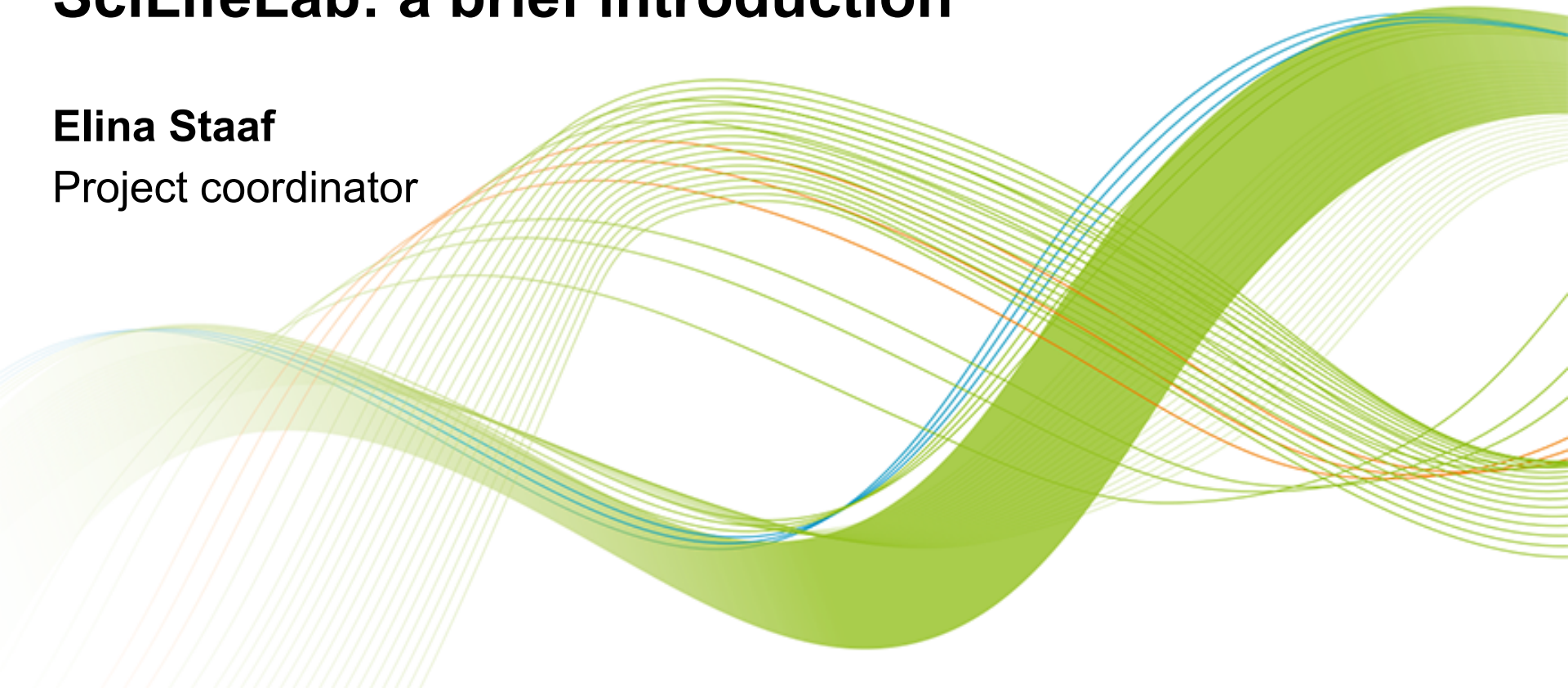# SciLifeLab

R Programming Foundations for Life Scientists, March 27-31 2017, Uppsala

SciLifeLab: a brief introduction

Elina Staaf
Project coordinator

- **4** host universities
- Established in **2010**
- National resource since **2013**
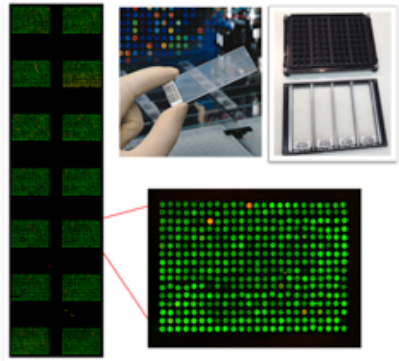- More than **1000** researchers

