

# Jonas Falck

BIOINFORMATICS

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## Education

### Radboud University

Nijmegen, Netherlands

B.S. IN MEDICAL BIOLOGY

2014

- Sparked interest in molecular biology, omics and ngs technologies.
- Started to invest time in understanding the linux operating system.

### Radboud University

Nijmegen, Netherlands

M.S. IN MEDICAL BIOLOGY

2017

- Developing a wide range of (bio)informatic and machine learning/data science skills in internships and extracurricular.

## Skills

### IT skills

- **r/bioconductor:** tidyverse, ggplot2, grid, caret, shiny
- **python:** pandas, matplotlib, scikit-learn, django, SQLAlchemy, flask, jinja2
- **productivity:** shell scripting, regex
- **database:** SQL, elasticsearch
- **writing:** LaTeX, markdown, html

### Data science/Machine learning

- **supervised:** linear regression, knn, decision trees
- **unsupervised:** HCA, PCA, kmeans
- **statistics:** parametric and non-parametric methods
- **visualization:** publication ready plots, development of custom visualizations using grid

### Software

- **operating systems:** linux, windows, macOS
- **version control:** git, gitlab
- **container and virtualization:** docker, virtualbox, qemu
- **IDE:** vscode, rstudio
- **web:** nginx, shiny
- **office solutions:** microsoft, google, libreOffice
- **graphics:** adobe photoshop, gimp

### Languages

- **English:** fluent
- **Dutch:** fluent
- **German:** native

## Experience

### Identification and ranking of p63 binding sites putatively involved in the etiology of non-syndromic cleft lip with or without cleft palate.

Nijmegen, Netherlands

Radboud University Medical Center Nijmegen RUNMC

2017

- In-silico prediction and in-vitro validation of clinically relevant transcription factor binding sites using an integrative multiomics approach.
- Took ownership of a network research project and pioneered bioinformatical research in a solely network focused lab, teaching myself the necessary bioinformatic skills.
- Development of a pipeline to integrate publicly available and in-house multi-omics data (Chip-seq, SNPs, GWAS, linkage disequilibrium).
- Effective communication and presentation of bioinformatical methods and results to researches with no bioinformatical expertise.

### CTCF-motif directionality controls CTCF-mediated chromatin interactions and correlates with topological domain structure.

Nijmegen, Netherlands

CENTER FOR MOLECULAR AND BIOMOLECULAR INFORMATICS CMBI

Jan. 2016 - Jun. 2017

- Drove and transformed a loosely defined, explorative research project into a hypothesis driven project resulting in a publication.
- Hypothesis generation by leveraging multiomics datasets describing different dimensionalities of the genome, ranging 1D (sequence), 2D (ChIP-Seq), and 3D data (ChIA-PET, Hi-C).
- Hypothesis testing by applying parametric and non-parametric methods, randomization, as well as modeling of chromatin loops.
- Applying unsupervised machine learning techniques e.g. PCA, HCA as well as a multitude of visualizations for data exploration.

## Extracurricular Activity

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### B10S (B1t On the Security, Underground hacker team)

S.Korea

CORE MEMBER

Nov. 2011 - PRESENT

- Gained expertise in penetration testing areas, especially targeted on web application and software.
- Participated on a lot of hacking competition and won a good award.
- Held several hacking competitions non-profit, just for fun.

### WiseGuys (Hacking & Security research group)

S.Korea

MEMBER

Jun. 2012 - PRESENT

- Gained expertise in hardware hacking areas from penetration testing on several devices including wireless router, smartphone, CCTV and set-top box.
- Trained wannabe hacker about hacking technique from basic to advanced and ethics for white hackers by hosting annual Hacking Camp.

### PoApper (Developers' Network of POSTECH)

Pohang, S.Korea

CORE MEMBER & PRESIDENT AT 2013

Jun. 2010 - Jun. 2017

- Reformed the society focusing on software engineering and building network on and off campus.
- Proposed various marketing and network activities to raise awareness.

### PLUS (Laboratory for UNIX Security in POSTECH)

Pohang, S.Korea

MEMBER

Sep. 2010 - Oct. 2011

- Gained expertise in hacking & security areas, especially about internal of operating system based on UNIX and several exploit techniques.
- Participated on several hacking competition and won a good award.
- Conducted periodic security checks on overall IT system as a member of POSTECH CERT.
- Conducted penetration testing commissioned by national agency and corporation.

### MSSA (Management Strategy Club of POSTECH)

Pohang, S.Korea

MEMBER

Sep. 2013 - Jun. 2017

- Gained knowledge about several business field like Management, Strategy, Financial and marketing from group study.
- Gained expertise in business strategy areas and insight for various industry from weekly industry analysis session.

## Writing

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### CTCF-motif directionality controls CTCT-mediated chromatin interactions and correlates with topological domain structure

google docs

MASTER INTERNSHIP, COMPARATIVE GENOMICS, CENTER FOR MOLECULAR AND BIOMOLECULAR INFORMATICS NIJMEGEN

Jan. 2015 - PRESENT

- Drafted daily news for developers in Korea about IT technologies, issues about start-up.

### Identification, ranking and testing of p63 binding sites putatively involved in the etiology of non-syndromic cleft lip with or without cleft palate

Nijmegen, Netherlands

MASTER INTERNSHIP: HUMAN GENETICS, UNIVERSITY MEDICAL CENTER NIJMEGEN

Oct. 2012 - Jul. 2013

- Drafted reports about IT trends and Security issues on AhnLab Company magazine.