Marc Williams

Computational biologist

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Current employment

2017–Present **Post-Doc**, *QMUL*, London.
Postdoc with Prof. Trevor Graham at Barts Cancer Institute

Education

2014–2017 **PhD**, *University College London*, London.
Title: Methods and practice of detecting selection in human cancers
Supervisors: Prof. Trevor Graham & Dr. Chris Barnes

2013–2014 **MRes, Modelling Biological Complexity**, *University College London*, London, Distinction.
Research projects in Computer Vision, Evolutionary Biology, Systems Biology and Evolutionary Cancer Biology

2008–2012 **MPhys, Physics**, *University of Manchester*, Manchester, 1st Class.
Final year project was developing experimental and computational methods to accurately quantify radioactivity of isotopes used in PET imaging (conducted at the Wolfson Medical Imaging Centre.)

Areas of expertise

Integrating data with theory using robust statistical methods.

Bioinformatics: Analysis of high throughput cancer genomics data including whole genome sequencing, whole exome sequencing and targeted sequencing data.

Mathematical modelling: Mathematical modelling using stochastic processes, differential equations and simulation based methods, particularly with applications to evolutionary systems.

Statistics: Regression, survival analysis, hypothesis testing, Markov Chain Monte Carlo methods for Bayesian inference, Approximate Bayesian Computation methods for likelihood free Bayesian inference.

Computer skills

Programming languages: R, Julia, Git and Bash (daily) Mathematica (often) Python, Matlab, C++, Java (occasionally)

Operating systems: Windows, macOS, Linux and Linux based high performance clusters

Writing and design: LaTeX, Microsoft Office Suite, Adobe Illustrator

Teaching

2015-2016 **Tutor**, *Introduction to R Course*, UCL, London.
Taught "Introduction to R" over a semester to first year undergraduate students in biology. Held weekly tutorials with 10-15 students.

2014-2016 **Tutor**, *SysMIC*, UCL, London.
Demonstrated on the SysMIC Quantitive Skills for Bioscientists course for bioscience PhD students. Supported students with assignments in R, Matlab and bash.

2012-2013 **Classroom assistant**, Technical School, Nova Gorica, Slovenia.
Delivered lessons in English, Mathematics and Physics.

Languages

Fluent English & Welsh

Beginner Spanish

Publications

Preprints

M. J. Williams, B. Werner, C. Curtis, C. P. Barnes, A. Sottoriva, and T. A. Graham. Quantification of subclonal selection in cancer from bulk sequencing data. *bioRxiv*, 2016.

Articles

M. J. Williams, B. Werner, C. P. Barnes, T. A. Graham, and A. Sottoriva. Identification of neutral tumor evolution across cancer types. *Nature Genetics*, 48(3):238–244, Mar. 2016.

Reviews & Commentaries

M. J. Williams, B. Werner, T. A. Graham, and A. Sottoriva. Functional versus non-functional intra-tumor heterogeneity in cancer. *Molecular & Cellular Oncology*, Apr. 2016.

Talks and Presentations

Conference talks

- Mathematical Models in Ecology and Evolution, London, July 2017 (*Invited*)
- London Julia Meetup, December 2016 (*Invited*)
- European Conference in Mathematical and Theoretical Biology, Nottingham, July 2016
- Quantitive Genomics, London, June 2016
- European Society of Molecular and Functional Imaging in Radiology, Utrecht, February 2016
- Cancer Evolution Through Space And Time, Plon, Germany, September 2015

Seminars

- Department of Medicine, Sheffield, March 2017

Workshops

- Quantification and modelling of spatial structures in colorectal cancer, Adelaide, November 2015
- Integrated Mathematical Oncology Workshop, Tampa Florida, November 2014

Grants and funding

- Travel grant to attend *European Conference in Mathematical and Theoretical Biology* from University College London. **Amount:** £250
- Travel grant to attend *Integrated Mathematical Oncology Workshop, Tampa Florida* from Moffit Cancer Centre. **Amount:** £1000

References

Available on request.