciLifeLab Infrastructure Platforms and Units should implement quality control processes to ensure that services are delivered in accordance with the high-quality standards SciLifeLab users have the right to expect. Adherence to good laboratory practices is expected, including documentation of standard operating procedures, use of electronic lab notebooks (ELN or equivalent systems), electronic sample and data workflow systems (LIMS or

equivalent), project planning systems (ProjectPlace or similar), and electronic systems for communication with users (Data Centre's Order Portal, for example). Units should consult the SciLifeLab Data Centre for guidance on systems to use, and to communicate any needs regarding IT systems and data management tools.

## Data Management and Sharing

SciLifeLab Infrastructure Platforms and Units should guide users with the analysis, storage, availability, and accessibility of the data produced by the Units. Supported projects must be assigned a unique identifier, and Units should collect the appropriate project information to enable tracking and reporting. Units will be required to submit such data to a central database to facilitate cross Platform services, at the time when SciLifeLab will provide the Infrastructure Platform for this.

In accordance with increasing demands from funders and scientific journals, we recommend that projects that include data management of any type set up a Data Management Plan (DMP). For example, all projects receiving supported from VR are required to have DMPs. We recommend that Platforms and Units ensure users set up a plan that estimates at least existing and requested resources to deal with data analysis and management, including computing, storage, archiving, security, and accessibility. Templates and guidelines for DMPs can be provided by the SciLifeLab Data Centre. In the near future, DMPs will be required for all SciLifeLab supported projects.

The Infrastructure Units are required to inform supported projects about the obligations:

- a) to acknowledge SciLifeLab support in publications, using the unique identifier assigned at the start of the project, and
- b) to report back to SciLifeLab when data has been used in a publication and where the data has been deposited.

SciLifeLab supported projects should adhere to the principles of open science, including open access to both publications and data to the greatest extent possible, given ethical, legal, and intellectual property considerations. The Units must ensure that sensitive and confidential information (e.g., from healthcare-related projects) is handled in accordance with current laws, regulations, and Host University practices, including GDPR directives.

The SciLifeLab Data Centre will provide support to the Infrastructure Units to address requirements and recommendations in this section.

## Courses and Training

The Platform and Units should provide courses and training related to technologies, analyses and application of the technologies and data generated by the Units. Courses and training should be offered to national academic user communities. Preferably, courses and training should also be offered to users within healthcare, governmental agencies, industry as well as international user according to rules and regulations for “uppdagsutbildning”. Costs for courses and training are usually covered by the Unit budgets or through participant fees (if applicable).

## Communication and Branding

The Infrastructure Platforms and Units should actively communicate to potential users regarding opportunities for existing and new services, both through own initiatives and by participating in events organized centrally at the SciLifeLab level. New possibilities and important research results produced using technologies and service provided should actively be communicated to the research community and to the society.

SciLifeLab Platform and Units should keep their website up to date and be active towards SciLifeLab Communications Office in terms of how communication and web traffic can be improved. With SciLifeLab web site being continuously developed, the Units should participate in making the web site as attractive as possible and well branded.

All SciLifeLab Platforms and Units should be primarily branded under the SciLifeLab name. The VR- and KAW-funded network names can be used as secondary, but not alone. VR networks that only partially overlap with SciLifeLab Platforms and Units are suggested to negotiate branding with the SciLifeLab management (contact Infrastructure Coordinator).

All Infrastructure Units should follow the SciLifeLab communication handbook guidelines ([www.scilifelab.se/staff/documents-and-templates](http://www.scilifelab.se/staff/documents-and-templates)) and policies for the use of the SciLifeLab logotype. For the SciLifeLab brand to be clear, strong, and recognizable, it is important that it is handled consistently and purposefully. The handbook is available as a tool for this and differentiates SciLifeLab from other organizations.

## National and International Strategic Collaborations

SciLifeLab Platforms and Units should, whenever applicable, have a national role in developing and maintaining infrastructure networks in their specific service area. The Platforms and Units should interact with other national infrastructures as well as relevant local core facilities across the country.

SciLifeLab Platforms and Units should participate in international networks, including EU networks and infrastructures (e.g., European Strategy Forum on Research Infrastructures (ESFRI), European Molecular Biology Laboratory (EMBL), and European Bioinformatics Institute (EMBL-EBI) and other global partners to sustain a cutting-edge, internationally competitive development.

## Reporting

SciLifeLab Platforms and Units must report to the MG annually and upon request. The yearly report normally includes project deliveries, number of users and their national distribution, quality and efficacy metrics for data production, publications, financial report, and budget for the coming year. The financial report should contain complete financial information for the Unit including national funds, funds for drug discovery and development, Strategic Research Area (SFO)-funding, VR, KAW and additional funding and user fees. This information should be extracted from the Host University's financial system twice a year by an economist at the Host Department and/or Host University. Every Host University has an appointed SciLifeLab Financial Coordinator that is responsible for coordinating all SciLifeLab financial reporting at their University. The Financial Coordinator is responsible for delivering the financial reporting to KTH in a predefined format. Reported deliverables will be used in the annual reports to the Ministry of Education and Research, as well as in other web-based or printed material that describes SciLifeLab activities.

For the major evaluation of the Infrastructure every fourth year, more detailed evaluation material and future plans will be requested. This will include general descriptions of Platforms and Units (e.g. instruments, staff, service etc.), SWOT analysis, benchmarking and operational plans (incl. four-year budget).

Units with phased-out funding from SciLifeLab or under reorganization should report during their first year of phasing out.

## Agreements

***Agreement between SciLifeLab and Infrastructure Units.*** All SciLifeLab Units are organized under a department (or sometimes several departments) at a Swedish university. To clarify funding conditions and the responsibilities of the department and SciLifeLab respectively, SciLifeLab will provide an agreement to be signed by the Head of Department, the Head of Unit, the SciLifeLab Director, and the SciLifeLab Infrastructure Director. The agreements only need to be signed with departments receiving direct national funding from SciLifeLab. The departments should ensure that the personal research funding of the scientists operating the Units is kept separate from the infrastructure funding. Thus, infrastructure funding cannot be used to support the research funding of PD, HU, PSD or Unit staff. Conversely, research funding of the of the PD, HU or PSD should not be applied to back up salaries if the Infrastructure Unit is subject to phase-down or loses other infrastructure funding.

