

NBIS

The National Bioinformatics Infrastructure Sweden

www.nbis.se

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SciLifeLab

SciLifeLab

National service

Local scientific center

Vision:

To be an internationally leading center that develops, uses and provides access to advanced technologies for molecular biosciences with focus on health and environment.



Director (July 2015)
Olli Kallioniemi

Co-director
Kerstin Lindblad-Toh

2010: Strategic research initiative
2013: National resource

www.scilifelab.se

Main sites (Stockholm/Uppsala)



Uppsala (Biomedical center)



Stockholm (KI campus)

9 national service platforms
200+ research groups

SciLifeLab platforms

SciLifeLab

National
Genomics
Infrastructure

Joakim Lundeberg
Ann-Christine Syvänen
Ulf Gyllensten



National
Bioinformatics
Infrastructure
Sweden

Bengt Persson



Clinical
Diagnostics

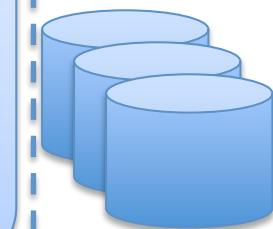
Lars Engstrand



Ongoing merge of BILS, WABI
and more; complete 2016.
National, distributed

VR

SNIC



Computer
resources
free for
Swedish
researchers

Support ▾

Infrastructure ▾

Training ▾



NATIONAL BIOINFORMATICS
INFRASTRUCTURE SWEDEN

NBIS is a distributed national bioinformatics infrastructure, supporting life sciences in Sweden



SciLifeLab



Why bioinformatics infrastructure?

A continuous technical scale-up will provide an unprecedented amount of heterogeneous omics data

- Support, Tools, Training

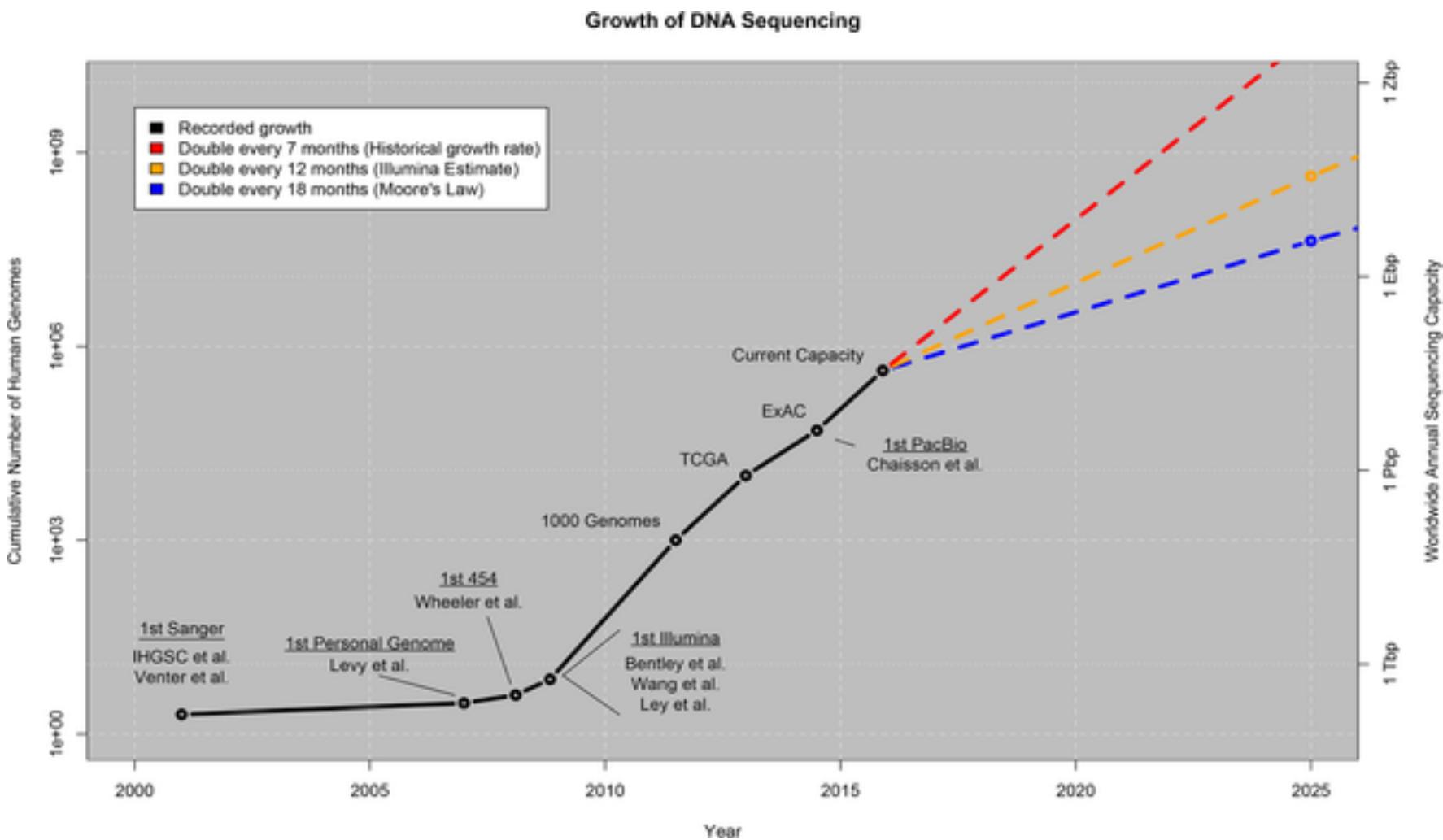
System-level analyses in biomedical research will transform life science

