3ME Initiative
Future Directions

4th & 5th of July 2011
De Vere: Wychwood Park
Contents

3ME Initiative Overview .......................................................................................................................... 3
Venue ..................................................................................................................................................... 5
De Vere Wychwood Park .......................................................................................................................... 5
Plan of Complex ..................................................................................................................................... 6
Program ................................................................................................................................................ 7
Monday 4th of July 2011 .......................................................................................................................... 7
 Session I  Future Directions: Interactions with the ‘other side’ of campus .......................... 7
 Session II  3ME Outcomes .................................................................................................................. 7
 Session III  Future Directions: Discussions .................................................................................... 7
REF and beyond, Tuesday 5th July 2011 ............................................................................................. 8
 Session I: Postgraduate Training ......................................................................................................... 8
 Session II: REF 2014 ............................................................................................................................ 8
 Session III: Key Guest Speakers ........................................................................................................ 8
 Session IV: Building External Links ................................................................................................... 8
Research Theme Updates ...................................................................................................................... 8
Future Directions Workshop Delegates ............................................................................................... 9
Staff ....................................................................................................................................................... 9
 Dr Nigel Cassidy .................................................................................................................................... 9
 Dr Charles Day .................................................................................................................................... 10
 Professor Andrew Dobson .................................................................................................................. 10
 Prof Alicia El Haj ................................................................................................................................ 11
 Professor Gordon Ferns ....................................................................................................................... 12
 Dr Alan Harper .................................................................................................................................... 13
 Dr Catriona Kelly ................................................................................................................................ 14
 Dr Theocharis Kyriacou ....................................................................................................................... 15
 Dr Ka-Po Lam ..................................................................................................................................... 16
 Dr Shailesh Naire ............................................................................................................................... 17
 Dr Kehoe Oksana ................................................................................................................................ 17
 Professor Pauline Ong ......................................................................................................................... 18
 Dr Sharon Owen .................................................................................................................................... 18
 Dr Dhaya Perumal ............................................................................................................................... 18
 Dr Paul Roach ...................................................................................................................................... 19
 Dr Frank Rutten ................................................................................................................................... 20
3ME Initiative Overview

The **3ME Initiative** is an inter-disciplinary project to develop collaborative research in Modelling Methods for Medical Engineering which brings together three well established Keele research groups:

- **The Institute for Science & Technology in Medicine (ISTM),** including the Cellular & Neural Engineering group led by Prof Alicia El Haj and the Imaging & Diagnostics group led by Prof Jon Dobson, other members include Prof Sally Roberts, Dr Isaac Liu, Dr Sarah Cartmell, and Dr Jan-Herman Kuiper.

- **The Mathematical Modelling Group in EPSAM** comprises Prof Graham Rogerson, Prof Yibin Fu, Dr Shailesh Naire and associated research staff who employ mathematical modelling including asymptotic and numerical techniques to solve problems related to industrial processes, biology and human physiology. This group enjoys an RAE 5 rating and an international profile, having become increasingly interested in emerging areas such as stem cells and cell engineering.

- **The Applied and Environmental Geophysics Research Group,** also in EPSAM, includes Professor Peter Styles, Dr Ian Stimpson, Dr Nigel Cassidy Dr Jamie Pringle, Dr Sam Toon, and a range of research staff who offer ultra-high resolution geophysical techniques and numerical modelling in Environmental, Geodynamic, Hydrocarbon and Archaeological areas. Expertise covers fuel cells, clean energy, biomass utilisation, pollution control, waste management, green chemistry, clean and innovative utilisation of coal, involving academic and commercial links throughout the world. They have extensive expertise in the imaging of a parameter space, using techniques that transcend disciplines and can equally well be applied from geological to human bodies.