***Agreement between Infrastructure Units and Users.*** SciLifeLab Units should prepare and employ User Agreements. The agreements should specify the conditions, responsibilities for each party, estimated fees, and timelines. In User Agreements, Units must include writing to collect consent to process personal data in accordance with GDPR. The consent should cover the presumption that any user is a user of SciLifeLab as a national infrastructure and data is collected to serve that purpose, and therefore may be shared with other Platforms User agreements should be prepared in consultancy of the legal department of the Unit's Host University.

***Other agreements.*** Agreements that concern national VR-funded infrastructures that substantially overlap with SciLifeLab funded Platforms/Units, need to be discussed with the Infrastructure Director and the Management Group to clarify mandate and responsibility of potential steering groups. Unless otherwise agreed, the SciLifeLab Management Group and Board are fully responsible for strategic decisions of the Unit.

## Principles for Publications

When SciLifeLab Infrastructure staff make significant intellectual contributions to research, the persons involved should be included as co-authors in accordance with the Vancouver principles. For all other publications that are the result of the use of routine infrastructure services, SciLifeLab Unit(s) should be included in the acknowledgment section of the paper. The Units should actively encourage users to undertake such acknowledgements.

## Freedom to operate and non-competition

SciLifeLab expects that the Infrastructure Platforms and Units can provide the services to its users without interfering with commercial interests and with companies providing similar services. Freedom to operate and non-competition are particularly critical when providing full-cost services to industry and healthcare.

## Conflicts of Interest

Infrastructure staff and Platform Management Group members should avoid personal conflicts of interest e.g. being involved in companies providing instruments, equipment or reagents to the Infrastructure Units. Infrastructure staff can be engaged in external activities according to permissions from the Host University. These may include spin-off companies arising out from the SciLifeLab Infrastructure, which should be carefully structured not to act in a competitive manner. Infrastructure staff must disclose to the SciLifeLab Infrastructure Director any such potential conflicts of interest.

## Scientific and Infrastructure Misconduct

If there is a suspicion of scientific misconduct either by SciLifeLab Infrastructure users or by the staff, the suspicion should be disclosed according to the practices of the Host Universities involved. The PD and the SciLifeLab Infrastructure Director should also be notified, and MG should be made aware of each such case. The Host Universities are in charge of investigating whether there is evidence of scientific misconduct as well as potential consequences and should keep the SciLifeLab MG well informed of the progress of the investigation. In exceptional documented cases of misconduct, infrastructure funding to a Unit may be discontinued based on a Board decision without an 18-month grace period.

## Updates and Changes

The SciLifeLab Management Group and Board reserves the right to change and make additions to this document at any time, and such changes or modifications shall be effective after being discussed with the Host University SciLifeLab committees and communicated to the Platforms, Units and Host Departments.

## Appendix 4

### Infrastructure Platform Directors, Co-Directors and Platform Coordination Officers 2021-2024

#### Bioinformatics

PD: Bengt Persson, UU  
Co-PD: Björn Nystedt, UU  
PCO: Björn Nystedt, UU

#### Clinical Genomics

PD: Thoas Fioretos, LU  
Co-PD: Lucia Cavelier, UU  
PCO: Eva Berglund, UU

#### Metabolomics

PD: Anders Nordström, UmU  
Co-PD: Thomas Moritz, SLU  
PCO: Annika Johansson, UmU

#### Cellular and Molecular Imaging

PD: Marta Carroni, SU  
PCO: Ana Agostinho, KTH

#### Chemical Biology and Genome Engineering

PD: Anna-Lena Gustavsson, KI  
Co-PD: Bernhard Schmierer, KI  
PCO: Bernhard Schmierer, KI

#### Genomics

PD: Tuuli Lappalainen, KTH/KI  
Co-PD: Lars Feuk, UU  
PCO: Magnus Lundgren, UU

#### Clinical Proteomics and Immunology

PD: Masood Kamali-Moghaddam, UU  
Co-PD: Elisabet Carlsohn, GU  
PCO: Claudia Fredolini, KTH

#### Spatial and Single Cell Biology

PD: Mats Nilsson, SU  
PCO: Charlotte Stadler, KTH

#### Integrated Structural Biology

PD: Göran Karlsson, GU  
PCO: Cecilia Persson, GU

#### Drug Discovery and Development

PD: Per Arvidsson, KI  
Co-PD: Kristian Sandberg, UU  
PCO: Rebecka Klintenberg, UU



Proposal title	Submitter	Affiliation	Approved funding (SEK)
Rapid establishment of comprehensive laboratory pandemic preparedness – RAPID-SEQ	Albert, Jan	K	4 000 000
Systems-level immunomonitoring to unravel immune response to a novel pathogen	Brodin, Petter	KI	4 000 000
Genomic Pandemic Preparedness Portfolio (G3P) - Nationally scalable genomics portfolio for detection and surveillance of viral outbreaks	Rosenquist Brandell, Richard	KI	8 000 000
BSL3 Biomedicum-SciLifeLab collaborative platform	Rothfuchs, Antonio	KI	4 000 000
Pandemic sample center to build up readiness to connect SciLifeLab infrastructure and university hospitals	Lehtiö, Janne	KI	4 000 000
Multiplex and high-throughput multi-disease serology	Nilsson, Peter	KTH	6 000 000
ZSC - National core facility for Pandemic Preparedness	Lundkvist, Åke	UU	3 000 000
Establishment of the Swedish Environmental Epidemiology Center (SEEC)	Székely, Anna	SLU	6 000 000

