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Professor of Molecular Genetics

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About

(/university/colleges/les/research-gallery/chris-thomas.aspx) Professor Thomas joined the University of Birmingham in 1980 as a Lecturer in the Department of Genetics and has been Professor of Molecular Genetics since 1991. He is an internationally recognised authority on bacterial plasmid and mobile DNA and within the university has championed Biotechnology. He was also a founder of the successful Medici Programme that encourages development of Enterprise and Outreach.

Qualifications

MA Biochemistry (University of Oxford, 1974)

DPhil Microbiology (University of Oxford, 1977)

Biography

After undergraduate training at The Queen's College in Oxford (1970-1974) and postgraduate study at Linacre College Oxford (1974-1977), Chris Thomas worked with Professor Donald Helinski in California funded by an MRC Travelling Fellowship (1977-1979). He then returned to a Lectureship in Genetics at the University of Birmingham in 1980. He was promoted to a personal Chair in 1991. He was first Director of the Biosciences Graduate Research School from 1999-2004 and was the first Director of the University Graduate School from 2005-2009. He was Editor in Chief for the journal Microbiology from 2000-2005. He was one of the founders of the International Society for Plasmid Biology in 2004 and was its first Secretary.

Teaching

Professor Thomas is Director of Graduate Research in the College of Life and Environmental Sciences. He supervises PhD students and Undergraduate/Masters projects and delivers postgraduate training. His prime area of expertise is bacterial genetics, cell biology and biotechnology. He currently teaches first year Genetics (Bio154) as well as contributing to third year courses Bio317 (Prokaryotic Genetics and Gene Regulation) and Bio303 (Applied and Environmental Microbiology).

Postgraduate supervision

For a list of possible PhD projects offered by Prof Thomas **www.findaphd.com/search/customlink.asp?inst=birm-Biol&supersurname=Thomas (http://www.findaphd.com/search/customlink.asp?inst=birm-Biol&supersurname=Thomas)**

Research

Research Theme within School of Biosciences: Molecular Microbiology

Microbial genetics and biochemistry, particularly in relation to plasmids, antibiotic resistance and antibiotic biosynthesis

Full research description

Professor Thomas' research covers two areas:

Bacterial plasmids: replication, stability, gene spread, global regulation

Bacterial plasmids are important because of their role in spreading genes horizontally within bacterial populations and as tools for genetic manipulation. His group has carried out detailed investigations of the genes which control DNA replication, plasmid segregation and conjugative transfer between dividing cells, including how they are regulated with the view to help displace them in clinical and veterinary contexts but improve their properties as vectors. He is collaborating with a number of colleagues to understand plasmids as systems and as agents underpinning the emergence of new infectious diseases due to the spread in the environment.

Polyketide antibiotic biosynthesis

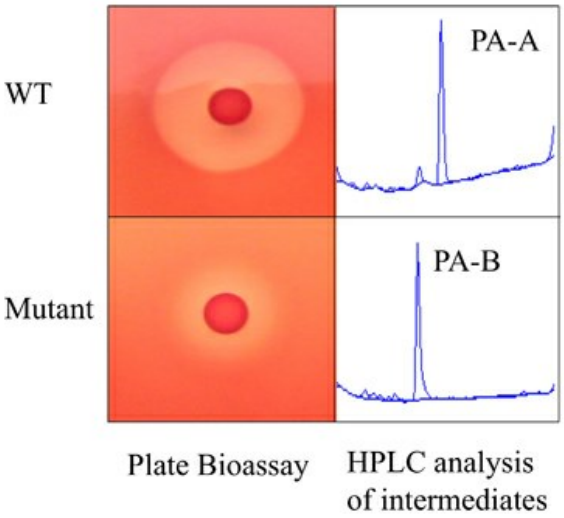
New antibiotics are required for use in medicine. We are working on two important and related pathways. First, we are studying biosynthesis of Mupirocin in *Pseudomonas fluorescens* with a view to generating new forms of this polyketide antibiotic that can be used against the superbug MRSA. This antibiotic has a number of unusual features that may be important for expanding the repertoire of building blocks for synthetic biology. Second, we are studying the biosynthesis of the related antibiotic Thiomarinol in marine bacteria in order to understand how the additional elements of this antibiotic are made and how they increase the potency of the antibiotic compared to mupirocin.

The Thomas lab is carrying out mutational analysis of the pathway by which

Other activities

Professor Thomas is Managing Director of Plasgene, a spinout company set up to

Pseudomonas fluorescens synthesises the antibiotic mupirocin (Pseudomonic Acid A) - mutants accumulate intermediates.



commercialise tools for plasmid displacement.