**Objectives** of the **3ME Initiative** are to:

1. Create an interdisciplinary environment and culture that enables Keele researchers to work together in small groups on new common interest areas
2. Host international senior research visitors to enhance the research skills of Keele and the UK's capability in medical engineering
3. Invest to start up new key collaborative medical engineering projects

**Beneficiaries** of the **3ME Initiative** will be:

1. Clinicians seeking new and cost-effective treatments for human diseases that would benefit from tissue and cell engineered interventions, eg orthopaedic replacements using the patient's own laboratory grown tissues
2. Those patients' quality of life as a result of successful interventions
3. Industry supplying products and services to support clinical use of medically engineered solutions, and the ultimate growth of the UK research and manufacturing base in Medical Engineering.
4. Engineering researchers at a wider level, including the next generation of students seeking to apply engineering solutions to healthcare problems.
5. Mathematics researchers through application of modelling to novel, relevant fields.
6. Geophysics researchers through the mutual development of modelling and imaging techniques.

The 3ME Initiative is specifically intended to generate at least two new funded projects and a range of grant applications to the Research Councils and the European Commission, and further strengthen Keele’s links with the UK Medical Engineering industry.
Venue

De Vere Wychwood Park

The 3ME Initiative Workshop is being held in the Wychwood Suite which is located in the Golf Club House.

The Drinks Reception will be held at the Bar Vista Bar in Wychwood Park Hotel and will be followed by Dinner.
Plan of Complex
Program

Monday 4th of July 2011

10:00 Registration & Refreshments

Session I  Future Directions: Interactions with the ‘other side’ of campus
10:30 The journey from bench to bedside is long and windy: using implementation theory to make this journey easier

*Prof Bie Nio (Pauline) Ong, Professor of Health Services Research, Arthritis Research UK Primary Care Centre, Keele University*

11:30 Interdisciplinary Research ESRC programme

*Prof Andrew Dobson, Professor of Politics, Research Institute for Law, Politics and Justice, Keele University*

12:00 Refreshments
12:30 The Future of Bridging the Gaps

*Prof Alicia J. El Haj, Chair of Cell Engineering & Mr Mark Smith, Research Institute Manager, ISTM, Keele University*

13:00 Open Forum Discussion
13:30 Lunch

Session II  3ME Outcomes
14:30 Poster Displays – Review of projects past and present from 3ME
15:30 Refreshments
16:00 Breakout Groups

Session III  Future Directions: Discussions
17:00 Road Mapping
17:30 Driving Range
18:30 Drinks Reception
19:30 Dinner
REF and beyond, Tuesday 5th July 2011

09.00  Registration & Coffee
09.30  Introduction to the Day
       Prof Gordon Ferns, RI Director,
       Institute for Science & Technology in Medicine (ISTM)

Session I: Postgraduate Training
09.45  Future PG Training and Administration
       Prof Trevor Greenhough
       Postgraduate Research Director (ISTM)

10.30  Coffee

Session II: REF 2014
10.50  Background to REF
       Mr Mark Smith, RI Manager, Institute for
       Science & Technology in Medicine (ISTM)

11.10  ISTM REF current position
       Prof Gordon Ferns, RI Director, Institute for
       Science & Technology in Medicine (ISTM)

Session III: Key Guest Speakers
11.30  Publishing in Nature Journal
       Dr Nicola McCarthy, Chief Editor
       Nature Reviews Cancer Journal

12.15  NIHR Programmes
       Dr David Cox Deputy Director – Research Faculty
       Department of Health

13.00  Lunch

Session IV: Building External Links
13.45  MRC Priorities and Opportunities
       Morven Roberts Programme Manager for Global Health and Trials, Infection and Immunity
       Board
       Medical Research Council (MRC)

14.30  Developing Future Collaborations
       Iain Comley Business Development Director
       AstraZeneca

15.15  Consultancy
       Peter Hooper / Richard Toon Research & Enterprise Services Keele University

15.45  Coffee

Research Theme Updates
16.00  Prof Alicia El Haj, Dr David Furness, Prof Gordon Hamilton & Prof Simon Davies
17.00  Day Close

18.00  Dinner at Shaffers, 60 Snowhill, Shelton www.shaffers.co.uk
20.30  Close
Dr Nigel Cassidy
Senior Lecturer in Applied Geophysics
Telephone: 01782 733180
E-mail: n.j.cassidy@esci.keele.ac.uk

Selected Publications


Research Interests:

My research involves the application of engineering and geophysical methods for the characterisation, investigation and remediation of environmental, geological, hydrological, archaeological, forensic and geotechnical problems and spend most of my research time on the development of practical, non-invasive site investigation and numerical modelling tools for industry and academia.