39 000 000

## SciLifeLab DDLS 2021 budget

MSEK

No		Total	Co-funding	KAW Funding	Tentative budget	Comments
1	<b>Recruitments 2021</b>	<b>0,00</b>	<b>0,00</b>	<b>0,00</b>	<b>0,00</b>	
2	<b>Data support and databases</b>	<b>14,00</b>	<b>0,33</b>	<b>13,67</b>	<b>39,60</b>	
	Personnel costs, central data support hub	3,79	0,24	3,55		Salary and running costs: 9 FTEs; dataplatform hub staff for 4 months (Sep.-Dec) during 2021
	Personnel costs, distributed data support nodes	1,68	0,08	1,61		Salary and running costs: 4 FTEs; staff for topic specific data support area - biodiversity, precision medicine, infectious diseases, cell biology. University placement will be decided at recruitment
	Running costs	5,53	0,01	5,52		Running costs include e-infrastructure for data platform, support services, software licenses, consulting fees
	Depreciation	1,00	0,00	1,00		
	Externally developed services	2,00	0,00	2,00		Project support following call for proposals
3	<b>Interactions with WASP</b>	<b>0,50</b>	<b>0,00</b>	<b>0,50</b>	<b>2,00</b>	
	Networking	0,5	0	0,50		i.e. WASP- DDLS conference. workshops, seminar series
4	<b>Advanced bioinformatics support (WABI) including Cryo-EM</b>	<b>0,00</b>	<b>0,00</b>	<b>0,00</b>	<b>0,00</b>	
5	<b>Program coordination, networking and research school</b>	<b>7,28</b>	<b>0,10</b>	<b>7,18</b>	<b>6,75</b>	
	Program coordination and administration	4,44	0,10	4,34		Salary and Running costs: 0,83 FTE controller; 0,5 FTE communications; 2,05 FTE coordinators; 0,4 FTE events-support; 0,2 management
	Networking activities	0,72	0,00	0,72		Annual one day conference (on-site), workshops and webinars via Science SciLifeLab promotion agreement
	Review and plan DDLS training activities	0,10	0,00	0,10		20% effort for coordination and planning (from july-december)
	Strategy and planning	0,04	0,00	0,04		Meetings (on-site)
	Management	0,81	0,00	0,81		DDLS Director
	Advertisement and promotions	0,92	0,00	0,92		Advertisement (Science SciLifeLab promotion agreement) of DDLS fellow positions. Promotions of the programmet.
	ELSI support to the DDLS program	0,25	0,00	0,25		25% effort for Ethical, Legal and Social Aspects (ELSI) assignment
	<b>TOTAL</b>	<b>21,78</b>	<b>0,42</b>	<b>21,35</b>	<b>48,35</b>	

# Strategy for the SciLifeLab & Wallenberg National Program for Data-Driven Life Science (DDLs)

*- The future of life science is data-driven*

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## **DDLS Strategy development**

As described in this document, we envisage that the DDLS program is essential for Sweden to lead the transformation towards a data-driven future in life science. However, DDLS is a national program to be done in collaboration with 11 partner organizations. We hope to achieve synergistic benefits for the entire life science ecosystem. This is why this first version of the DDLS strategy document will be revised already next year. Therefore, we encourage comments from collaborators, the Swedish life science research community, industry, healthcare as well as other stakeholders in the society at large. Feedback is collected until the end of November 2021, and based on this, a revised 10-year strategy for the DDLS program will be published in the beginning of 2022.

Link: *to be updated upon publishing*

## EXECUTIVE SUMMARY

SciLifeLab & Wallenberg National Program for Data-Driven Life Science (DDLS) is a national 12-year research program funded by the Knut and Alice Wallenberg Foundation (KAW) with SEK 3.1 billion. SciLifeLab (Science for Life Laboratory), as a national infrastructure for life science, coordinates this program in collaboration with ten universities and the Swedish Museum of Natural History. Over the years, the DDLS program will recruit 39 new academic leaders, train over 400 PhD students and postdocs, and work with all stakeholders to profoundly change how life science is practiced today. This document describes the DDLS program's motivation, specific aims, an overall strategy, and the priorities of the four research areas (Cellular and Molecular Biology, Evolution and Biodiversity, Epidemiology and Infection Biology, as well as Precision Medicine and Diagnostics). We believe that the future of life science is data-driven and that an active national collaboration in the DDLS program will promote the government's aim to make Sweden a leading nation in life sciences.

## VISION and MISSION

**Vision:** The future of life science is data-driven

**Mission:** DDLS is a national research and training program accelerating the data-driven life science paradigm in Sweden, promoting Swedish universities acting at the global frontline with eventual impact on every life scientist and the entire society.

The national DDLS mission is accomplished by joint recruitment of talent, a national program of training and research excellence, launch of a national data platform and set up of an international collaboration hub for engaging academia, health care and industry. Besides top scientific excellence, DDLS also promotes a broad impact for every life scientist as well as for society.

## Why is the DDLS program important right now?

Life science is increasingly data-centric. The European Bioinformatics Institute currently manages about 300 PB of public life science data, and this, along with other data resources are growing rapidly in terms of content, depth and interconnection of data. At the same time, advances in computational capabilities, AI, machine learning and other technologies, provide enormous new opportunities for new objective, unbiased ways to analyze data and to promote biological discovery, insights on life as well as innovation and society benefits. The DDLS program is essential right now because:

1. **Most life science data are still not FAIR:** Despite recommendations, most data are still not readily available and FAIR (Findable, Accessible, Interoperable, and Reusable). Often data are not annotated or organized in a standardized, interoperable way to be machine-readable. There is a need for coordinated national efforts facilitating such goals to integrate and make life science data better available.
2. **Data analysis capabilities need to be further developed and made available:** Data-driven analysis has developed rapidly as a result of advances in artificial intelligence (AI) and machine learning (ML). As a result, biology can be studied, hypotheses generated, and comprehensive and systematic insights generated in an unbiased manner. However, most scientists are not yet making optimal use of the available data or the latest tools and technologies in their research.
3. **Life scientists need much more data science expertise and competence:** Most researchers in life science do not currently have the multi- and cross-disciplinary skills and competences that data-driven science demands. Therefore, training and education is essential to ensure the availability of cutting-edge experts, but also the utilization of data science in the broader life science community.
4. **Data science and society needs:** Industry, health care, decision-makers and the public all need unbiased, data-driven insights of biological processes, human health, and

ecosystems. However, there is often a lack of access to data, tools, and technologies as well as expertise. In order for data-driven life science to prosper in the future, a number of policy issues, such as privacy, legislation, and ethical considerations, access to health data, need to be addressed. For example, the COVID-19 pandemic uncovered huge gaps in the flow of data across health care, authorities, academia, the public and decision makers. This contributed to challenges faced by health care and the society at large.

Creation of an entirely new data-driven and hypothesis-generating scientific process would boost discovery opportunities within life science and efforts to examine and understand life processes. A powerful iterative cycle is emerging; from data science to laboratory experiments and back.