- Strategic positioning in systems biology

Large-scale omics is will make a major leap into translational research and diagnostics

- Method adaptation and expert advice

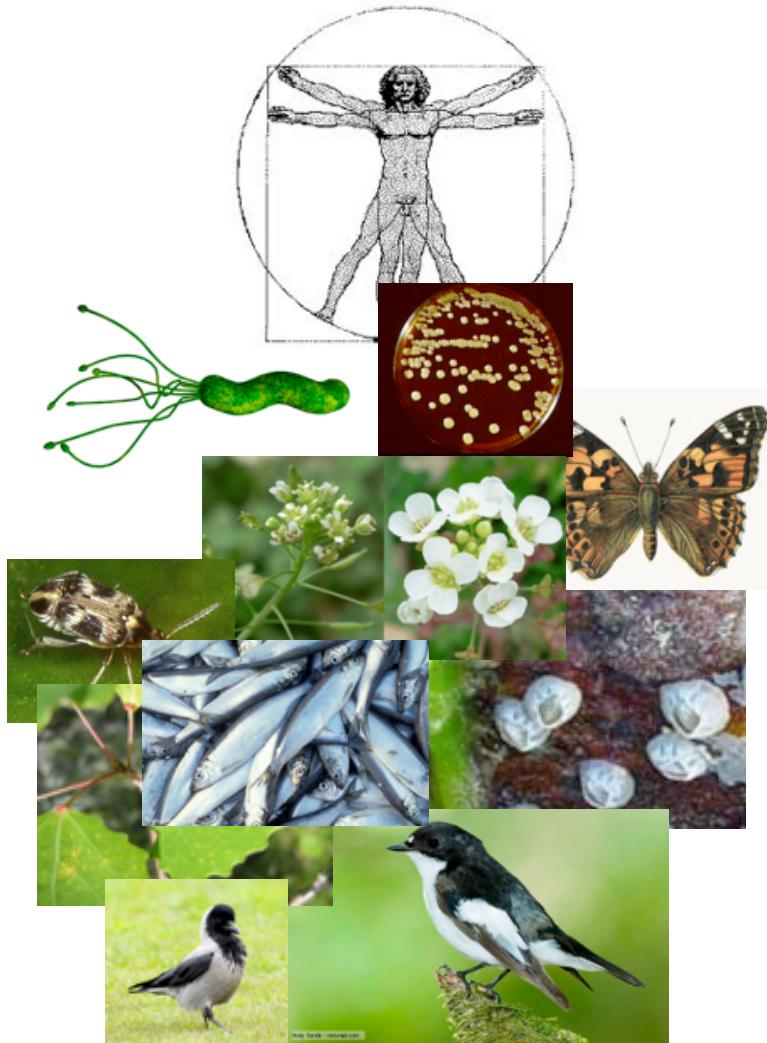
Fig 1. Growth of DNA sequencing.



