

# HENRIK ÅHL, PhD

## Postdoctoral Research Associate

☎ + (44) 7999 306 112   @ henrikaahl@gmail.com   in linkedin.com/in/henrik-ahl   📍 4 Chantry Close, CB4 1AR Cambridge, United Kingdom

## EXPERIENCE

- |                               |   |
|-------------------------------|---|
| Ongoing<br>December 2021      | <b>Research Associate, SAINSBURY LABORATORY, UNIVERSITY OF CAMBRIDGE, Cambridge, UK</b><br>Developed computer simulation frameworks with a strong integrative focus, combining 3/4D experimental data, computational analysis, and theoretical models to elucidate how plants grow. Applied state-of-the-art data-driven methodologies, with an emphasis on high-throughput pipelines, computer vision, statistical analysis, and data-driven mathematical modelling.<br><div><div>Deterministic GRN modelling</div><div>FEM mechanical modelling</div><div>Computer vision</div><div>Numerical simulations</div><div>Confocal imaging</div><div>Machine learning : Support vector machines</div><div>High-performance computing</div><div>Spatiotemporal patterning analysis</div></div> |
| September 2016<br>August 2016 | <b>Research Assistant, SAINSBURY LABORATORY, UNIVERSITY OF CAMBRIDGE, Cambridge, UK</b><br>Established a stochastic partial differential equation framework to simulate the regulatory network and resulting gene expression patterns which govern stem cell identity in plant shoots.<br><div><div>Numerical simulations</div><div>Optimisation</div><div>Stochastic GRN modelling</div><div>High-performance computing</div><div>Itô calculus</div></div>   |
| June 2016<br>July 2015        | <b>Supplemental Instructor, DEPT. OF PHYSICS, LUND UNIVERSITY, Lund, Sweden</b><br>Led weekly supplemental exercise sessions for undergraduate students in physics. Groups of up to 25 people.<br><div><div>Lecturing</div><div>Scientific communication</div></div>  |
| June 2015<br>August 2015      | <b>Research Assistant, DEPT. OF THEORETICAL PHYSICS AND ASTRONOMY, LUND UNIVERSITY, Lund, Sweden</b><br>Investigated the consequences for evolvability of artificial genomes due to various mutation operations. Strong code optimisation focus in C++.<br><div><div>Simulated evolution</div><div>Genetic algorithms</div><div>Linux</div><div>Sequence alignment</div><div>High-performance computing</div></div>   |

## EDUCATION

- |              |   |
|--------------|---|
| 2021<br>2017 | <b>PhD in Applied Mathematics and Theoretical Physics, UNIVERSITY OF CAMBRIDGE, Cambridge, UK</b><br>Thesis : <i>Integrative high-throughput analyses of aerial morphodynamics in plants.</i><br><div><div>3D Segmentation</div><div>Numerical methods</div><div>Confocal imaging</div><div>GRN modelling</div><div>FEM mechanical modelling</div><div>Support vector machines</div><div>Quantitative phenotyping</div><div>Single-cell tracking</div><div>Image registration</div></div> |
| 2017<br>2016 | <b>MPhil in Computational Biology, UNIVERSITY OF CAMBRIDGE, Cambridge, UK</b><br>Thesis : <i>In vivo single cell dynamics of the Arabidopsis thaliana aerial stem cell niche. With distinction.</i><br><div><div>Computer vision</div><div>Functional genomics</div><div>Genome informatics</div><div>Structural biology</div><div>Systems biology</div></div>  |
| 2016<br>2014 | <b>BSc in Theoretical Physics, LUND UNIVERSITY, Lund, Sweden</b><br>Thesis : <i>Linking the dynamics of genetic algorithms to the encoding of information. With distinction</i><br><div><div>Artificial neural networks</div><div>Mechanics</div><div>Quantum physics</div><div>Genetic algorithms</div><div>Scientific programming</div></div>   |
| 2013<br>2011 | <b>BA in Theoretical Philosophy (Unfinished), LUND UNIVERSITY, Lund, Sweden</b><br>Courses in Philosophy, Computer Science, Mathematics, Economics, and Latin.<br><div><div>Scientific &amp; Philosophical methodology</div><div>Logics</div><div>Analysis &amp; Algebra</div><div>Software development &amp; design principles</div></div>   |