- The application of mathematical modelling in the interpretation of near-surface ground penetrating radar.
- KAGe Supercomputer
- Merapi NERC Project
Dr Charles Day  
Lecturer in Computing  
Telephone: 01782 733411  
Email: cr.day@cs.keele.ac.uk  
Selected Publications:


Research Interests:
Computational modelling and evaluation of human perception: vision, audition, speech processing. Data mining of very large datasets (e.g. astrophysical surveys of the night sky, electromagnetic surveys of the built environment etc). Intelligent decision support for NHS clinicians trying to identify/treat patients with conditions such as colo-rectal cancer or stroke. Investigator on an EPSRC funded project using neural networks to identify selected chemical elements via their x-ray signatures.

Professor Andrew Dobson  
Professor of Politics, Research Institute for Law, Politics and Justice  
E-mail: a.n.h.dobson@pol.keele.ac.uk  
Selected Publications:
Please view Professor Dobson’s website for a full list of his publications and CV:  
http://www.andrewdobson.com/  
Research Interests:
My research is in two fields:
1. Democratic theory – particularly in relation to democracy and listening.
2. Environmental political theory, with particular reference to the relationship between ‘ecologism’ and other modern political ideologies, and to the tensions between
environmental sustainability as a social objective, and other objectives such as deepening democracy and increasing social justice.

Prof Alicia El Haj
Chair of Cell Engineering & Theme Lead in Bioengineering & Therapeutics, ISTM
Telephone: 01782 554605
E-mail: a.j.el.haj@bemp.keele.ac.uk

Publications:


Research:
Professor El Haj is the Research Director of an EPSRC Doctoral Training Centre in Regenerative Medicine with the aim of training 50 new PhDs in the stem cell field and is one of the co-directors of the new EPSRC Centre for Innovative Manufacturing Centre in Regenerative Medicine, both run jointly with Loughborough and Nottingham Universities. She has published over a 100 publications in the area of cell and tissue engineering with an emphasis on engineering solutions for controlling stem cell behaviour and new orthopaedic repair strategies using novel enabling technology approaches with funding from the EPSRC, BBSRC, Wellcome and EU Framework.

Professor Gordon Ferns
Professor of Metabolic Medicine; Consultant in Clinical Biochemistry;
Associate Medical Director, North Staffordshire NHS Research & Development &
Clinical Director, West Midlands North Clinical Local Research Network
Telephone: 01782 554718
Email: g.a.a.ferns@istm.keele.ac.uk

Selected Publications:

Research Interests:
Professor Ferns' research and clinical interests include the causes and management of coronary heart disease and other metabolic disorders:

• Dietary management of coronary risk
• Cellular mechanisms of atherogenesis
• Trace elements and antioxidants in disease
• Clinical management of Dyslipidaemia
• Insulin resistance

Dr Alan Harper
Lecturer in Bioscience, ISTM
Telephone: 01782-554600
E-mail: a.g.s.harper@hfac.keele.ac.uk

Selected Publications:

Research Interests:
My research interests lie in the calcium signalling mechanisms that control the activation and aggregation of human platelets in responses to physiological stimuli. These calcium signals are crucial to allow platelets to clot upon damage to the blood vessel wall. However platelets can also be triggered to clot inside intact, inflamed blood vessels. This aberrant clotting can lead to a person suffering from deep vein thrombosis, pulmonary embolism, heart attack and stroke. These cardiovascular disorders are the main cause of death in adults in the United Kingdom. Therefore understanding the calcium signalling mechanisms of platelets may allow us to identify novel targets for drugs to help prevent this unwanted platelet activity.
Calcium signalling is the result of a complex interplay between a number of direct and indirect factors that can affect the flux of calcium into and out of the cytosol, therefore solely interpreting data measuring the cytosolic calcium concentration can lead to incorrect conclusions to how this signal was brought about (Harper & Sage, 2007; Harper et al., 2009; Harper et al., 2010; Sage et al., 2011). Therefore my research has become interested in developing and utilising a systems-level analysis of platelet calcium signalling in which all the factors that can influence platelet cytosolic calcium concentration are systematically measured. We believe this methodology will help us more reliably decode the mechanisms by which calcium signals are shaped in these cells. We want to develop this systems-level analysis further, and in the future we hope to use it to further delineate the calcium signalling system of platelets from healthy individuals, as well as to help identify areas of the calcium signalling system which are dysregulated in situations where platelet calcium signalling is known to be abnormal such as in patients suffering from diabetes mellitus, hypertension and stroke.

