

HALFDAN RYDBECK

Profile

Expert in applied bioinformatics with 8+ years of experience in providing transparent and reproducible solutions for diverse areas of biological and medical research. Deep knowledge of underlying issues in need of bioinformatics support. Experience includes genetic epidemiology of rare diseases, integrative omics analysis of data from cancer tissue and immune cells, microarray analysis, preprocessing to final analysis of NGS output. The integrative analysis, performed during phd, encompassed, gene expression, copy number variation, promoter methylation and histone occupancy data. Integrative analysis of proteomics, clinical and brain imaging data. Focused on keeping at the forefront of the latest within computational omics analysis. I have emotional intelligence, strong communication skills and am a great teammate. I am dynamic and work very hard to achieve the intended result which has been decided from the start on time. I am not pretentious. I speak my mind and make it safe for others to do so. My colleagues say about me that I am hardworking, joyful and problemsolving.

Objective

To further develop my skills in developing reproducible bioinformatics pipelines and applying AI and ML. To share attained knowledge.

Relevant competences

- NGS preprocessing and analysis
- Integrative omics analysis
- Pathway and network analysis
- shell, (Python), R, git, Github, Nextflow, Docker
- scientific communication and writing



RESEARCH EXPERIENCE

2022
|
2020



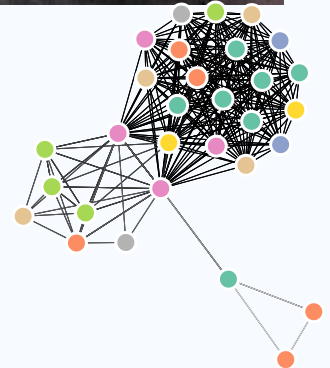
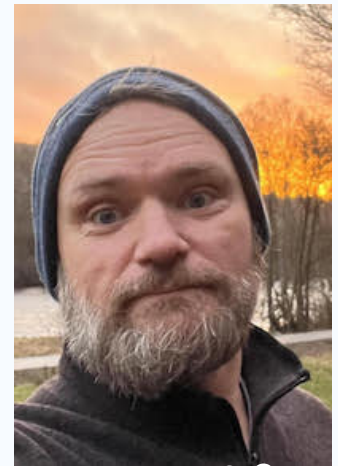
Researcher bioinformatics



Sahlgrenska ac., Univeristy of Gothenburg

📍 Göteborg, Sweden

- Developed a [pipeline](#) of rscripts to perform pathway and correlation network analysis of cord blood plasma proteomics data.
- Worked with Rstudio and the R package collections Bioconductor and Tidyverse. Reports where generated with R notebooks and the R package Bookdown. Github and
- GitKraken is used for code version control. Recently applied R packages are DEqMS for differential expression analysis of mass spectrometry data, WGCNA for proteins correlation analysis and ReactomeGSA for pathway analysis



CONTACT

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🐦 [hrydbeck](#)

🔗 github.com/hrydbeck

🔗 halfdanrydbeck.me

in https://www.linkedin.com/in/halfdan_rydbeck

Made with the R package
[pagedown](#).

The source code is available [here](#).

2017
|
2014



Senior engineer bioinformatics



Norwegian Sequencing Center



University of Oslo, Norway

- Set up server infrastructure for NGS data handling. Managed NGS file servers, user access and data delivery.
- Examples of downstream analysis: Blasted an exon sequence against multiple assembled fish genomes to look for systematic loss in phylogeny. Analyzed bacterial methylomes, sequenced with Pacbio in respect to virulens.
- System setup, user management, data preprocessing, delivery and down stream analysis of Illumina and Pacbio sequence data at the Norwegian DNA sequencing center. Workflow automation with cron and make

2008
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2007



Principal engineer



Bioinformatics core facility



Rikshospitalet HF, Norway

- Microarray gene expression analysis
- Developing network-based methods to investigate and visualize clinically relevant patterns in data.

2007
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2006



Research assistant



Human Genetics division



Children's Hospital of Philadelphia, USA

- Bash and scripting for data wrangling and testing Solar, Plink, TDT, Merlin, STATA, SAS, R
- Work primarily done in R Shiny and Javascript (node and d3js).