## PUBLICATIONS AND SELECT PRESENTATIONS

- 2022 Åhl, H., Willis, L., & Jönsson, H. (2022). Regulation of floral phyllotaxis by auxin transport proteins. *Preprint; in preparation*.
- 2022 Åhl, H., Zhang, Y., & Jönsson, H. (2022). POM2/CSI1 modulates the shoot dome shape through mechanical regulation. *Preprint; in preparation*.
- 2022 Scandinavian Plant Physiology Symposium. Longyearbyen, Svalbard. *Oral presentation*
- 2022 Åhl, H., Zhang, Y., & Jönsson, H. (2022). High-throughput 3D phenotyping of plant shoot apical meristems. *Frontiers in Plant Science*, p.712.
- 2021 Sainsbury Laboratory Seminar. Sainsbury Laboratory at the University of Cambridge, Cambridge, UK. *Oral presentation*
- 2021 Åhl, H. (2021). Integrative high-throughput analyses of aerial morphodynamics in plants (Doctoral dissertation). *University of Cambridge*.
- 2020 Morphogenesis seminar, Remote. *Oral presentation*
- 2019 Bhatia, N., Åhl, H., Jönsson, H., & Heisler, M. G. (2019). Quantitative analysis of auxin sensing in leaf primordia argues against proposed role in regulating leaf dorsoventrality. *Elife*, 8, e39298.
- 2019 12th Plant Development Conference, Retzbach, Germany. *Poster presentation*
- 2019 Merlevede, A., Åhl, H., & Troein, C. Homology and linkage in crossover for linear genomes of variable length (2019). *PLoS ONE*, 14(1), e0209712.
- 2018 Sainsbury Laboratory Seminar. Sainsbury Laboratory at the University of Cambridge, Cambridge, UK. *Oral presentation*
- 2017 Montpellier Morphogenesis Spring School. Montpellier, France. *Oral presentation*

## COMPETENCIES

Scientific computing	Git, SVN, Eclipse, Spyder, Linux (Ubuntu, OpenSUSE), Slurm, Sh/Bash/Zsh
Graphical	Adobe (Photoshop, Illustrator), Inkscape
Writing and presentation	Vim, $\LaTeX$ , Microsoft Office (Word, Excel, PowerPoint), WPS

## LANGUAGES

Swedish	● ● ● ● ●
English	● ● ● ● ●
German	● ● ○ ○ ○

## SCIENTIFIC PROGRAMMING

Python	● ● ● ● ●
R	● ● ● ● ○
Java	● ● ● ○ ○
C++	● ● ● ○ ○

## VOLUNTEERING

2020-	Reviewer, PLoS ONE
2020-2021	Instructor, St Edmund's College Tabata Club
2019-2022	Pro se litigation, EW High Court & CFC
2017-2021	Founder, St Edmund's College Poetry Society
2015	Coordinator, Fjällräven Classic
2013-2014	Coordinator, Ordkonst
2013-2014	Producer and Show host, Lyriklådan, Radio AF

## AWARDS

2021	Crane's Charity Award
2020	University of Cambridge Support Award
2020	St Edmund's College Monetary Award
2019	St Edmund's College Monetary Award
2017	Montpellier Spring School Travel Award
2017	St Edmund's College Sports Award
2014	Akademiska Föreningen Annual Award
Total	£6000

## PERSONAL INTERESTS

LEISURE :	Chess, Photography, Nature & Wildlife
SPORT :	Climbing, Ultimate frisbee, Powerlifting, Tabata