Publications

AS Haines (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-1), **X Dong (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-2)**, **Z Song (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-3)**, **R Farmer (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-4)**, **C Williams (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-5)**, **J Hothersall (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-6)**, **E Płoskoń (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-7)**, **P Wattana-amorn (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-8)**, **ER Stephens (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-9)**, **E Yamada (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-10)**, **R Gurney (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-11)**, **Y Takebayashi (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-12)**, **J Masschelein (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-13)**, **RJ Cox (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-14)**, **R Lavigne (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-15)**, **CL Willis (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-16)**, **TJ Simpson (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-17)**, **J Crosby (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-18)**, **PJ Winn (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-19)**, **CM Thomas (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-20)**, **MP Crump (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#auth-21)** (2013) A conserved motif flags acyl carrier proteins for β-branching in polyketide synthesis *Nature Chemical Biology,* doi:10.1038/nchembio.1342
http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#access (http://www.nature.com/nchembio/journal/vaop/ncurrent/pdf/nchembio.1342.pdf#access)

Murphy, A.C., Fukuda, D., Song, Z., Hothersall, J., Cox, R.J., Willis, C.L., Thomas. C.M. and Simpson, T.J. (2011) Novel Thiomarinol antibiotics active against MRSA are generated by mutagenesis and mutasynthesis of Pseudoalteromonas SANK73390. Angewandte Chemie International Edition 50, 3271–3274.

Hothersall, J., Wu, J., Murphy, A., Shields, J., Stephens, E., Cooper, H., Campbell, G., Williams, P., Chris Willis, C., Simpson, T.J. and Thomas, C.M. (2011) Manipulation of quorum sensing regulation in Pseudomonas fluorescens NCIMB 10586 to increase mupirocin production. Applied Microbiology and Biotechnology 90, 1017- 1026.

Fukuda, D., Haines, A.S., Song, Z., Murphy, A., Hothersall, J., Stephens, E.R., Cox, R., Crosby, J., Willis, C., Simpson, T.J., Thomas, C.M. (2011) A natural plasmid uniquely encodes two antibiotic pathways creating a potent hybrid. PLoS ONE e0018031.

Hothersall, J., Wu, J., Rahman, A.S., Shields, J.A, Haddock, J., Johnson, N., Cooper, S.M., Stephens, E., Cox, R.J., Crosby, J., Willis, C.L., Simpson, T.J. and Thomas, C.M. (2007). Mutational analysis reveals that all tailoring region genes are required for production of polyketide antibiotic mupirocin by Pseudomonas fluorescens: pseudomonic acid B biosynthesis precedes pseudomonic acid A. J Biol Chem 282, 15451-15461.

Wu, J., Hothersall, J., Mazzetti, C., O'Connell, Y., Shields, J.A., Rahman, A.S., Russell J. Cox, R.J., John Crosby, J., Simpson, T.J., Thomas, C.M. and Willis, C.L. (2008) In vivo Mutational Analysis of the Mupirocin Gene Cluster Reveals Labile Points in the Biosynthetic Pathway: the "Leaky Hosepipe" Mechanism. ChemBiochem 9, 1500-1508.

Bingle, L.E.H., Rajasekar, R.V., Muntaha, S.T., Nadella, V., Hyde, E.I. and Thomas, C.M. (2008) A single aromatic residue in transcriptional repressor protein KorA is critical for cooperativity with the coregulator KorB. Mol Microbiol 70, 1502-1514.

Batt, S.M., Bingle, L.E.H., Dafforn, T. and Thomas, C. M. (2009) Bacterial genome partitioning: N-terminal domain of IncC protein encoded by broad host range plasmid RK2 modulates oligomerisation and DNA binding. J Mol Biol 385, 1361-1374.

Mark W. Silby, Ana M. Cerdeño-Tárraga, George Vernikos, Stephen R. Giddens, Robert Jackson, Gail Preston, Xue-Xian Zhang, Scott Godfrey, Andrew Spiers , Simon Harris, Gregory L. Challis, Alice Morningstar, David Harris, Kathy Seeger, Lee Murphy, Simon Rutter, Rob Squares, Michael A. Quail, Elizabeth Saunders, Iain Anderson, Kostantinos Mavromat, Thomas S. Brettin, Stephen Bentley, Joanne Hothersall, Elton Stephens, Christopher M. Thomas, Julian Parkhill, Stuart B. Levy, Paul B. Rainey, Nicholas R. Thomson. (2009) Genomic and functional analyses of diversity and plant interactions of Pseudomonas fluorescens. Genome Research 10, R51

Shields, J.A., Rahman, A.S., Arthur, C.J., Hothersall, J., Crosby, J., Simpson, T.J., Thomas, C.M. (2010) Phosphopantetheinylation and Specificity of Acyl Carrier Proteins in the Mupirocin Biosynthetic Cluster. ChemBioChem **2010**, 248-255.

Hale, L., Lazos, O., Haines, A.S., Thomas, C.M. (2010) An efficient stress-free strategy to displace stable bacterial plasmids. BioTechniques, **48**, 223–228

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