Stephens ZD, Lee SY, Faghri F, Campbell RH, Zhai C, et al. (2015) Big Data: Astronomical or Genomical?. *PLoS Biol* 13(7): e1002195. doi:10.1371/journal.pbio.1002195
<http://127.0.0.1:8081/plosbiology/article?id=info:doi/10.1371/journal.pbio.1002195>

“Routinely unique”

Difficult to foresee/automate



7 Variant analyses in medical research	Human
4 Differential gene expression	
3 single-cell RNAseq	
2 Epigenetics	
1 miRNA	
1 Allele-specific expression + methylSeq	
1 Immunorepertoire	
1 Integrative	
20	
5 Variant calling/Population genomics	Animals/plants
4 De novo genome assembly/analyses	Animals/plants
3 Gene expression	Animals/Plants
2 RNAseq method development	Universal
1 RNAseq + proteomics	Fungus
1 Metagenomics	Human microbiota
1 Non-coding RNA	Bacteria
17	

The Bioinformatics Platform 2016

Funding

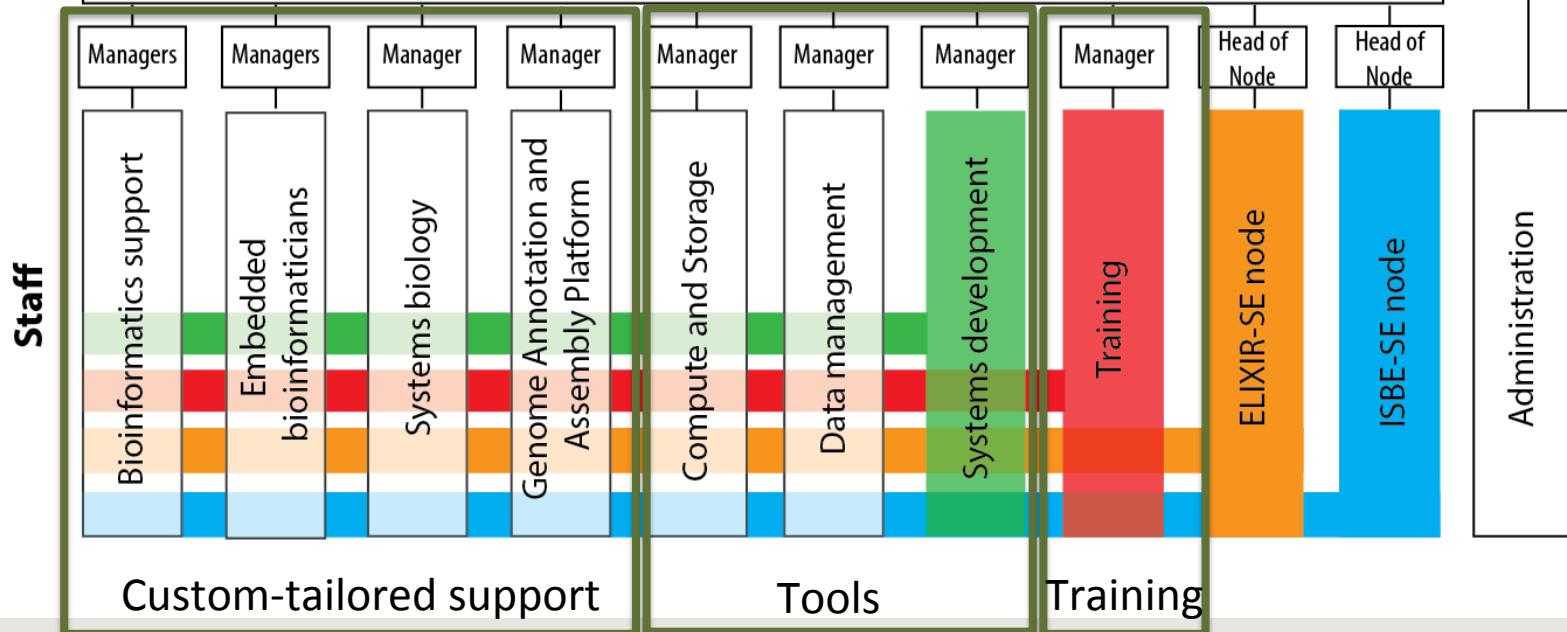
- The Research Council
- SciLifeLab
- KAW foundation
- Host universities