We are at the start of a new digitalization era of life sciences which offers exceptional opportunities but also many challenges. We envisage that the DDLS program is essential for Sweden to lead this transformation, not just react to it. Given the importance of data-driven life science, we believe that these actions will substantially promote the government's aim to make Sweden a leading nation in life sciences.

## **STRATEGIC OBJECTIVES**

The DDLS program will have the following long-term objectives, figure 1:

1. Create a National Framework for Data-Driven Life Science
2. Attract Scientific Excellence
3. Train the next generation of data-driven life scientists
4. Develop national research programs across universities
5. Bridge the gap between the life science and data science communities
6. Create partnerships and impact on society at large
  - industry, health care, and other national and international links
7. Promote policy actions at the national level to provide opportunities for data-driven research










	Create a <b>National Framework</b> for Data-Driven Life Sciences
	Attract <b>Scientific Excellence</b>
	Train the <b>Next Generation</b> of Data-Driven Life Scientists
	Develop <b>National Research Programs</b> Across Universities
	Bridge the Gap Between the <b>Life Science</b> and <b>Data Science</b> Communities
	Create <b>Partnerships</b> and <b>Impact on Society</b> at Large
	Promote <b>Policy Actions</b> at the National Level

Figure 1: DDLS program 7 strategic objectives

## IMPLEMENTATIONS

To realize the strategic objectives of DDLS, we will launch the following specific actions:

1. Create a National Framework for Data-Driven Life Science: We will establish a national data platform for data services and life science databases, providing data availability, FAIR data management and advanced data analytics support services. The platform will utilise the top computational resources for the national life science research community in collaboration with all universities. We will coordinate efforts across the country to make FAIR (Findable, Accessible, Interoperable and Reusable) data a norm in academia and to create services and resources to support this. We will facilitate the creation of data resources and services, and organize scientific information, including data, code, methods, and meta-data. The platform will support the needs of the main scientific areas of the DDLS program, and establish domain-specific portals, following the example of the national COVID-19 portal with links to international data resources. We will link up with powerful computational capabilities, advanced data analysis technologies, and AI capabilities and develop new computational methods to facilitate life science research. DDLS will publish a data road map to describe these actions in more detail.

2. Attract Scientific Excellence. DDLS will launch the recruitment of 39 young group leaders (DDLS fellows) in four research areas to the participating universities. After a 5-year fellowship, the DDLS fellows may have a possibility to be promoted as tenured faculty and continue as key members of the national DDLS program. We expect that the caliber of the DDLS fellows to be

recruited will be truly world-leading. In addition, the DDLS fellows should be located in progressive, multi-disciplinary local research environments that form powerful links and synergies with the national DDLS program. Thus, for DDLS to succeed in building a truly globally leading program, it is necessary to attract talented young scientists, but also to link up each university's best research environments and unique capabilities together into a synergistic national DDLS network.

3. Train the next-generation data-driven life scientists: Besides the PhD students and postdocs to be recruited to the DDLS fellows' groups, there will be additional positions that will be made available in open calls. Altogether more than 400 PhD students and postdocs are expected to be trained as part of this program. We will launch a national DDLS research school / training programme. The purpose of the training is to educate the future workforce for data-driven life science in Sweden, within academia, industry, health care, and other fields. Courses will be organized together with all universities, SciLifeLab's Data Centre and Bioinformatics Platform, Wallenberg Centre for Molecular Medicine (WCMM), the Wallenberg AI, Autonomous Systems and Software Program (WASP) and many other parties. The training will also aim at making the broad life science community better prepared for the data opportunities and challenges in the next decade.

4. Develop national research programs across universities: DDLS will focus on four research areas where all the fellows will be assigned. We will build on this core DDLS community to create a broad national DDLS community, which will participate in research collaborations and training. As DDLS will be anchored at 11 different sites across the country, creation of active national collaborative communities will be key. We expect interactions within each research area, but also cross-disciplinary collaborations across the four research areas.

5. Bridge the gap between the life science and data science communities: DDLS program has a unique opportunity to form multi-disciplinary collaborations with the Wallenberg Autonomous Systems and Software (WASP and WASP-HS) Programs and other KAW funded programs. This will enable the life science community to collaborate with the large community of world-leading data science, software, and automation experts. Conversely, this will also provide life science grand challenges to be explored by the WASP community. DDLS will also link up with e.g., the Wallenberg Centre for Quantum Technology and the recently inaugurated Berzelius HPC cluster, Wallenberg Advanced Bioinformatics Infrastructure (WABI) as well as the Wallenberg Centers for Molecular Medicine (WCMM).

6. Create partnerships and impact on society: DDLS will boost data-driven life science through partnerships and spread the benefits to the society at large: **A) Industry:** Industry will be a beneficiary of the training programs and young experts, and it will be important that DDLS is engaged with industry at many levels; including R&D collaborations. Collaboration with the Wallenberg Launch Pad (WALP) program may allow innovative ideas originating from the DDLS research to be developed further into products and services. **B) Health care:** DDLS will promote training of the next-generation of data experts for health care. In the research areas of Precision Medicine and Diagnostics as well as for Epidemiology and Infection biology, we will

focus on the links and secure integration of molecular and clinical data in a research setting. DDLS will also work together with the health care regions, biobanks, Genome Medicine Sweden, and the WCOMM network on the challenges and policy issues with health care data (see below). **C) Other collaborations nationally and internationally:** DDLS will also engage with other national communities within areas such as biodiversity, environment, agriculture, and forestry. International networking is key to DDLS, and we will build collaborative programs with leading international institutions in data-driven research. DDLS scientists will participate in international (e.g. EU) programs in health care, precision medicine, biodiversity, etc. and will work with its partners to create and promote international standards and practices in data handling.

7. Promote policy actions at the national level to provide opportunities for data-driven research: Progress in many areas of life science is highly dependent on regulation and ethical, legal, and social implications (ELSI) and guidelines. These include data security, privacy, ownership, fragmentation and access to health care data that are already being actively debated at the national level. There are also policy questions on biodiversity and sustainability in environmental research. Hence, the DDLS program will work with the community of stakeholders and connect leading experts on ELSI, and related matters, to the program. We will set up a policy action group to address some of the issues that would easily become roadblocks to the transformation to a digital, data-driven future in life science research.

