University of Birmingham

Dr David Grainger PhD

Reader in Molecular Microbiolgy
Wellcome Trust Career Development Fellow

School of Biosciences (/schools/biosciences/index.aspx)

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About

Dr Grainger is an expert in the field of bacterial chromosome biology. He relocated his laboratory to the University of Birmingham in March 2011 having previously established a successful research group at the University of Warwick. He is a life-long supporter of Wolverhampton Wanderers FC and attributes his capacity to cope with the frequent disappointments that befall a research scientist to this. Take a look at what's currently going on in the **Grainger lab here (https://twitter.com/GraingerLab)** .

Qualifications

- PhD (University of Birmingham)
- PGCE (University of Wolverhampton)
- BSc (University of Birmingham)

Biography

David's first degree (Biochemistry) was awarded by the University of Birmingham in 1999. Following this, David trained as a teacher at the University of Wolverhampton (2000). Keen to reengage with the cutting edge research that he had been exposed to as an undergraduate, David returned to Birmingham to complete his PhD studies (2004). Employment as a post-doctoral research associate followed. During this time David developed the use of high-throughput techniques to map gene regulatory events in bacteria.

In 2008 David was awarded a prestigious Career Development Fellowship by the Wellcome Trust and used this grant to set up his research group at the University of Warwick. During this time David established collaborations with biophysical scientists and began studying DNA and its interactions at the single-molecule level.

In 2011 David relocated his research group to Birmingham. His current research is focused on deciphering the chromosome biology of pathogenic bacteria.

Teaching

David teaches the bacterial cell cycle (Bio317) and microbial genomics (BioM25).

Postgraduate supervision

Davis is always keen to welcome enthusiastic individuals to the lab. Contact him directly to discuss projects currently available

Research

Research Theme within School of Biosciences: Molecular Microbiology

Bacterial chromosome biology, pathogenicity and stress response; high-throughput analysis of DNA binding events; single molecule analysis

DNA can be envisaged as a long piece of string and, just like string, if not carefully wound, DNA becomes a tangled mess. This presents a problem for living organisms because they have to package their string of DNA within the confines of a small compartment (the cell). Cells have evolved numerous mechanisms to package DNA and, for more complicated organisms (for example humans and plants) we have a reasonably good understanding of how these mechanisms work. However, our understanding of chromosome folding in bacteria (such as the familiar organisms E. coli and Salmonella) is less well developed.

David's laboratory is focused on understanding mechanisms of DNA folding in bacteria. David is also interested in how this process impinges upon gene expression, DNA replication and pathogenicity.

Other activities

David is keen to engage with the public on scientific topics and was recently a runner up in the "science snaps" competition that utilised scientific imagery to arouse public interest in the sciences. David's laboratory run a **Twitter (https://twitter.com/GraingerLab)** feed where they discuss current issues in science. Take a look and find out what life is like in the Grainger lab!

Publications

Selected recent publications:

Singh SS, Singh N, Bonocora RP, Fitzgerald DM, Wade JT, Grainger DC (2014) Widespread suppression of intragenic transcription initiation by H-NS. *Genes Dev.* (advanced access) (http://genesdev.cshlp.org/content/early/2014/01/21/gad.234336.113.full.pdf+html)

Singh SS and Grainger DC (2013) H-NS Can Facilitate Specific DNA-binding by RNA Polymerase in AT-rich Gene Regulatory Regions. *PLoS Genet.* 9(6):e1003589 (http://www.plosgenetics.org/article/metrics/info%3Adoi%2F10.1371%2Fjournal.pgen.1003589;jsessionid=F3A9C924A493510A0FD1A738F0142F40)

Chintakayala K, Singh SS, Rossiter AE, Shahapure R, Dame RT, Grainger DC (2013) *E. coli* Fis Protein Insulates the *cbpA* Gene from Uncontrolled Transcription. *PLoS Genet.* 9(1): e1003152. (http://www.plosgenetics.org/article/info:doi/10.1371/journal.pgen.1003152)

Dame RT, Kalmykowa OJ, Grainger DC (2011) Chromosomal macro-domains and associated proteins: implications for DNA organization and replication in Gram negative bacteria. *PLoS Genet.* 7(6): e1002123. (http://www.plosgenetics.org/article/info%3Adoi%2F10.1371%2Fjournal.pgen.1002123)

click for more of David's publications in PubMed (http://www.ncbi.nlm.nih.gov/pubmed?term=grainger%20dc)

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