2005
|
2004



Senior research assistant



Dept. of genetic epidemiology



Nemours Hospital for Children, USA

- Used software for genetic linkage and association studies of diseases/syndroms Velocardiofacial Syndrome, ADHD, Neuroblastoma, Osteoporosis, Cornelia de Lange's syndrome and Myopia · Solar, Plink, TDT, Merlin, STATA, SAS, R

2004
|
2002



Database coordinator



Human Genetics division



Children's Hospital of Philadelphia, USA

- Managed a database for SNP information Progeny2000



TEACHING EXPERIENCE

2018
|
2017



R for reproducible scientific programming



Software carpentry



Oslo Norway

2018
|
2017



Version controlling with git and github



Software carpentry



Oslo Norway

2018
|
2017



Unix



Software carpentry



Oslo Norway

Calmness and excitement are essential prerequisites for good teaching and learning



EDUCATION

2012
|
2007



PhD bioinformatics



Medical faculty, University of Oslo

📍 Oslo, Norway

- PhD project with thesis title: Integrative epigenome analysis¹. Scripts developed in R and [The Genomic Hyperbrowser](#) was used to study the dependencies and select genes, based on genomic, epigenomic and transcriptomic alterations in samples from osteosarcoma and immune cells. The gene expression, promoter methylation and DNA copy number data were acquired by oligonucleotide microarray technology, and the histone modification data was acquired by technology based on chromatin immune precipitation and next generation sequencing, ChIP-seq.
- Developed an R package for clustering of genomic tracks.

2001
|
2000



Master of Science in Bioinformatics



Chalmers University of Technology

📍 Gothenburg, Sweden

1999
|
1993



Master of Science in Molecular biology



University of Gothenburg /Uppsala

📍 Göteborg/Uppsala, Sweden

“Halfdan has shown both analytical and technical skills in his work. He has also shown an ability to work independently and with the eagerness and persistence required for attaining results. I am convinced that Halfdan will be well prepared and suited for works in the biomedical field. Therefore it is a pleasure to recommend him”
Professor Dan Röhme, cmb-genetics University of Gothenburg

Halfdan did a “very good job as a senior engineer at NSC and is a responsible and pleasant person to work with”
Professor Kjetil Sigurd Jakobssen, founder of Norwegian DNA Sequencing Center



SELECTED PUBLICATIONS, POSTERS, AND TALKS

2022



The proteome signature of cord blood plasma with high hematopoietic stem and progenitor cell count²

Stem Cell Research

- Authored with Anders K. Nilsson, Annika Thorsell, Sofia Frändberg, Helena Barreto Henriksson, Camilla Hesse, Gunnel Hellgren, Pia Lundgren, AnnHellström

2015



ClusTrack: Feature Extraction and Similarity Measures for Clustering of Genome-Wide Data Sets³

Plos One

- Authored with Geir Kjetil Sandve, Egil Ferkingstad and Eivind Hovig

2010



The Genomic HyperBrowser: inferential genomics at the sequence level⁴

Genome biology

- Authored with Geir K Sandve, Sveinung Gundersen, Ingrid K Glad, Lars Holden, Marit Holden, Knut Liestøl, Trevor Clancy, Egil Ferkingstad, Morten Johansen, Vegard Nygaard, Eivind Tøstesen, Arnaldo Frigessi & Eivind Hovig

https://www.researchgate.net/profile/Halfdan_Rydbeck; ORCID identification number: 0000-0003-1606-38420000



SPECIAL COMPETENCES

- **Preprocessing of NGS output**
FASTQC, etc
- **Downstream analysis of NGS output**
Gene centric(DEG), GO and pathway centric, correlation module centric
- **Programming**
R, shell, Python
- **Version control**
git, Github



LANGUAGES

- **Swedish (native)**
- **English (native)**
- **Norwegian (good)**



CONFERENCE PARTICIPATION

- **Pangenomes Evolution and Computation⁵**



PEDAGOGIC EXPERIENCE

- **Tutoring PhD students**



REFERENCES

- **Carina Mallard**
Department of Physiology, GU | Prof. | Carina.Mallard@neuro.gu.se | 0705-63 10 04
- **Kjetill Sigurd Jakobsen**
Manager at Norwegian DNA Sequencing Center, UIO | Prof. | k.s.jakobsen@ibv.uio.no | 00-47-22854602



- 1: <https://www.duo.uio.no/handle/10852/39398?locale=attribute=en>
- 2: <https://www.sciencedirect.com/science/article/pii/S1873506122001015>
- 3: https://www.researchgate.net/publication/277618279_ClusTrack_Feature_Extraction_and_Similarity_Measures_for_Clustering_of_Genome_Wide_Data_Sets
- 4: <https://link.springer.com/article/10.1186/gb-2010-11-12-r121>
- 5: https://pgec2021.schlieplab.org/PGEC2021_Program.pdf