## MILESTONES AND DELIVERABLES

At the end of the 12 years, we anticipate that the DDLS program has achieved the following outcomes:

- Accelerated adoption of data-driven life science throughout Sweden and the quality of life science (publication output)
- Sweden and Swedish universities are considered world leading in data-driven life science.
- Outstanding international PI recruitments have taken place.
- A community of 400 PhD students and postdocs has been trained.
- A unique national research program and a networked community established across the 11 partners.
- Major collaborations in place with industry, health care, and other national stakeholders.
- Innovations have taken place and translated via private sector to the society
- Major grants have been acquired by researchers within the DDLS program, such as ERC grants and industry collaboration grants.
- Collaborative interactions with leading international institutions have taken place.
- Established a data platform, broadly enabling and facilitating FAIR data sharing
- Developed high-end computational and ML/AI technologies to transform life science
- Set up advanced computational services for the whole life science sector
- Key policy discussions and actions have helped to take the field forward.

- Taken together, the diverse steps to promote data-driven life science have enabled improved understanding of life and health.

## FOUR STRATEGIC RESEARCH AREAS

The program will focus on four broad research areas, where the 39 DDLS fellow positions will be recruited (see figure 2) and where national communities are formed. The aims of these four research areas will be explained below.

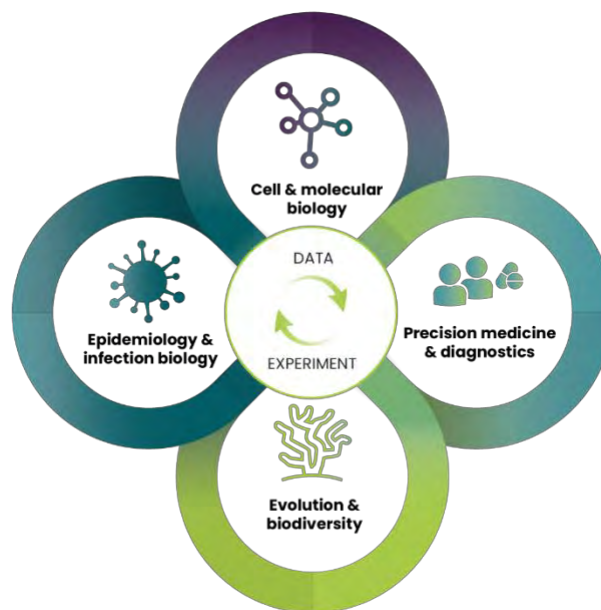


Figure 2: Main research areas within the DDLS program

### Cell and molecular biology

The DDLS program will support research that fundamentally transforms our knowledge about how cells function by peering into their molecular components in time and space, from single molecules to native tissue environments. This research area aims to lead the development of novel data-driven methods relying on machine learning, artificial intelligence, or other computational techniques to analyze, integrate and make sense of cellular and molecular data. Our vision for the DDLS program is to support data-driven research that takes advantage of these opportunities, and builds on the state-of-the-art infrastructure and computing capabilities.

## **Evolution and biodiversity**

The DDLS program will support research that takes advantage of the massive data streams offered by techniques such as high-throughput sequencing of genomes and biomes, continuous recording of video and audio in the wild, high-throughput imaging of biological specimens, and large-scale remote monitoring of organisms or habitats. This research area aims to lead the development of novel methods relying on machine learning, artificial intelligence, or other computational techniques to analyze these data and to address major scientific questions in evolution and biodiversity. The DDLS and SciLifeLab will also provide state-of-the-art infrastructure, computing facilities and training for data-driven research in evolution and biodiversity.

## **Precision medicine and diagnostics**

The DDLS program will support data-driven research for next generation precision medicine making use of and connecting multiple data layers from genotype to molecular phenotype to clinical data. Molecular precision medicine is about tailoring preventive and therapeutic approaches to the particular characteristics of each person and their disease. Data integration and analysis in DDLS aims to lead to development of molecular patient stratification and discovery of biomarkers for disease risk assessment, prognosis, treatment or prevention. This can include development of data interpretation, visualization and clinical decision support tools. The research is expected to use assets such as high-quality electronic health care data, molecular (e.g. imaging and omics) data, as well as longitudinal patient and population registries, biobanks and digital monitoring data.

## **Epidemiology and infection biology**

Infectious diseases pose significant global threats, including emerging, neglected and chronic infectious diseases, growing antimicrobial resistance, and a lack of antivirals and vaccines. For many host-pathogen systems, multidimensional, genome-scale experimental data can now be processed through computational methods and models to generate testable hypotheses regarding pathogen biology and transmission, as well as to identify antimicrobial or antiviral targets. Population-scale genetic, clinical, or public health data from pathogen surveillance efforts and biobanks, on the other hand, offer opportunities for data-driven prediction of the emergence, spread, and evolution of infectious agents, improved diagnostics, and to understand pathogenicity. DDLS work in this research area will use big experimental, clinical, or pathogen surveillance data in innovative ways to transform our understanding of human, animal or plant pathogens, their interactions with hosts and the environment, and how they are transmitted through populations.

## DDLS organization and steering structure

The DDLS program is funded by the Knut and Alice Wallenberg Foundation (KAW) with a total of SEK 3.1 billion over twelve years and the use of the funding is stipulated in the KAW donation letter. Funding will be provided in 3-year allocations, based on a progress report and a detailed strategic plan. The SciLifeLab Board is the decision-making body for the DDLS program, while the Program Director manages the operations together with the DDLS steering group members. A national reference group with representatives from all 11 parties will support and advise on strategic issues and to ensure close links to the operations and leadership at the collaborating organizations, figure 3.

The program's main operations currently include Recruitments, Research school and Data infrastructure. The steering group coordinates these operations to create synergies throughout the program. As the program develops, working groups for other activities will be launched as needed.

As a SciLifeLab coordinated program, DDLS gains substantial synergies in the interactions between infrastructure, research and data at the national level. For example, the SciLifeLab Data Centre is responsible for coordinating data infrastructure and support. In addition, we can make use of the SciLifeLab organization in the coordination and administration of the DDLS program, such as communication, external relations, training, meetings, events, financing and reporting.

