



Big Data in Biology: Challenges and Opportunities for Health Care and Research

Ewan Birney

European Bioinformatics Institute

7.30pm, Monday 14th November, 2016
Storey's Way, Cambridge CB3 0DS

Event Information

CSAR lectures are open to all: CSAR members are admitted free, pupils and students may register for free membership at the lecture reception desk. Non-members are asked to make a nominal contribution of £3.00.

Location: Wolfson Lecture Theatre, Churchill College, Storey's Way, Cambridge, CB3 0DS

Refreshments: Coffee and biscuits are available in the Wolfson Foyer from around 7pm. Before lectures, attendees can use the college canteen for dinner (from 5:45pm) and, after lectures, the bar. Cash can be used at both.

Car parking: Attendees may park in the Senior Car Park on Churchill Road off Storey's Way. More parking is available further along Churchill Road, and in the Möller Centre at the far end.

Membership: There is a range of membership options; just ask at the reception desk in the lecture theatre foyer before the talk, or visit our website www.csar.org.uk.

Ewan writes:

"Molecular biology is now a leading example of a data intensive science, with both pragmatic and theoretical challenges being raised by data volumes and dimensionality of the data. These changes are present in both "large scale" consortia science and small scale science, and across now a broad range of applications – from human health, through to agriculture and ecosystems. All of molecular life science is feeling this effect. This shift in modality is creating a wealth of new opportunities and has some accompanying challenges. In particular there is a continued need for a robust information infrastructure for molecular biology. This ranges from the physical aspects of dealing with data volume through to the more statistically challenging aspects of interpreting it. A particular problem is finding causal relationships in the high level of correlative data. Drawing on recent experience I will explore both the "blue collar" challenges of data volume and the "white collar" challenges of interpretation.

I will end with the serendipitous invention of using DNA for an entirely different reason – as a long-time horizon digital archiving material. I will describe this method and some of its benefits (as well as a few downsides) and explain how a future culture in 10,000 years time may still be able to read all of Shakespeare's sonnets – and perhaps much more."

Ewan Birney is Director of EMBL-EBI with Dr Rolf Apweiler, and runs a small research group. He played a vital role in annotating the genome sequences of human, mouse, chicken and several other organisms; this work has had a profound impact on our understanding of genomic biology. He led the analysis group for the ENCODE project, which is defining functional elements in the human genome. Ewan's main areas of research include functional genomics, assembly algorithms, statistical methods to analyse genomic information (in particular information associated with individual differences) and compression of sequence information.

Ewan completed his PhD at the Wellcome Trust Sanger Institute with Richard Durbin, and worked in the laboratories of leading scientists Adrian Krainer, Toby Gibson and Iain Campbell. He has received a number of prestigious awards including the 2003 Francis Crick Award from the Royal Society, the 2005 Overton Prize from the International Society for Computational Biology and the 2005 Benjamin Franklin Award for contributions in Open Source Bioinformatics. Ewan was elected a Fellow of the Royal Society in 2014 and a Fellow of the Academy of Medical Sciences in 2015.

Ewan is a non-executive Director of Genomics England, and is a consultant and advisor to a number of companies, including Oxford Nanopore Technologies and GSK.

Please note: The lecture will be preceded by a five-minute CSAR AGM

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