**Dr Catriona Kelly**  
Lecturer in Bioscience, ISTM  
Telephone: 01782 734658  
E-mail: c.kelly@hfac.keele.ac.uk

**Selected Publications:**

Research Interests:
My research interests are in inflammatory lung diseases such as Cystic Fibrosis and asthma and in particular, the molecular defects that lead to uncontrolled inflammation in these diseases. The work seeks to identify novel genetic predictors of inflammation in chronic airways disease at the earliest possible stage in an attempt to predict disease development and inform treatment regimes. A primary focus of the work is how the regulation of the NF-kB pathway is altered and how this contributes to disease progression and severity.

Dr Theocharis Kyriacou
Lecturer in Computing, EPSAM
Telephone: 01782 733080
E-mail: t.kyriacou@cs.keele.ac.uk

Selected Publications:


Research Interests:
My research interests lie in fields of robotics, human-computer interaction, computer vision, modelling of complex (non-linear) systems, data mining and effective methods for teaching computer programming. More recently I have become interested in biologically inspired robotics and more particularly with biological mechanisms of navigation.
Dr Ka-Po Lam
Lecturer in Computing, EPSAM
Telephone: 01782 734110
E-mail: k.p.lam@cs.keele.ac.uk

Selected Publications:


Research interests:

My research interests are in parallel algorithms and distributed multimedia/visual information processing. They have led to research track record exemplified in the following work:

Parallelisation of machine vision algorithms (vision cone model), including the adaptation of pattern matching techniques (Smith-Waterman) for protein and DNA sequence database analysis on massively parallel platforms in collaboration with Edinburgh university and the AFRC (now BBSRC).

Prototypes development of high performance/concurrent computational architectures for document imaging funded under the UK/DTI AXON Initiative jointly with the Royal Mail (Future Technologies Group).


Pervasive computing technology in an EPSRC funded joint project concerning the development of an embedded detection system and associated instrumentation for element specific x-ray imaging.
Dr Shailesh Naire
Lecturer in Mathematics, EPSAM

Telephone: 01782733268
E-mail: s.naire@maths.keele.ac.uk

Selected Publications


Research Interests:

My research interests lie in continuum mechanics of problems related to industry, biology and physiology, and specifically, problems involving strong fluid-structure interaction and free boundaries. I am interested in mathematical modelling and in using asymptotic and numerical techniques to solve these problems. I have investigated problems in pulmonary mechanics involving lung airway reopening, cough manoeuvres and mucus transport, surfactant effects in thin-film fluid dynamics such as in drop spreading and foam drainage. More recently, I have been involved in mathematical modelling in tissue engineering with researchers in the Institute of Science and Technology at Keele with researchers in the Institute of Science and Technology at Keele and the Robert Jones and Agnes Hunt Orthopaedic hospital in Oswestry. Projects related to this have been internally funded by the 3ME- Bridging the Gaps initiative between EPSAM and ISTM.

Dr Kehoe Oksana
ISTM/RJAH
Telephone: 01691 404149
E-mail: oksana.kehoe@rjah.nhs.uk

A list of Publications and Research Interests can be provided on request
Professor Pauline Ong
Professor of Health Services Research, Arthritis Research UK Primary Care Centre
Telephone: 01782 734708
E-mail: b.n.ong@cphc.keele.ac.uk

Selected Publications:
A list can be provided on request

Research Interests:
- Experience of pain
- Health needs assessment
- User involvement
- Relationship between qualitative and quantitative research
- Health policy

Dr Sharon Owen
ISTM/RJAH
Telephone: 01691 404660
E-mail: sharon.owen@rjah.nhs.uk
A list of Publications and Research Interests can be provided on request