Recently applied at the Research Council as continued national infrastructure 2016-2023. Decision late 2015.

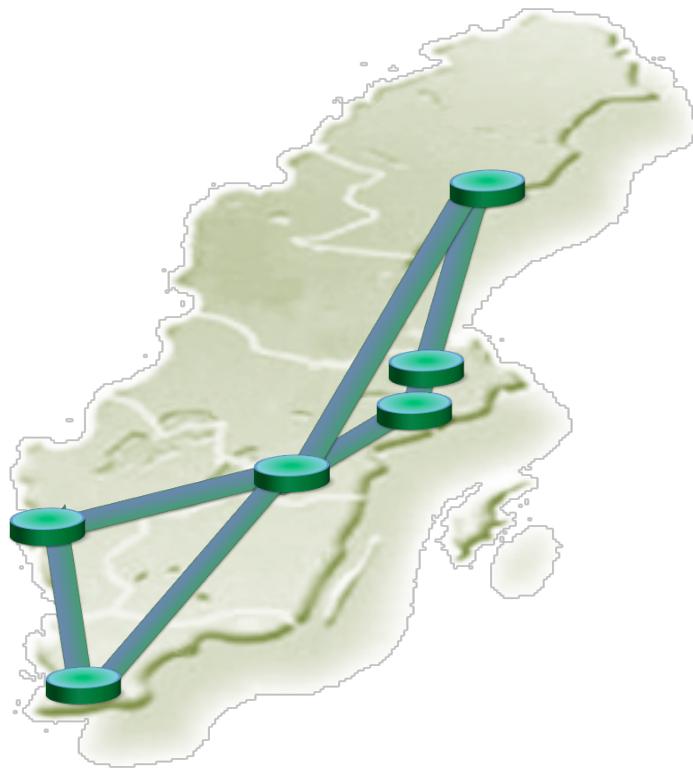


Reference Group

Management (Director + Managers)



Distributed across Sweden



Short-term Support

(Formerly known as BILS)

- BILS provides
 - Support/Consultancy
 - 8 hours for free
 - additional hours for 800 SEK/hour
 - Training
 - Infrastructure/tools
- BILS coordinates the Swedish node in the European infrastructure for biological information ELIXIR

Director

Bengt Persson

Technical coordinator

Mikael Borg

Proteomics coordinator

Fredrik Levander

Genomics coordinatorsMagnus
Alm-RosenbladHenrik
LantzDag
AhrénJonas
HagbergSara
Light*Syst. development coordinator**Training coordinator*

Long-term Support

Wallenberg Advanced Bioinformatics Infrastructure
www.scilifelab.se/facilities/wabi/

Tailored solutions – high impact

Applied bioinformatics: 500h free support/project

- Variant analyses in health and disease
- Transcriptomics
- Novel genomes
- Metagenomics