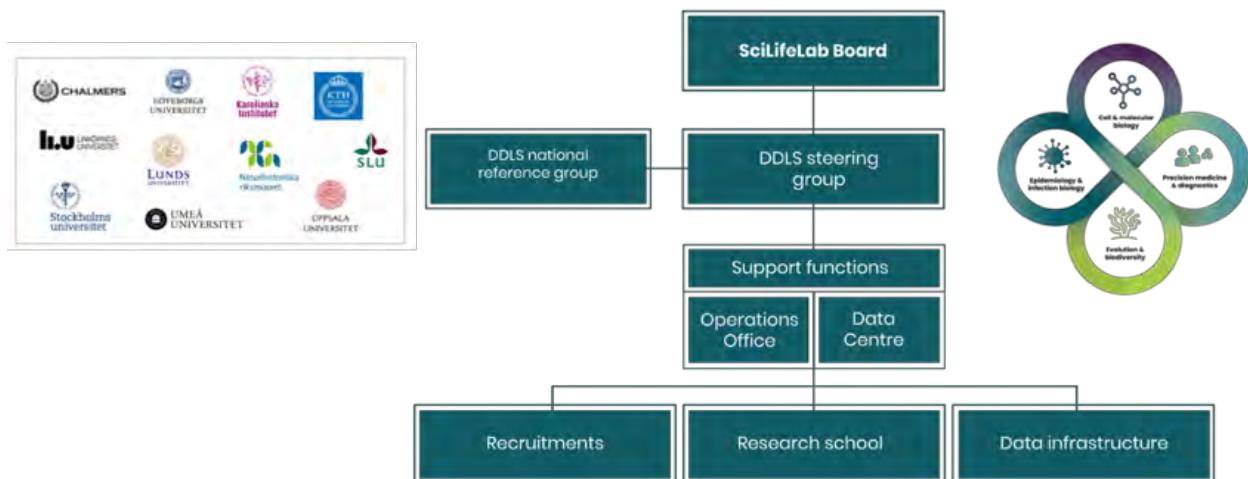


Figure 3: The DDLS governance, operations, and support functions



## Working groups

Working groups set up for DDLS as of April 2021:

1) Data strategy working group: This group works on establishing a national data-sharing platform, providing access to services including compute and storage e-infrastructure, computational tools, bioinformatic web services, databases, and topic-specific, along with web-based data portals for the four research areas of the DDLS program. The platform will provide a common structure for data-centric services and projects, community-created content, and a single point of contact user support portal. The DDLS program will work together with major Swedish e-infrastructure providers to increase the capability to analyze and share data.

2) Recruitments working group: This group works on defining the principles of the national recruitment for the DDLS program, and will organize the coordination of recruitments at the national level as well as the adherence to the aims of the program.

3) WASP collaborations - working group: This group will plan and coordinate the interactions with the WASP community and together with a joint WASP - DDLS working group organize and launch joint calls and networking activities.

4) Program coordination, networking and research school – working group: This group will plan and coordinate program overarching activities, such as annual conferences and other networking activities, plan for training and research school development and ELSI support, as well as act as support to the other three working groups mentioned above.

## Acknowledgements

This first version of the DDLS strategy has been developed by the DDLS steering group with input from the KAW, DDLS national reference group (representatives from the 11 participating organizations Chalmers, GU, KI, KTH, LiU, LU, NRM, SLU, SU, UmU and UU), SciLifeLab Board, Management group, Operations office and the Data Centre.

# DDLs recruitment subject area descriptions

## Data Driven Cell & Molecular Biology (5)

### *Generic subject description (common first part for all positions):*

*The subject area concerns research that fundamentally transforms our knowledge about how cells function by peering into their molecular components in time and space, from single molecules to native tissue environments. This research subject area aims to lead the development or application of novel data-driven methods relying on machine learning, artificial intelligence, or other computational techniques to analyze, integrate and make sense of cell and molecular data.*

### SU addition (two identical positions):

Eng: The subject covers studies in the broad area of cell and molecular biology on different scales ranging from molecules and single cells to tissues and organisms. Central to the profile is an emphasis on utilizing and/or integrating large molecular, structural, imaging or functional datasets to promote an unbiased, mechanistic understanding of biological processes. Relevant areas include macromolecular interactions, structural biology, cell biology, developmental biology, metabolism, immune responses, toxicology and neurobiology.

Sv: Ämnet omfattar studier inom det breda området cell-och molekylärbiologi på olika nivåer, från molekyler och enskilda celler till vävnader och organismer. Centralt för profilen är en tonvikt på användning och/eller integrering av stora datamängder från molekylära, strukturella, mikroskopibaserade eller funktionella studier för att främja en förutsättningslös, mekanistisk förståelse av biologiska processer. Relevanta områden inkluderar makromolekylära interaktioner, strukturbologi, cellbiologi, utvecklingsbiologi, metabolism, immunförsvar, toxikologi och neurobiologi.

### KTH addition:

~~The preliminary proposal heading is “biophysics with specialization in data-driven cell & molecular biology”. — Discussion with Sebastiaan Meijer who feels strongly about the freedom to keep this title. The steering group nevertheless recommends the board to stick with the plan “Data driven cell & molecular biology” as all hosts have been instructed to do.~~

Eng: A specific focus is the development of methods that take a quantitative approach to cell and molecular biology with potential to give new insights of biophysical relevance. These methods can be applied to data generated by (but not limited to) microscopy and simulation techniques that are currently developed at KTH and SciLifeLab, including single cell



screening, super-resolution fluorescence microscopy, cryo-electron microscopy, and molecular dynamics simulations.

Sv: Ett specifikt fokus är utveckling av metoder som har ett kvantitativt angreppssätt till cell- och molekylärbiologi med potential att ge nya insikter med relevans för biofysik. Dessa metoder kan tillämpas på data genererade genom (men inte begränsat till) mikroskopi och simuleringstekniker som utvecklas på KTH och SciLifeLab, t.ex. screening med encells-upplösning, superupplöst fluorescensmikroskopi, kryo-elektronmikroskopi och molekylardynamiksimuleringar.