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
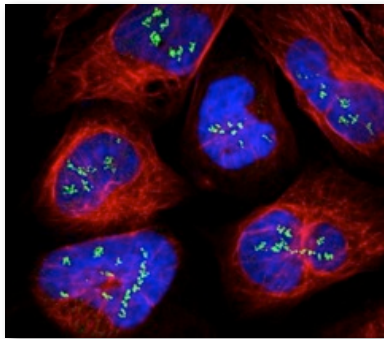
Mission

Technology platforms for national use

- Service to research community
- Technology development
- Education

Strong research community

- Strong interdisciplinary community
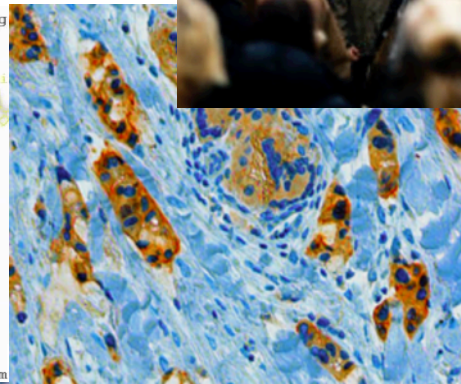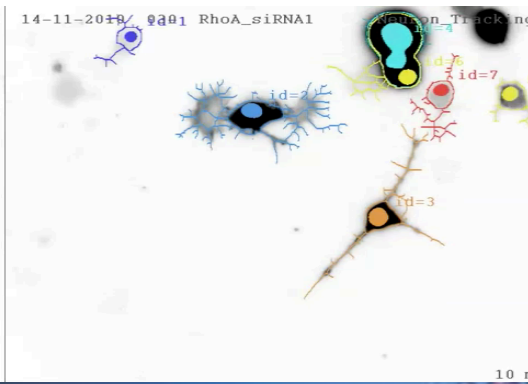- SciLifeLab Fellows Program
- National projects

Society impact

- Health care outcome
- Environment
- Tech transfer, spin-offs, industry collaborations

The range of life sciences studied

Ecosystems
Communities
Populations
Organisms
Organs
Tissues
Cells
Organelles
Molecules

Platforms and facilities

SciLifeLab

Platforms & facilities

Bioinformatics (NBIS)
Bioinformatics Compute and Storage (UPPNEX)
Bioinformatics Long-term Support (WABI)
Bioinformatics Short-term Support and Infrastructure (BILS)
Systems Biology

Cellular & Molecular Imaging
Advanced Light Microscopy
BioImage Informatics
Cryo-EM
Fluorescence Correlation Spectroscopy
Fluorescence Tissue Profiling
High-Content Microscopy
Protein Science Facility
Swedish NMR Centre (SNC)
Tissue Profiling

Chemical Biology & Genome Engineering
Genome Engineering Zebrafish
High Throughput Genome Engineering (HTGE)
Laboratories for Chemical Biology Umeå (LCBU)
The Laboratories for Chemical Biology at Karolinska Institutet (LCBKI)

Diagnostics Development
Clinical Biomarkers
Clinical Genomics Göteborg
Clinical Genomics Lund
Clinical Genomics Stockholm
Clinical Genomics Uppsala

Drug Discovery and Development
ADME (Absorption Distribution, Metabolism Excretion) of Therapeutics (UDOPP)
Biochemical and Cellular Screening
Biophysical Screening and Characterization
Human Antibody Therapeutics
In Vitro and Systems Pharmacology
Medicinal Chemistry – Hit2Lead
Medicinal Chemistry – Lead Identification
Protein Expression and Characterization

Genomics (NGI)
NGI Stockholm
NGI Uppsala (SNP&SEQ Technology Platform)
NGI Uppsala (Uppsala Genome Center)

Proteomics/Metabolomics
Autoimmunity Profiling
Chemical Proteomics & Proteogenomics
PLA Proteomics
Plasma Profiling
Swedish Metabolomics Centre (SMC)

Single-cell Biology
Eukaryotic Single Cell Genomics
Mass Cytometry
Microbial Single Cell Genomics
Single Cell Proteomics

Nodes and sites

Umeå

Göteborg

Linköping

Lund

Uppsala node

Stockholm node (Solna)

Platforms and facilities

SciLifeLab

Platforms & facilities

Bioinformatics (NBIS)
Bioinformatics Compute and Storage (UPPNEX)
Bioinformatics Long-term Support (WABI)
Bioinformatics Short-term Support and Infrastructure (BILS)
Systems Biology