Swedens strongest unit for analyses of large-scale genomic data (13 + 10 FTE)

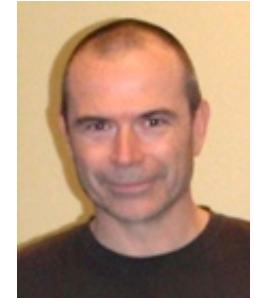
National committee reviews and selects projects based on scientific quality

Directors



Siv Andersson Gunnar von Heijne

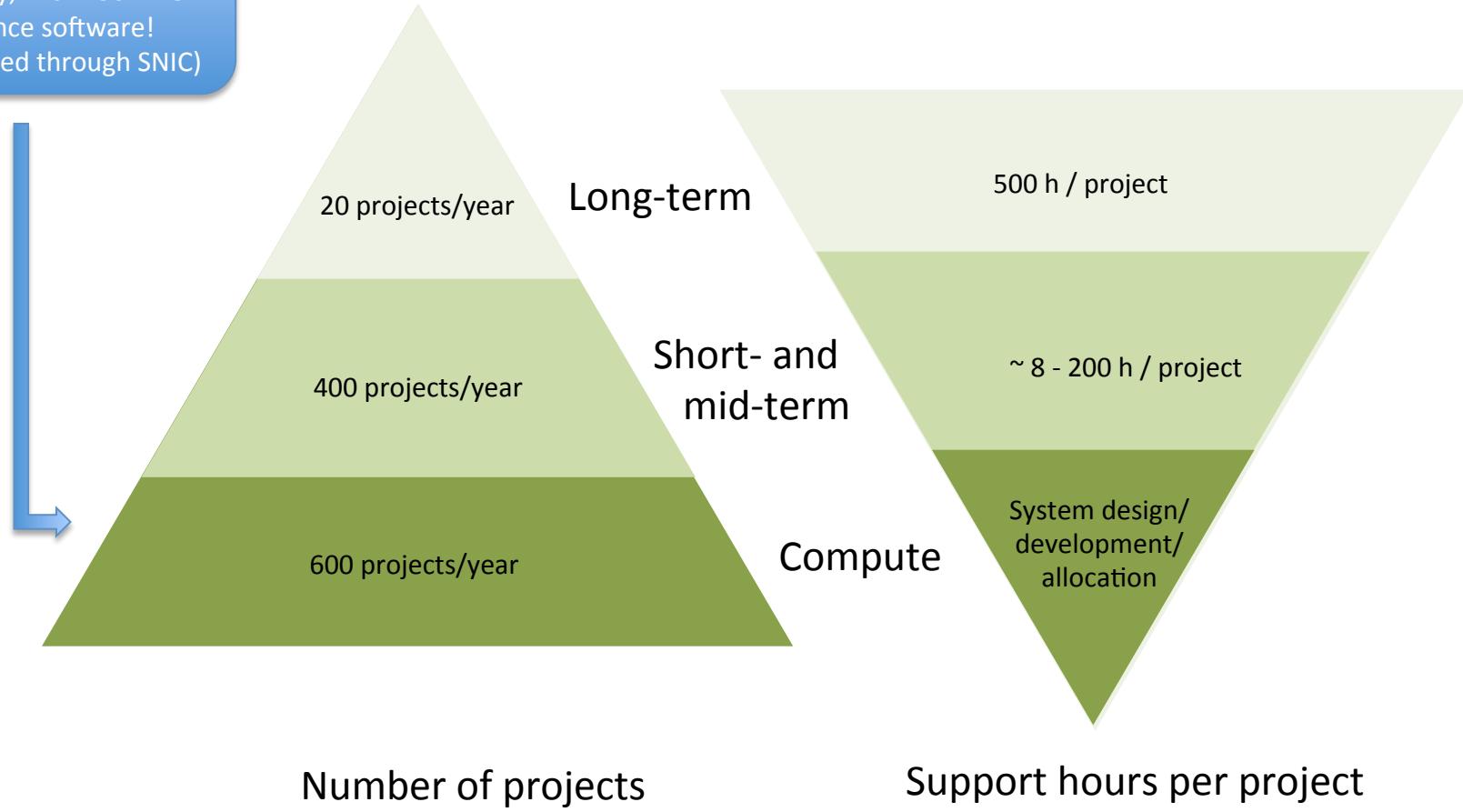
Managers



Björn Nystedt Thomas Svensson

The bioinformatics platform

A centralized computer resource for the entire country, with 250+ life science software!
(Organized through SNIC)



Expert teams

Assembly/annotation of novel genomes

support@bils.se

(2 + 2 people, running)

Human WGS ToolBox