Dr Dhaya Perumal
ISTM
E-mail: d.Perumal@kingston.ac.uk
A list of Publications and Research Interests can be provided on request
Dr Paul Roach
Lecturer in Biomedical / Cell Engineering, ISTM
Telephone: 01782 555226
E-mail: P.Roach@istm.keele.ac.uk

Selected Publications


Research Interests:

My research interests lie at the boundary between chemistry, physics and biology with my main focus towards understanding and developing materials and sensors for biomedical applications. My particular interest is in the design and fabrication of surfaces to invoke desired biological responses. These surfaces have defined characteristics, including but not limited to, nano/ micro topographic features, chemistry and compliance.

Surface cues can be used to control cell adhesion and proliferation as well as protein adsorption characteristics. Well defined topography from micron sized grooves that can constrain growth guidance of cells, to nano-scale topography on the same length scales as protein molecules themselves can be engineered. The addition of and overlayer of chemistry and/or surface layer stiffness gives an additional complexity to the degree of control over biological responses. Mechanical and electrical stimuli may also be incorporated to enhance tissue growth.
Dr Frank Rutten
Lecturer in Physical Chemistry, EPSAM

Telephone: 01782 733521

E-mail: f.j.m.rutten@mema.keele.ac.uk

Selected Publications:


Research Interests:

My diverse research projects all revolve around the detailed chemical characterisation of surfaces (presence as well as distribution of constituents) through advanced analytical techniques including Time-of-Flight Secondary Ion Mass Spectrometry (ToF-SIMS) and an exciting new technique developed together with colleagues from Nottingham and Heriot-Watt universities termed PADI-MS (plasma-assisted desorption-ionisation mass spectrometry). As stand-alone techniques both can be very powerful, but more often than not the application of other, complementary techniques is crucial to fully elucidate complex surface chemical issues. I therefore complement surface mass spectrometry with vibrational spectroscopy (IR and Raman) as well as X-ray photoelectron spectroscopy (XPS). The chemical properties of surfaces are crucial in a wide range of processes. Some key applications, in collaboration with a range of research groups, are highlighted below.

I have always been very interested in archaeology and combine this with my knowledge of materials chemical characterization in collaboration with Professors Julian Henderson and David Briggs from The University of Nottingham – see publication list below. The aim of this work is to use the very powerful analytical techniques developed for surface analysis to answer key archaeological questions such as how and where certain objects were made and what materials were used. This in turn can give very valuable information not otherwise available, which will helps us to better understand ancient societies and their often surprisingly sophisticated manufacturing technologies.
A very exciting research project with Dr Peter Licence from the University of Nottingham has led to the selection of a paper as "Hot Topic" in Angewandte Chemie International Edition and was reported on by Nature (as a Research Highlight), Chemical and Engineering News (American Chemical Society) and Chemistry World (Royal Society of Chemistry). Research on this topic is ongoing.

Mr Mark Smith  
Research Institute Manager, ISTM  
Telephone: 01782 555234  
Email: m.e.smith@pmed.keele.ac.uk

Publications and recent Conference Presentations:

- Ashmore C & Smith M (2010) Summarising medical research for a lay audience – what do grant funders expect?; poster presentation at Quality Counts - Leighton Exhibition 2010, Leighton Hospital, Cheshire, November 2010
- Smith M & Ashmore C (2010) The Lay Summary in medical research proposals – is it becoming more important?; poster presentation at Making an Impact - Annual Conference of the Association of Research Managers and Administrators, Manchester, June 2010 (The Lay Summary in Medical Research poster 2010 pdf)

Research Interests:

My role in ISTM is in supporting the research of approximately 70+ academic and clinical staff, 30+ research assistants and fellows, and up to 100 research students. To maintain our current level of activity we need to collectively achieve a grant income of around £4million per year alongside our HEFCE block grant for research, based on consistent performance in the RAE/REF assessment exercises every 5 years or so. So in fact my main role is in helping colleagues navigate their way through the fund-raising process for grants, studentships, equipment, etc.