LiU addition:

Eng: We will accept applications in the broad field of data-driven cell and molecular biology. Further information about our strong areas can be found at <https://liu.se/en/research/wcmm/ddls-cell>

Sv: Vi tar emot ansökningar inom hela fältet Datadriven cell- och molekylärbiologi. Information om vilka ämnen vi har starka miljöer inom finns på <https://liu.se/en/research/wcmm/ddls-cell>

Chalmers addition:

(only generic text/bara generisk text)

## Data Driven Precision Medicine & Diagnostics (7)

*Generic subject description:*

*The subject area concerns data-driven research on precision medicine, such as the use of computational tools to integrate molecular and clinical data for translational research and diagnostic development thereby facilitating individualized patient care. Data integration and analysis can be used for patient stratification, for discovery of diagnostic biomarkers and for longitudinal monitoring and follow-up. Precision medicine also depends on capabilities for data interpretation, visualization and clinical decision support. The research is expected to use assets, such as electronic health care records, molecular data (e.g. imaging and omics), as well as longitudinal patient and population registries, biobanks and digital monitoring data.*

KTH addition:

Eng: This includes development and use of system biology methods and/or pharmacological modeling to develop precision treatment, including precision dosing of drugs and experimental validation.

Sv: Detta innefattar utveckling och användning av systembiologiska metoder och/eller farmakologisk modellering för att utveckla precisionsbehandling, inklusive precisionsdosering av läkemedel, samt experimentell validering.

### KI addition:

Happy with the generic text - no additions required.

### GU addition:

Eng: The ultimate long-term goal of the research should be to develop precision medicine in order to tailor the right intervention or treatment to the right person at the right time.

Sv: Det långsiktiga målet med forskningen ska vara att utveckla precisionsmedicin så att rätt person erhåller rätt intervention eller behandling vid rätt tidpunkt.

### LU addition:

(only generic text/bara generisk text)

### UmU addition:

only generic text/bara generisk text

### Chalmers addition:

only generic text/bara generisk text

### LiU addition:

Eng: We will accept applications in the broad field of data-driven precision medicine and diagnostics. Further information about our strong areas can be found at <https://liu.se/en/research/wcmm/ddls-precision>

Sv: Vi tar emot ansökningar inom hela fältet Datadriven precisionsmedicin och diagnostik. Information om vilka ämnen vi har starka miljöer inom finns på <https://liu.se/en/research/wcmm/ddls-precision>

## Data Driven Epidemiology & Infection biology (5)

### *Generic subject description:*

*The subject area concerns research that will use big experimental, clinical, or pathogen surveillance data in innovative ways to transform our understanding of pathogens, their interactions with hosts and the environment, and how they are transmitted through populations. The priority area covers computational analysis or predictive modelling of pathogen-host systems for which multidimensional, genome-scale experimental data are*

*now available and extends to using population-scale genetic, clinical, or public health data from pathogen surveillance efforts and biobanks.*

## GU addition:

(only generic text/bara generisk text)

## KI addition:

(only generic text/bara generisk text)

## LU addition:

Eng: Lund University foresees that the outcome of the research will contribute to gained knowledge of medical importance, for example understanding of host-pathogen interactions, infection biology including structure-function relationships and transmission of infectious diseases, that could translate into identification of novel targets for therapeutic and prophylactic purposes, as well as tools for infectious disease monitoring and prediction.

Sv: Lunds universitet förväntar sig att resultatet av forskningen kommer att bidra till fördjupad kunskap av medicinsk betydelse, till exempel förståelsen av värd-patogen-interaktioner, infektionsbiologi inkluderande struktur-funktionsförhållanden eller spridning av infektionssjukdomar, vilket kan utnyttjas vid identifiering av nya angreppspunkter för terapeutisk och profylaktiska ändamål, liksom verktyg för övervakning och prognos av infektionssjukdomar.

## UmU addition:

Eng: We are looking for an outstanding researcher to become a DDLS fellow in the area of data-driven epidemiology and infection biology at Umeå University who will  
(1) apply innovative computational methods to biomolecular datasets, for instance from genomic, transcriptomic, metabolomic or structural biology experiments, in ways that transform our understanding of pathogens, their interactions with hosts and the environment, or that may lead to the discovery of new antimicrobial or antiviral strategies.

Or

(2) who will advance the limits of analysing biobank and clinical data, for instance to understand human susceptibility to infection, disease severity, disease complications, long-term prognosis or vaccine outcome.

Sv: Vi söker kandidater

(1) som avser att tillämpa innovativa beräkningsmetoder på biomolekylära datamängder från genom, transkriptom, metabolom eller struktur biologiska experiment, på sätt som förändrar vår förståelse av patogena mikroorganismer, deras interaktion med värdorganismer och miljö, eller som kan leda till upptäckter av nya antimikrobiella eller antivirala strategier.

Eller

(2) som avser utvidga gränserna för analys av omfattande uppsättningar biobank och kliniska data, till exempel för att förstå människans mottaglighet för infektion, infektioners svårighetsgrad, sjukdomskomplikationer, långsiktig prognos eller vaccinationseffekter.

## UU addition:

Eng: The position as associate senior lecturer / DDLS Fellow is organised within the section for infections and immunity at IMBIM, but data-driven research in epidemiology and infection biology is expected to bridge to IMBIM's overall theme of genetic and phenotypic variation and evolution. Based on an integrated approach, advanced cell and molecular biology techniques, medically relevant model systems, imaging, genomics and bioinformatics are applied to perform comprehensive analyses of host-pathogen and pathogen-pathogen interactions as well as studies of immunological and inflammatory consequences of infections. Functional and comparative "omics" are used to analyze differences in sensitivity and spread of infection at both the individual level and in populations.

Sv: Anställningen som biträdande universitetslektor (DDLS Fellow) är placerad vid sektionen för infektioner och immunitet vid IMBIM, men datadriven forskning inom smittspridning och infektionsbiologi förväntas överbrygga till IMBIM:s övergripande tema om genetisk och fenotypisk variation och evolution. Utifrån ett integrerat tillvägagångssätt tillämpas avancerade cell- och molekylärbiologiska tekniker, medicinskt relevanta modellsystem, bildteknik, genomik och bioinformatik för att utföra omfattande analyser av värd-patogen och patogen-patogen-interaktioner samt immunologiska och inflammatoriska konsekvenser av infektioner. Funktionell och jämförande "omics" används för att analysera skillnader i känslighet och smittspridning på såväl individnivå som i populationer.