Method implementation, community building

<https://wabi-wiki.scilifelab.se/display/SHGATG/>

(2+ people, running)

BigData/Integrative bioinformatics

Method development, project support

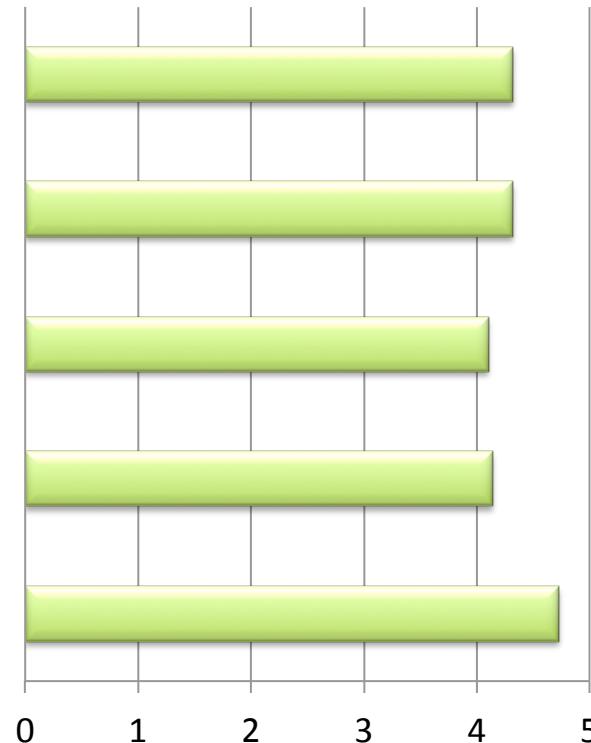
<http://www.scilifelab.se/facilities/wabi/>

(4 people, hiring now, part of Long-term Support)

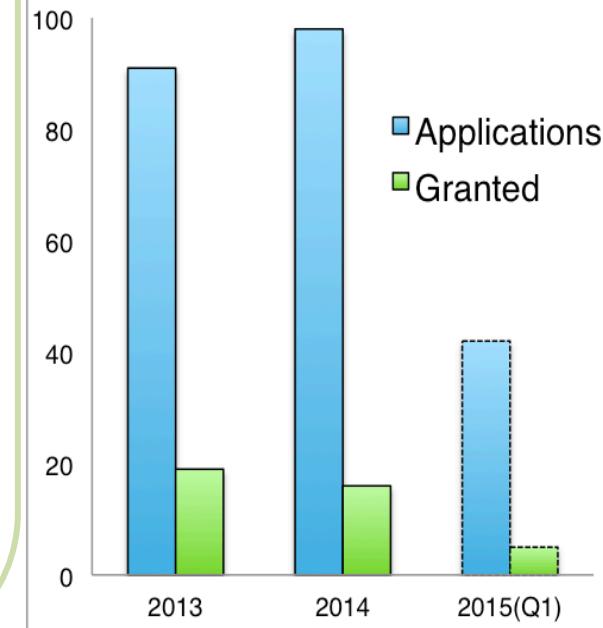
Happy users, high demand

User evaluation April 2015

Overall rating
Technical quality
Scientific impact
Long-term value (2-3 years)
In favour of SciLifeLab continuing
to offer this type of national
support