Research Grants held as Principal Investigator:

- BBSRC/EPSRC EP/P501237/1 Dorothy Hodgkin Postgraduate Award Oct 2005 to Sept 2009: £37,500 "Functional analysis of alternately spliced variants in cancer" (Dr P Hoban)
- MRC/EPSRC EP/P503019/1 Dorothy Hodgkin Postgraduate Award Oct 2007 to Sept 2011: £45,000 "Investigation of gene-smoking interactions in rheumatoid arthritis" (Dr D Mattey)
- MRC/EPSRC EP/P504546/1 Dorothy Hodgkin Postgraduate Awards (x2) Oct 2008 to Sept 2012: £90,000  
  - "Peritoneal dialysis and the evaluation of fluid status in advanced renal failure" (Prof S Davies)
"Exploring Progenitor Cell Regeneration Methods for the Repair of Lung Fibrosis" (Prof M Spiteri, Dr N Forsyth)

Professor David Smith
Professor of Chemical Physics, ISTM
Telephone: 01782 555228
E-mail: bea10@keele.ac.uk

Selected Journal Publications

(Prof David Smith has published some 350 research and review papers, including approx 90 since 2001. Below is a comprehensive set of references from 2006 onwards and a selection from 2001-05).

- David Smith, Patrik Španel, Beth Enderby, Warren Lenney, Claire Turner and Simon J Davies Isoprene levels in the exhaled breath of 200 healthy pupils within the age range 7–18 years studied using SIFT-MS. J. Breath Res. 4 (2010) 017101 (7pp)

**Research Interests:**
Physics and chemistry of ionised gases with special reference to ion-molecule reaction.
Development of analytical instruments that exploit gas phase ionic reactions for the analysis of trace gases in air (for environmental monitoring) and breath analysis (for non-invasive clinical diagnosis and therapeutic monitoring).

Current Projects include:
• Quantification of metabolites in breath of patients with end-stage renal failure, pre- and post-dialysis.
• Determination of total body water by measuring the deuterium content of single breath exhalations following ingestion of D2O.
• Identifying and quantifying metabolites emitted by tumour cells, both in vivo and in vitro.

**Ms Pauline Weston**
Research Institute Manager, EPSAM
Telephone: 01782734339
E-mail: p.weston@epsam.keele.ac.uk
A list of Research Interests can be provided on request

**Dr Karina Wright**
ISTM/RJAH
E-mail: Karina.Wright@rjah.nhs.uk
A list of Publications and Research Interests can be provided on request
Dr Ying Yang  
ISTM/RJAH  
Telephone: 01782 554606  
E-mail: y.yang@bemp.keele.ac.uk

Selected Publications:


Research Interests:

Currently, my research interests focus on two directions: develop multifunctional scaffolds or template for regenerative medicine including novel nanofabrication techniques; explore non-destructive online monitoring techniques for diagnosis and characterization of engineered tissues. The on-going projects including:

- Establishment of full thickness corneal model for drug screening
- Exploring novel nanofabrication protocols for regeneration medicine of cornea, CNS, spine, tendon
- Development and characterization of new protocols for stimulation of rapid bone formation
- Identification of the pathway of pathological calcification in heart valve and establishment of an in vitro calcification model for drug screening
- Application of FTIR techniques as diagnostic and characterization tool for disease and regenerative tissues
- Development implantable 3D neuron circuits for treatment of disorder in CNS
- Development of multi-functional scaffolds including mechano-active scaffolds
- Establishment of novel non-destructive monitoring technique for tissue regeneration
PhD Students

Mr John Butcher
EPSAM PhD Student
Telephone: 01782 733435
E-mail: red51@epsam.keele.ac.uk

Publications:


Research Interests:

My main interests lie in understanding how the many processes of the brain work in order to try and model these computationally. Modelling these processes does not only provide solutions to real-world problems, but also has the potential to learn more about how processes in biological organs function. From this interest I went on to study recurrent neural networks for my PhD which were successfully applied to a variety of time-series tasks including speech recognition as well as an engineering application. Now at the end of my PhD research, I am looking to use more biologically plausible models, not only to replicate functions in the brain, but also to apply them to domains such as speech recognition and robotics.
Miss Angeliki Fouriki  
PhD Student  ISTM  
E-mail: a.fouriki@istm.keele.ac.uk  

Research Synopsis:  
Angeliki is completing the final year of her PhD in Keele University under the supervision of Professor Jon Dobson. Her research interest is focused on biomedical engineering and in particular on nanomagnetic gene transfection for non-viral gene delivery on a single cells basis.

