SUPA IAC Meeting – 26th May 2016

Physics and Life Sciences

Theme Leader: Gail McConnell since 2016

Speaker: Gail McConnell

Key points regarding theme: all HEI partners involved. 65 T&R academics, 85 research fellows/associates and 90 graduate research students. Major sources of funding are RCUK & H2020, though also some industrial funding.

Several relevant DTCs at present, e.g. Optima programme in Optical Medical Imaging (joint Edinburgh & Strathclyde), PHOQUS (Dundee), Integrative Sensing and Measurement (Glasgow).

Existing Scope of Theme

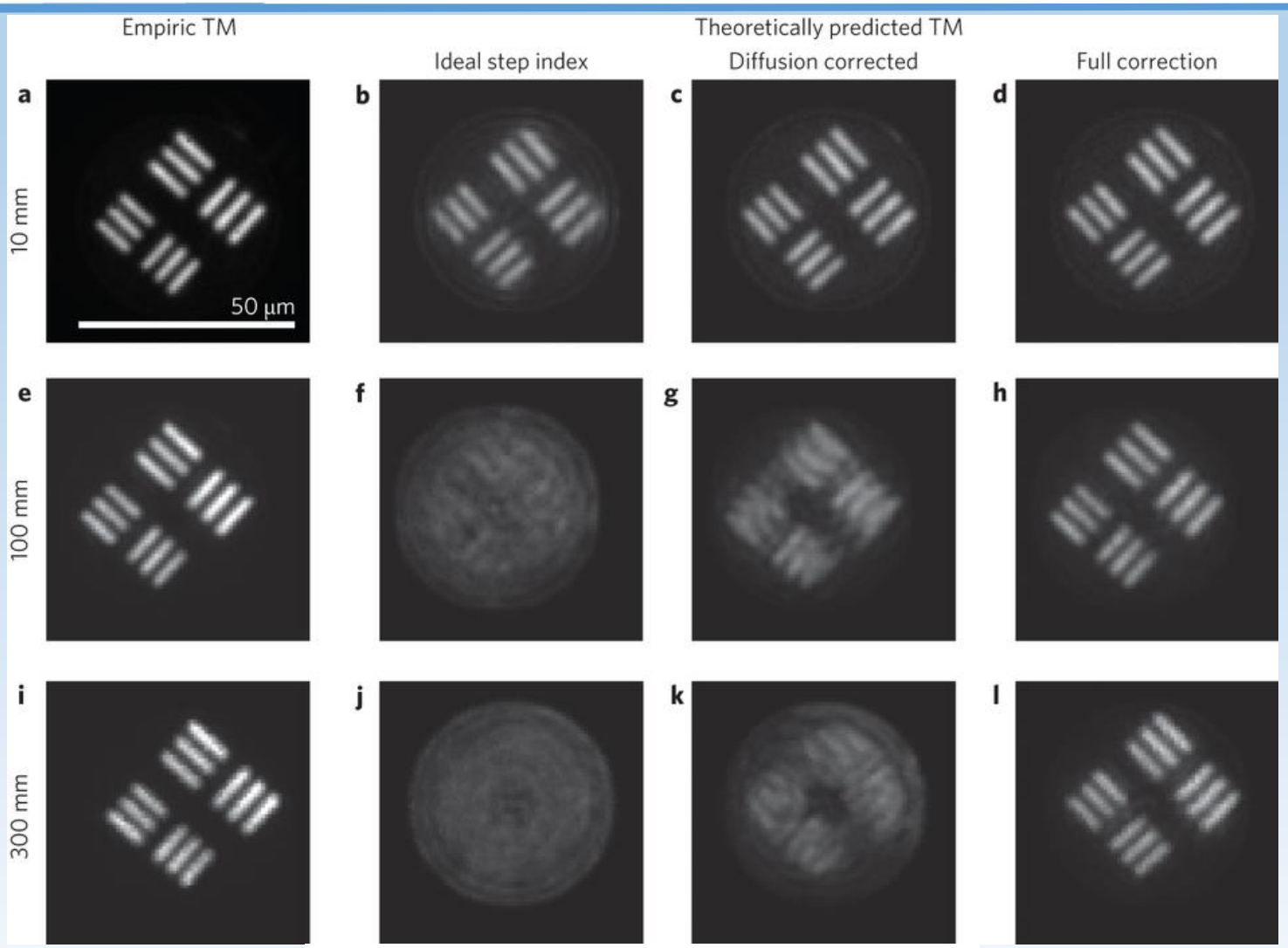
The research within PALS can be classified into three broad themes:

Structure and Dynamics
Protein folding and interactions
Water and hydrogen-bonding interactions

Enzymes and model enzyme systems
Studies of Model Biological Systems
Interactions in their cellular context
Evolving ecosystems and environments
Cell motility

Optical Imaging and Cellular Interactions
Micro-photonics for life sciences
Imaging and Spectroscopy
Nano and Targeted Therapeutics

Illustrative Examples

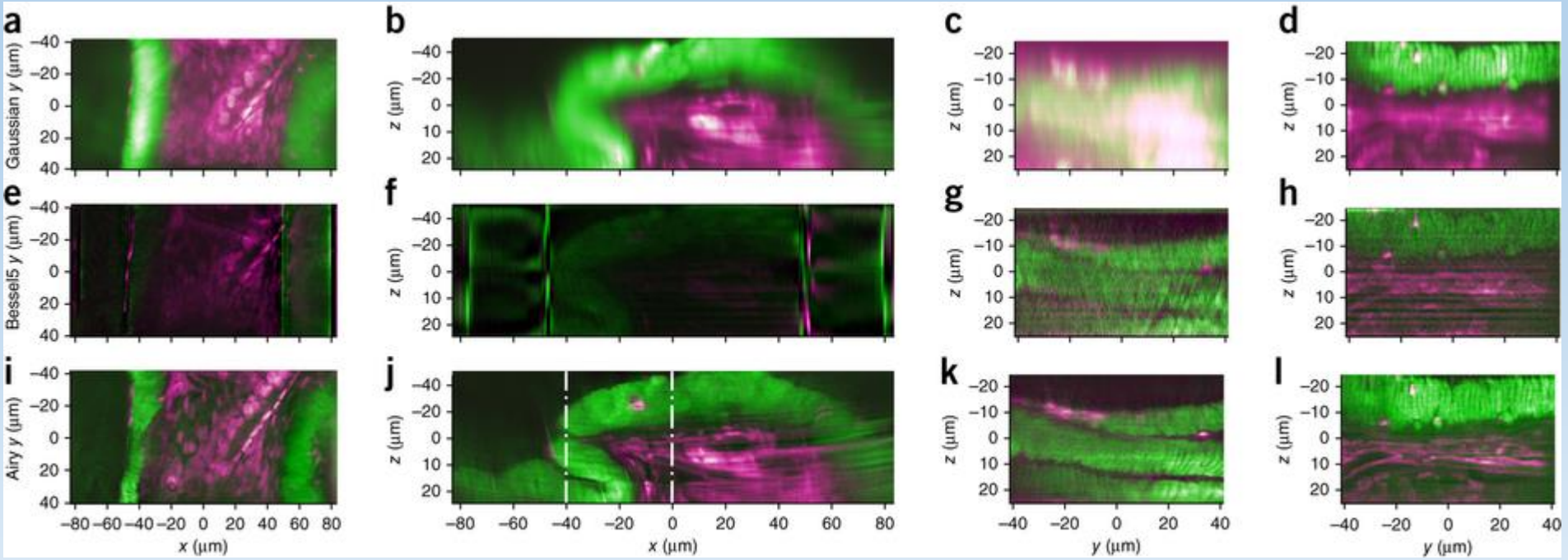


Seeing through chaos in multimode fibres

Martin Plöschner, Tomáš Tyc & Tomáš Čižmár

Nature Photonics **9**, 529–535 (2015) | doi:10.1038/nphoton.2015.112

Illustrative Examples



Light-sheet microscopy using an Airy beam

Tom Vettenburg, Heather I C Dalgarno, Jonathan Nylk, Clara Coll-Lladó, David E K Ferrier, Tomáš Čižmár, Frank J Gunn-Moore & Kishan Dholakia

Affiliations | Contributions | Corresponding authors

Nature Methods **11**, 541–544 (2014) | doi:10.1038/nmeth.2922

Received 30 December 2013 | Accepted 04 March 2014 | Published online 06 April 2014 | Corrected online **14 April 2014**