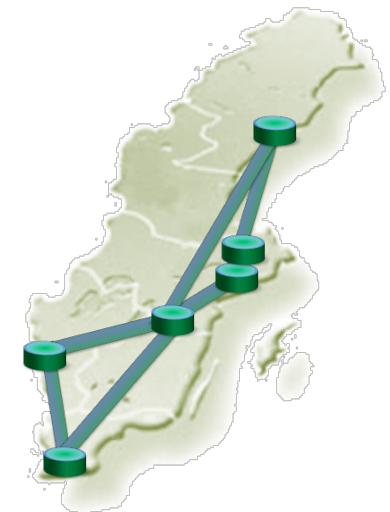


Bioinformatics
Long-term Support



User access to the Bioinformatics Platform

- Study design consultation (free)
- Short & medium-term support
- 8 hours for free, then 800 SEK/hour
- <http://www.nbis.se/support/supportform/index.php>
- Apply anytime
- Long-term support (500h; free: scientific evaluation)
<http://www.scilifelab.se/facilities/wabi/>
- Next deadline: **~June 2016**
- Compute and storage (free; majority of hardware and system administration belongs to SNIC)
- Apply: <https://supr.snic.se>
- Read more: <http://www.uppmax.uu.se/>



The Swedish Bioinformatics Advisory Program

A new teaching model, where PhD students get a senior bioinformatician as a personal advisor during 2 years of their PhD.

Monthly project meetings + two grand meetings per year to aid networking and knowledge transfer.

First call late 2014:

>50 applicants for 15 places

www.scilifelab.se/education/mentorship/the-swedish-bioinformatics-advisory-program/

Next call Nov-December 2016

Why this program

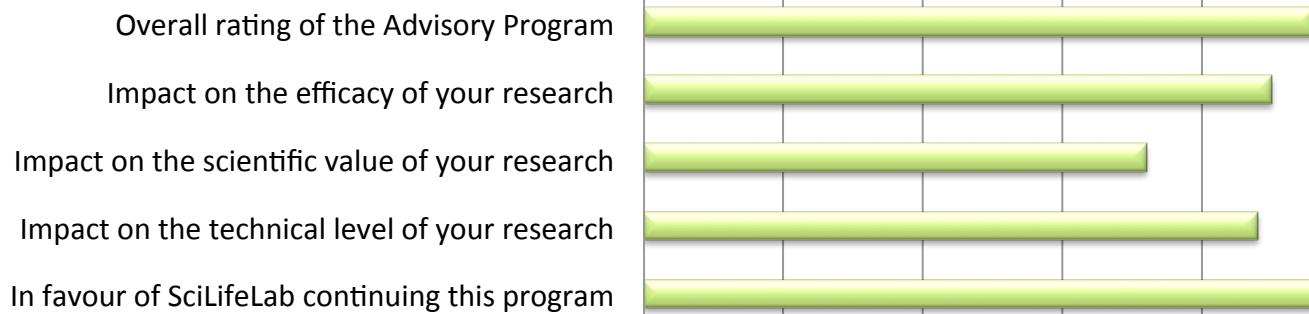
Overall aim: Great research in Sweden!

How? Strategic investment in PhD education
Complementing PhD supervisors with technical expertise
Catalyze transition to large-scale data analyses

The PhD student is responsible to prepare and drive the meetings!

The Swedish Bioinformatics Advisory Program

Student evaluation, June 2015



Bioinformatics Drop-In

- Are you planning a project and need someone to discuss the bioinformatics analysis with?
- Do you need bioinformatics support, but do not know who to turn to?
- Are you stuck in your own bioinformatics project and need help?
- Meet the NBIS staff at bioinformatics drop-in

When: Weekly on Tuesdays at 3 pm

Where: Room Avsikten, HU, Linköping

Similar activities in the other NBIS nodes/cities

We're here for you!

