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**Abel Jansma****URL**

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**EDUCATION****PhD in Precision Medicine | University of Edinburgh****Sep 2018 - Present**

- I use information theory to construct hypergraphs of genetic interactions that reveal complex cell identities.
- Developed a novel and complex bioinformatics pipeline to analyse > 100k genome-wide transcriptomes on an HPC cluster.
- The pipeline (in closed beta as of Dec. 2022) has users from various subfields of biology.
- Funded through the Precision Medicine programme & jointly supervised by Chris Ponting at the Institute of Genetics and Cancer, Luigi Del Debbio at the Higgs Centre for Theoretical Physics, and Ava Khamseh at the School of Informatics.

**MSc Theoretical Physics | University of Amsterdam****Sep 2015 - July 2018**

- Thesis: *E8 symmetry structures in the Ising model* (supervised by Bernard Nienhuis)
- Visited the **Niels Bohr Institute** in Copenhagen from Feb to Aug 2016.

**BSc Physics and Astronomy | University of Amsterdam****Sep 2012 - July 2015**

- Thesis: *Chaos and Dimensionality in Wormspace* (supervised by Greg Stephens)
- Graduated with Honours/Cum Laude, and a Minor in Computational Science.

**Propedeuse in Art and Technology | HKU university of the Arts****Sep 2011 - July 2012****WORK EXPERIENCE****Research Associate | University of Edinburgh****Oct 2022 - Present**

- Lead R&D of the **Stator** software package.
- Produce and guide original research in an interdisciplinary team.

**Information Officer | SciPost****Oct 2017 - July 2018**

- Expanded the editorial board, profiling and contacting potential new editors.

**Member of the Junior Editorial Board | SPUI25****Feb 2017 - July 2017**

- Co-organised and presented monthly academic & cultural events for a broad audience.

**Distillation Engineer | Mediamatic****Sep 2016 - Feb 2017**

- Designed, built, and demonstrated a bespoke vacuum still for artistic and olfactory research.

**SELECTED PUBLICATIONS AND TALKS**

(A full list is available at <https://abeljansma.nl/publications/>)

**Articles**

- A compositional game to fairly divide homogeneous cake - A. Jansma 2023 (<https://arxiv.org/abs/2301.02281>)
- Higher-order in-and-outeractions reveal synergy and logical dependence beyond Shannon-information - A. Jansma 2022 (<https://arxiv.org/abs/2205.04440>)

## Talks & Poster presentations

- Cybergenetic networks in the mouse brain: higher-order gene regulation and Boolean logic - IGC Biomedical Genomics meeting, Dec 2021 (talk).
- Genetic Interactions and Information Lattices - Mathematical Quantum Physics group, University of Innsbruck, Juli 2021 (talk).
- Model-free estimation of higher-order interactions - CSHL Biology of Genomes conference, May 2021 (poster).
- Complex Gene Regulation: Higher-order interactions in single-cell expression data - European Mathematical Genetics Meeting, April 2021 (long talk).
- Complex gene regulation: higher-order interactions in single-cell expression data - CSHL Network Biology conference, March 2021 (poster).
- A maximally noncommittal physicist looks at genetic interactions - IGC Biomedical Genomics meeting, May 2020 (talk).

## AWARDS

### Protocol Fellowship | Ethereum Foundation

Nov 2022 - Present

- Working with the Robust Incentives group and the Institute for Categorical Cybernetics (CyberCat).
- I model flows of information and resources in complex systems using category theory.

### Technology Scholarship | ASML

Sep 2015 - Sep 2017

- Selected as one of 25 graduates nationwide for a two-year professional development programme, focused on leadership in technology.

## VOLUNTEERING

### Co-host | Computational Biology Journal Club

Feb 2019 - March 2020

- Hosted at the MRC Institute of Genetics and Cancer

### Beekeeper | Anna's Tuin en Ruigte

Oct 2017 - July 2018

- Beekeeper at a public permaculture garden.

### Reader | VoorleesExpress

Nov 2016 - Nov 2017

- I read books to children whose parents were not able to.

### Committee member | BetaBreak

Dec 2014 - Jan 2016

- Moderated and organised public debates on the role of science and technology in society at Amsterdam Science Park.

## SKILLS

### Languages

Dutch (native), English (fluent), German (fluent)

### Programming

Python, R, Nextflow, bash, Git, Haskell, Mathematica, Processing, Arduino

### Visual

L<sup>A</sup>T<sub>E</sub>X, SwiftUI, Photoshop, Grasshopper (Rhino)