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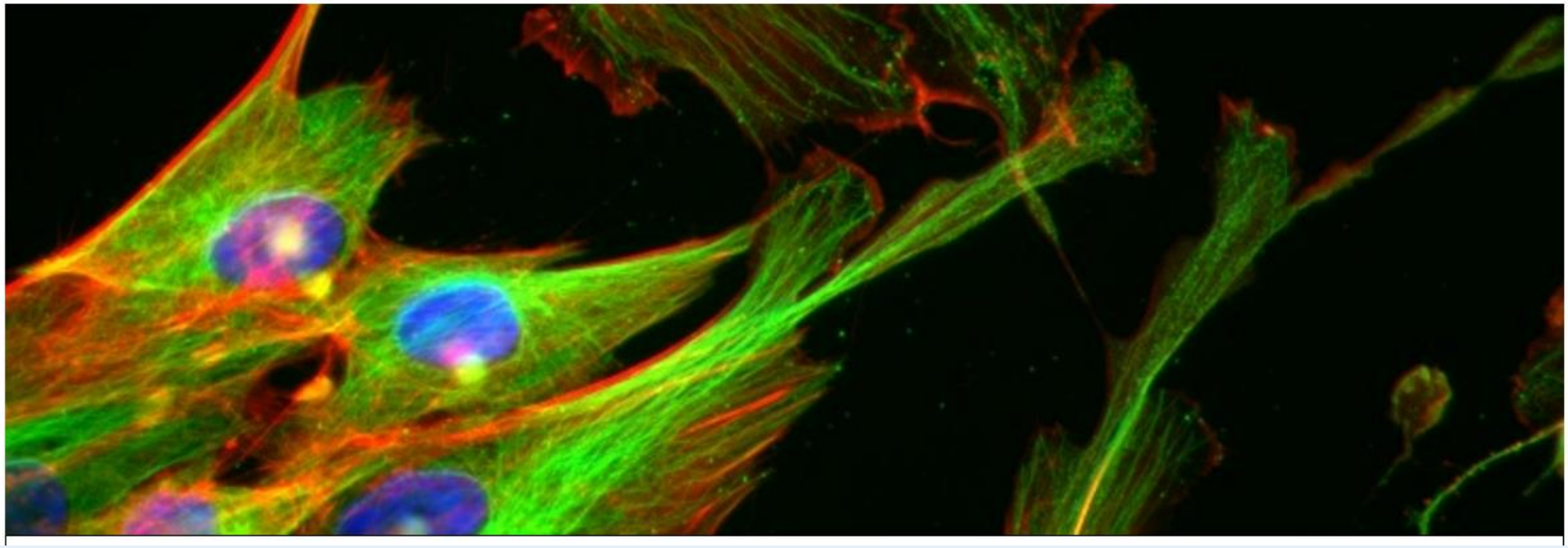
Illustrative Examples

Summer Science Exhibition 2016 | Monday 4 July - Sunday 10 July | London

Giving stem cells a good (nano)kicking



Professor Stuart Reid, UWS

Event attended by >10,000 members of the public, >2,500 school children, and MPs, policy makers, industrial leaders, and representatives from funding bodies.

Illustrative Examples

Epithelial Sheet Dynamics during Primitive Streak Formation as Active Matter. K. Weijer, R. Sknepnek (Dundee), S. Henkes (Aberdeen) BBSRC £705k

Synthetic gene circuits to measure and mitigate translational stress during heterologous protein expression. C. Romano (Aberdeen). BBSRC £850k

Extension to Genting TauRx Diagnostic Centre Sdn Bhd Dementia Project. B Schelter (Aberdeen). £363k (total funding now £1.2M)

Optimising biotechnological protein expression through predictive management of cellular translation. C. Romano (Aberdeen) £113k

Single-molecule studies of light-emitting polymers: observing and manipulating polymer conformation in solution. C. Penedo (St. Andrews) £398k

Lab in a bubble, D. Jaroszynski (Strathclyde) £4.5M

Multi-photon microscopy without scanning for faster than video-rate fluorescence imaging of live cells, G. McConnell (Strathclyde) £110k

Potential Areas for Development

- Overlap with other themes (photonics, Nuclear & Plasma Physics): possibility of joint themed meetings?
- Already considerable cross-HEI activity via DTC: further opportunity for cross-HEI research funding?