Publications  
- Journals:  

- Book Chapter (in press):  
  Chapter 12. Nanomagnetic Gene Transfection  
  For the book: ‘Magnetic Nanoparticles: From fabrication to clinical applications’.  
  Edited by Dr. Nguyen TK Thanh  
  To be published by CRC Press/Taylor and Francis in 1/1/2012.

Mr Deepak Kumar  
PhD Student  ISTM  
E-mail: d.kumar@istm.keele.ac.uk  

Research:  
A 3rd year PhD student under the supervision of Dr N R Forsyth, investigating the ability of non-biological substrates to support the adhesion and expansion of human embryonic stem cells whilst retaining their pluripotency and their typical hESC characteristics; alongside the underlying molecular mechanisms which are encouraging this phenomena.

Publications List  
- Jacek Klaudiusz Pijanka, Deepak Kumar, Tina Dale, Ibraheem Yousef, Gary Parkes, Valerie Untereiner, Ying Yang, Paul Dumas, David Collins, Michel Manfait, Ganesh Dhruvananda Sockalingum, Nicholas Robert Forsyth and Josep Sule-Suso. Vibrational spectroscopy differentiates between multipotent and pluripotent stem cells. Analyst, 2010
Muhammad Aslam Rao  
MSc Student, ISTM  
E-mail: aslampharm@hotmail.com  

Personal Profile  
I am an overseas pharmacy graduate with over five years experience in the pharmaceutical industry. I enjoy meeting new people, overcoming challenges and constantly seek to extend my knowledge by learning new skills and developing existing skills.

Miss Abigail Rutter  
ISTM PhD Student  
E-mail: me@abigailrutter.co.uk  
A Personal profile can be provided on request.

Mr William Smith  
PhD Student   EPSAM  
E-mail: w.a.smith@epsam.keele.ac.uk  

Research:  
PhD Supervisor: KP Lam  
Co-supervisor:   JB Richardson  
Visual inspection of cells is a fundamental tool for discovery in biological science. My PhD studies concerns the investigation of computational vision procedures that seek to automate the analysis of large scale image-based biology experiments.  
A principal goal is to extract high-quality measurements of the cells in digital microscopy images from each sample and identify samples with phenotypes of interest.

Publication:  
Ryad Soobhany  
PhD Student  
EPSAM  
E-mail: a.r.soobhany@cs.keele.ac.uk  
Research:  
PhD Supervisor: KP Lam  
Co-supervisor: P. Fletcher

My PhD is an industry CASE project (funded by Keele/ACORN) and pertains to the investigation of robust forensic identification techniques for portable camera sources and the classification of images generated by these devices. The research principally involves the development of reliable extraction procedures of a reference digital fingerprint of images in the form of the so-called sensor pattern noise (SPN) of a camera.

Publications:


Mr Rupert Wright  
PhD Student  
ISTM  
E-mail: cgrcmw@lboro.ac.uk  
A list of Publications and Research Interests can be provided on request.
<table>
<thead>
<tr>
<th>Name</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcock, Beryl</td>
<td>Horrocks, Paul</td>
</tr>
<tr>
<td>Bin, Hu</td>
<td>Hubball, Emma</td>
</tr>
<tr>
<td>Berkson, Rachel</td>
<td>Kehoe, Oksana</td>
</tr>
<tr>
<td>Carter, Pam</td>
<td>Kelly, Catriona</td>
</tr>
<tr>
<td>Chakravorty, Srabasti</td>
<td>Lam, KP</td>
</tr>
<tr>
<td>Chari, Divya</td>
<td>Longshaw, Laura</td>
</tr>
<tr>
<td>Chen, Ruo-Li</td>
<td>Maarabouni, Mirna</td>
</tr>
<tr>
<td>Clement, Darren</td>
<td>Maingon, Rhayza</td>
</tr>
<tr>
<td>Comley, Iain</td>
<td>Mattey, Derek</td>
</tr>
<tr>
<td>Cox, David</td>
<td>McCarthy, Nicola</td>
</tr>
<tr>
<td>Davies, Simon</td>
<td>Morris, Glenn</td>
</tr>
<tr>
<td>Dent, Gordon</td>
<td>Moss, Gary</td>
</tr>
<tr>
<td>Driskell, Owen</td>
<td>Redford, Amanda</td>
</tr>
<tr>
<td>Dobson, Jon</td>
<td>Richardson, Alan</td>
</tr>
<tr>
<td>Dudley, Lynn</td>
<td>Roach, Paul</td>
</tr>
<tr>
<td>Eggleston, Paul</td>
<td>Roberts, Sally</td>
</tr>
<tr>
<td>El Haj, Alicia</td>
<td>Roberts, Morven</td>
</tr>
<tr>
<td>Ferns, Gordon</td>
<td>Rotherham, Mike</td>
</tr>
<tr>
<td>Fricker-Gates, Rosemary</td>
<td>Skidmore, Mark</td>
</tr>
<tr>
<td>Fryer, Tony</td>
<td>Smith, David</td>
</tr>
<tr>
<td>Furness, Dave</td>
<td>Telling, Neil</td>
</tr>
<tr>
<td>Glazewski, Stas</td>
<td>Tripet, Frederic</td>
</tr>
<tr>
<td>Griffiths, Sarah</td>
<td>Rooney, Angie</td>
</tr>
<tr>
<td>Hamilton, Gordon</td>
<td>Rutten, Frank</td>
</tr>
<tr>
<td>Han, Jihong</td>
<td>Smith, Mark</td>
</tr>
<tr>
<td>Harper, Alan</td>
<td>Sule-Suso, Josep</td>
</tr>
<tr>
<td>Hart, Sarah</td>
<td>Toon, Richard</td>
</tr>
<tr>
<td>Hawkins, Clive</td>
<td>Watts, Keira</td>
</tr>
<tr>
<td>Henstock, James</td>
<td>Williams, Gwyn</td>
</tr>
<tr>
<td>Hooper, Peter</td>
<td>Yang, Ying</td>
</tr>
</tbody>
</table>
Ages and stages research project at Keele
Researchers at Keele University are looking for people who were interviewed for the Victoria Theatre’s famous social documentaries or docudramas.

Improving honeybee health by enhancing the palatability of food supplements
An £80,000 study which aims to improve the taste of artificial diets fed to honey bees has been awarded annual 'seed-core' funding from the British Beekeepers Association.

Spinstars: the first polluters of the Universe?
An international team of astronomers, including Dr Raphael Hirschi of Keele University, has presented new clues on the nature of the first stellar generations in our Universe.

Swearing relieves pain but don’t overdo it
New research from Keele University has fund that swearing can relieve pain – but only for people who swear infrequently.

£1million MRC award to fight malaria
The aim of £1 million MRC funded project is to better understand male mosquito mating behaviour, enabling new strategies to eliminate malaria.

Keele astrophysicist in discovery of red giant and two red dwarfs
A Keele University astrophysicist is a member of an international group of European, Australian and American researchers who have reported on the discovery of a unique system of stars.

Keele research into aluminium and Alzheimer’s disease
New research is being carried out at Keele university to examine links between aluminium and Alzheimer’s disease.
3ME Initiative Steering Group committee:

Prof. Alicia El Haj, ISTM, Keele University
Prof. Graham Rogerson, EPSAM, Keele University
Prof. Jon Dobson ISTM, Keele University
Prof. Peter Styles, EPSAM, Keele University
Dr Nigel Cassidy, EPSAM, Keele University
Mr. Mark Smith, ISTM, Keele University
Mrs Pauline Weston, EPSAM, Keele University

For any queries please contact:
Mrs Maria Kyriacou
ISTM, Keele University, GHRC,
Thornburrow Drive Hartshill Campus
Phone: +44 1782 554605
Fax: +44 1782 747319
Email: m.kyriacou@ismt.keele.ac.uk