Cellular & Molecular Imaging
Advanced Light Microscopy
BioImage Informatics
Cryo-EM
Fluorescence Correlation Spectroscopy
Fluorescence Tissue Profiling
High-Content Microscopy
Protein Science Facility
Swedish NMR Centre (SNC)
Tissue Profiling

Chemical Biology & Genome Engineering
Genome Engineering Zebrafish
High Throughput Genome Engineering (HTGE)
Laboratories for Chemical Biology Umeå (LCBU)
The Laboratories for Chemical Biology at Karolinska Institutet (LCBKI)

Diagnostics Development
Clinical Biomarkers
Clinical Genomics Göteborg
Clinical Genomics Lund
Clinical Genomics Stockholm
Clinical Genomics Uppsala

Drug Discovery and Development
ADME (Absorption Distribution, Metabolism Excretion) of Therapeutics (UDOPP)
Biochemical and Cellular Screening
Biophysical Screening and Characterization
Human Antibody Therapeutics
In Vitro and Systems Pharmacology
Medicinal Chemistry – Hit2Lead
Medicinal Chemistry – Lead Identification
Protein Expression and Characterization

Genomics (NGI)
NGI Stockholm
NGI Uppsala (SNP&SEQ Technology Platform)
NGI Uppsala (Uppsala Genome Center)

Proteomics/Metabolomics
Autoimmunity Profiling
Chemical Proteomics & Proteogenomics
PLA Proteomics
Plasma Profiling
Swedish Metabolomics Centre (SMC)

Single-cell Biology
Eukaryotic Single Cell Genomics
Mass Cytometry
Microbial Single Cell Genomics
Single Cell Proteomics

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

User access to NBIS

- Study design consultation
- Short & medium-term support
- 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: **May 5th**

- 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/

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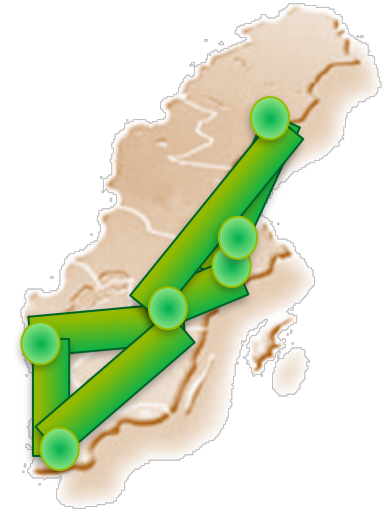
- Are you planning a project and need someone to discuss the bioinformatics analysis with?
- Do you need bioinformatics support, but do not know who to turn to?
- Are you stuck in your own bioinformatics project and need help?
- Meet the NBIS staff at bioinformatics drop-in

Uppsala
When: Weekly on Thursdays at 10-11 am
Where: SciLifeLab, level 3

Stockholm
When: Weekly on Tuesdays at 10.30-11.30 am
Where: SciLifeLab, gamma, level 6

- Similar activities in the other NBIS nodes/cities

Upcoming courses spring 2017

Date	Course
May 9-11	Introduction to Genome Annotation
May 15-19	Introduction to Bioinformatics using NGS data, Göteborg
Sep 11-15	Perl programming with application to Bioinformatics
Sep 25-29	Introduction to Bioinformatics using NGS data, Lund
Oct 23-27	R Programming Foundations for Life Scientists
Nov 6-8	RNA-seq
Nov 15-17	De novo Genome Assembly
Nov 20-22	Metagenomics
Nov 27 – Dec 1	Introduction to Bioinformatics using NGS data, Uppsala
Application Nov/Dec	The Swedish Bioinformatics Advisory Program

See also: https://www.scilifelab.se/education/courses/

Upcoming courses spring 2017

SciLifeLab

Date	Course
May 9-11	Introduction to Genome Annotation
May 15-19	Introduction to Bioinformatics using NGS data, Göteborg
Sep 11-15	Perl programming with application to Bioinformatics
Sep 25-29	Introduction to Bioinformatics using NGS data, Lund
Oct 23-27	R Programming Foundations for Life Scientists
Nov 6-8	RNA-seq
Nov 15-17	De novo Genome Assembly
Nov 20-22	Metagenomics
Nov 27 – Dec 1	Introduction to Bioinformatics using NGS data, Uppsala
Application Nov/ Dec	The Swedish Bioinformatics Advisory Program

See also: https://www.scilifelab.se/education/courses/

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
Last call in 2016
>111 applicants for 18 places