## Data Driven Evolution and Biodiversity (3)

### *Generic subject description:*

*The subject area concerns research that takes advantage of the massive data streams offered by techniques such as high-throughput sequencing of genomes and biomes, continuous recording of video and audio in the wild, high-throughput imaging of biological specimens, and large-scale remote monitoring of organisms or habitats. This research subject area aims to lead the development or application of novel methods relying on machine learning, artificial intelligence, or other computational techniques to analyze these data and take advantage of such methods in addressing major scientific questions in evolution and biodiversity.*

## SLU addition:

Eng: The subject area is Genomics, with focus on data driven research on evolution, adaptation and biodiversity in trees. The subject area concerns research that takes

advantage of the massive data streams offered by techniques such as high-throughput sequencing of genomes and biomes. This research subject area aims to lead the development of novel methods relying on machine learning, artificial intelligence, or other computational techniques to analyze these data and take advantage of such methods in addressing major scientific questions in evolution and biodiversity.

Sv: Ämnesområdet är Genomik, med fokus på datadriven forskning inom evolution, anpassning och biodiversitet i träd. Ämnesområdet avser forskning som drar nytta av de massiva dataströmmarna från tekniker som genom- och biom-sekvensering. Området syftar till att leda utvecklingen av nya metoder baserade på maskininlärning, artificiell intelligens eller andra beräkningstekniker för att analysera dessa data och använda dem för att lösa vetenskapliga frågeställningar inom evolution och biologisk mångfald.

## NRM addition:

Eng: More specifically, at NRM this research will be aimed at developing a deeper and dynamic understanding of biodiversity and ecosystem change, and to enable predictions on environmental change on global and local ecosystems. This research comprises analyses of, and/or developing methods to analyse, large-scale datasets within biodiversity or evolution. The scientific topics comprise the development and evolution of life, biodiversity, human evolution, environmental research or landscape ecology. From a methodological perspective, examples of such research include analyses of large-scale data within phylogenetics, population genetics or metagenomics, as well as image analysis or research on morphological and distributional data.

Sv: Mer specifikt så kommer denna forskning vid NRM syfta till att skapa en djupare och dynamisk förståelse av förändringar i biodiversitet och ekosystem, samt möjliggöra förutsägelser om miljöförändringar i globala och lokala ekosystem. Denna forskning innefattar analyser av, samt utvecklandet av metoder för att analysera, storskaliga dataset inom biodiversitet och evolution. De vetenskapliga områdena innefattar livets utveckling och evolution, biologisk mångfald, människans evolution, miljöforskning och landskapsekologi. Exempel på sådan forskning utifrån ett metodperspektiv är analyser av storskaliga data inom fylogenetik, populationsgenetik eller metagenomik, samt bildanalys eller forskning på morfologiska data och utbredningsdata.

## UU addition:

Eng: We have **three potential host Departments** at the **Faculty of Science and Technology of Uppsala University**, each with a certain focus within data-driven evolution and biodiversity. Candidates will select one preferred Department as part of the application procedure.

- The **Department of Cell and Molecular Biology (ICM)** drives successfully interdisciplinary research in molecular structure, function and evolution. ICM offers excellent opportunities to combine theoretical and experimental approaches. Our research strives to get a deeper and dynamic understanding of the molecular processes and selective pressure driving the evolution of cells, organisms and populations. Microorganisms are often used as model systems in these studies. For more information about this specialization and the Department of Cell and Molecular Biology, see [www.icm.uu.se](http://www.icm.uu.se).

- The **Department of Ecology and Genetics (IEG)** welcomes DDLS applicants to our internationally renowned research environment in ecology and evolution of biodiversity. Research areas could involve processes at any level and all domains of life, from molecules to ecosystems, including themes such as molecular evolution, adaptation, speciation, population genomics, conservation genomics, macroecology and global biogeochemistry. For more information about this specialization and the Department of Ecology and Genetics, see [www.ieg.uu.se](http://www.ieg.uu.se).

The **Department of Organismal Biology (IOB)** welcomes DDLS applicants who study diversity, genomics and traits using data-driven and computational approaches. IOB offers an excellent research environment, with thriving research programs focusing on evolution, genomics, and gene-environment interactions in model organisms including humans. Our work includes cross-disciplinary themes and infrastructure for intersecting, genomics, epigenomics, bioimaging, paleontology, archaeology, and evolution. For more information about this specialization and the Department of Organismal Biology, see [www.iob.uu.se](http://www.iob.uu.se).

Sv: Vi har **tre potentiella värdinstitutioner vid Biologiska sektionen, Uppsala universitet**, var och en med ett visst fokus inom datadriven evolution och biodiversitet. Kandidater uppger en föredragen institution som en del av ansökningsförfarandet.

- **Institutionen för cell- och molekyärbiologi (ICM)** bedriver framgångsrik interdisciplinär forskning om molekyär struktur, funktion och evolution. ICM erbjuder utmärkta möjligheter att kombinera teoretisk och experimentell forskning. Vår forskning syftar till att ge en djupare och dynamisk förståelse för molekyära processer och hur selektivt tryck driver evolutionen av celler, organismer och populationer. Mikroorganismer används ofta som modellsystem i dessa studier. För mer information om denna inriktning och institutionen för cell- och molekyärbiologi hänvisas till [www.icm.uu.se](http://www.icm.uu.se).

- **Institutionen för ekologi och genetik (IEG)** välkomnar DDLS-sökande till vår internationellt kända forskningsmiljö inom ekologi och evolution kopplat till biodiversitet. Forskningen kan omfatta processer på alla nivåer och från alla livets domäner, från molekyler till ekosystem, och gäller teman som molekyär evolution, anpassning, artbildning, populationsgenetik, bevarandebiologi, makroekologi och global biogeokemi. För mer information om denna inriktning och institutionen för ekologi och genetik hänvisas till [www.ieg.uu.se](http://www.ieg.uu.se).

- **Institutionen för Organismbiologi (IOB)** välkomnar kandidater för DDLS positionen som undersöker diversitet, genomik och egenskap med data-drivna beräkningsmetoder. IOB erbjuder en excellent forskningsmiljö med framgångsrika forskningsprogram som fokuserar

på evolution, genomik och samspelet mellan arv och miljö i modellorganismer, inkl.människan. Vårt arbete inkluderar ämnesöverskridande teman och infrastruktur genomik, epigenomik, bildanalys, paleontologi, arkeologi och evolution. För mer information om våra inriktningar och om IOB, se [www.iob.se](http://www.iob.se).