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

Next call Nov-December 2017

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!
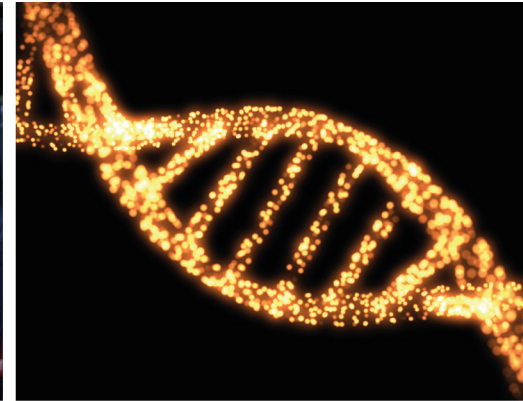
**The Swedish Bioinformatics Advisory Program
Student evaluation, June 2015**
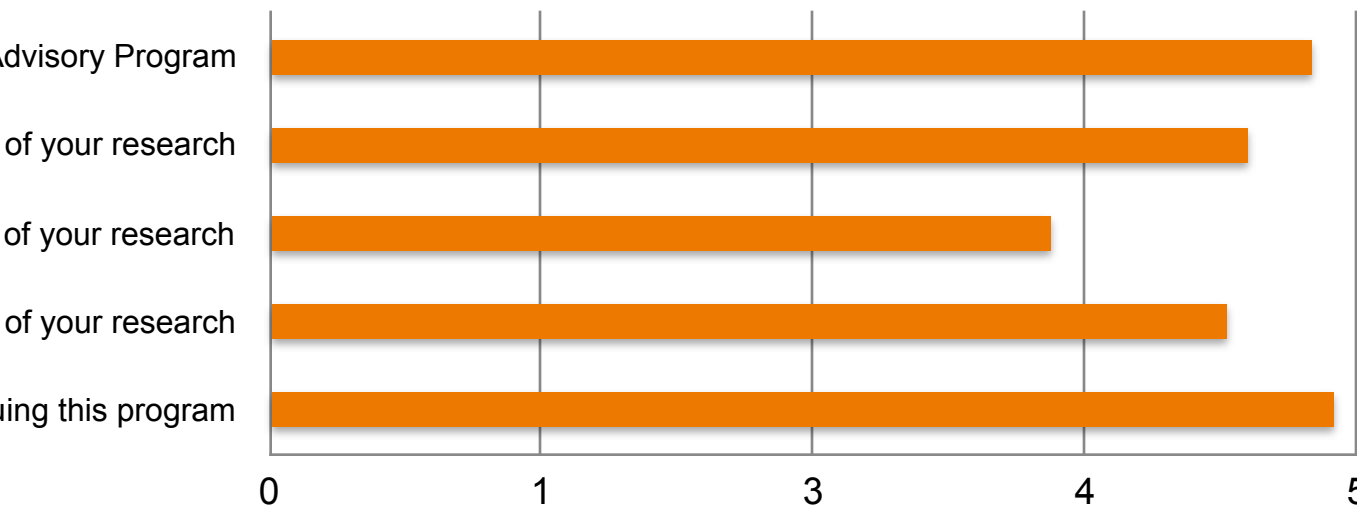
Science & SciLifeLab Prize

- A grand prize winner receives a prize of US $30,000; and each of the three category winners will receive US $10,000

- The grand prize winning essay will be published in *Science* and essays from the three category winners will be published online

"to incent our best and brightest to continue in their chosen fields of research"

Also of interest to you

- **SciLifeLab The Svedberg** seminar series
  - PhD student course (1 credit for 10 occasions)
  - Every other Monday 15.15 at BMC, Uppsala
  - Invites leading scientist from worldwide - field of bioscience
  - Open for all to attend!

  https://www.scilifelab.se/education/seminars-and-symposia/

- Roadshows, Open House, Mini-symposia

- Scientific conferences
  - SciLifeLab **Science Summit**, May 3
  - SciLifeLab **PhD student day**, June 8

SciLifeLab PhD student day

Practical information for the course

Attendance sheet
- Please sign morning and afternoon

Fika and lunches together every day
- 10, 12:00, 15

Course dinner
- Wed, 29/3 at 18:00, Restaurang Lingon
- Sign up latest today before lunch
- Select preferred **main course** (meat, fish, veg)
- Cancel latest Wed morning.

SciLifeLab

www.scilifelab.se

Elina Staaf
Project Coordinator
elina.staaf@scilifelab.uu.se
070-1679839