



**INNOVATIVE ENGAGEMENT**  
*for* **SUSTAINABLE DEVELOPMENT**

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*the Edinburgh - India story*

2014

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## **Contents**

<b>Message from the First Minister .....</b>	<b>7</b>
<b>Message from the Principal .....</b>	<b>9</b>
<b>Message from the High Commissioner .....</b>	<b>11</b>
<b>Message from the VP-International .....</b>	<b>13</b>
<b>Message from The University of Edinburgh - India Liaison Office .....</b>	<b>15</b>
<b>Our Gratitude .....</b>	<b>17</b>
<b>An overview of the Conference .....</b>	<b>18</b>
<b>Programme at a Glance .....</b>	<b>22</b>
<b>JMCC floor plan .....</b>	<b>23</b>
<b>Schedule of Programme .....</b>	<b>25</b>
Thursday 15 May 2014 .....	25
Friday 16 May 2014 .....	30
<b>Detailed programme with abstracts of presentations .....</b>	<b>35</b>
<b>Directory of engagements between the University of Edinburgh and Higher Education Institutions in India .....</b>	<b>63</b>
<b>Conference Sponsors .....</b>	<b>69</b>





## **Edinburgh and India: A shared history, a united future.**

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With links that stretch back to the 18th century, the University of Edinburgh's connections to India are strong. Now, those links are being strengthened further with the Edinburgh India Institute, a coming together of academics from across the University, united by their passion to work with the best and brightest in India.

This inaugural conference will allow the Institute to frame its objectives: what are the main challenges facing India? How can academics, students and other experts from both Edinburgh and India meet these challenges? How can we best share knowledge to allow India to flourish in the 21st century? With an impressive array of delegates, we hope you find the discussions and talks illuminating.

In the 18th century, the University of Edinburgh was at the very heart of the Scottish Enlightenment, a period of tremendous intellectual rigour and discovery. We believe those same principles can be used to ensure our conference echoes those aims and aspirations.

Edinburgh India Institute  
The University of Edinburgh







## Message from the First Minister

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Edinburgh India Institute Inaugural Conference  
The University of Edinburgh

The Scottish Government is very proud of the many longstanding links between Scotland and India, particularly in the areas of education, science, business, culture and tourism. Each year, we welcome over two thousand Indian students to our colleges and universities, and we greatly value the scientific, medical and business collaborations generated through our respective educational institutions. In addition, the bi-lateral exchanges in commerce, tourism and culture enriches both our countries.

We congratulate the University of Edinburgh in holding its first India Institute conference and recognise the valuable role the University plays in creating and strengthening relationships between Scotland and India. Indeed, the first ever South Asian student association in the UK, the Indian Association, was founded at the University as far back as 1875.

It is pleasing to see that the conference covers such a wide range of important topics and includes so many high calibre participants from both Scotland and India. I congratulate the University and the conference organisers, Dr George Palattiyil and Dr Dina Sidhva for developing this innovative event that should encourage stimulating discussion.

I am sorry I cannot be with you today but am pleased that my colleague, Mr Humza Yousaf MSP, Minister for External Affairs and International Development, will be able to join you. I send my best wishes for the success of the conference and the Edinburgh India Institute and trust that it will build on historical and existing bonds of friendship and collaboration, and develop the continuing exchange of knowledge and expertise to the mutual benefit of both nations.

**Alex Salmond MSP**  
*The First Minister, Scottish Government*



## Message from the Principal

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I am delighted to support the Inaugural Conference of the Edinburgh India Institute, which both celebrates our long history of engagement with India and looks to a future of greater collaboration and partnership.

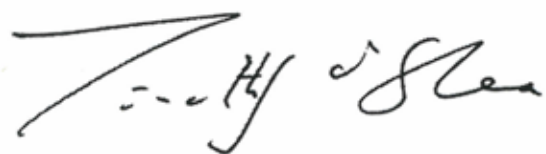
It is particularly pleasing to see so many strands of research coming together from across the three Colleges of the University in the Humanities and Social Sciences, Science and Engineering and Medicine and Veterinary Medicine, making this a truly interdisciplinary event which is significantly enhanced by the range of expertise from India which we are so pleased to see.

Of course interest in, and partnership with, India goes far beyond the University. The presence of colleagues from government, business, cultural organisations and, perhaps most importantly, our colleagues from the many Indian institutions that are represented here today serve to make this such a significant event.

I am sure that the Conference will help to forge new friendships and open up opportunities for greater collaboration between researchers and students across our many organisations.

I would like to thank the conference organisers, Dr George Palattiyil and Dr Dina Sidhva, for their vision and commitment in bringing us together and also to all of the participants who will make this Inaugural India Institute Conference a success.

I know that the Edinburgh India Institute will continue to grow as an interdisciplinary centre of excellence in India studies and a leading reference point for Scottish-India relations. I look forward to working together on future events that ensure the development of a truly innovative and sustainable partnerships between India and the University of Edinburgh.



**Professor Sir Timothy O'Shea, BSc, PhD, FRSE**  
*Principal & Vice-Chancellor*





*India House,  
Aldwych,  
London,*

WC2B 4NA  
12<sup>th</sup> May, 2014



### **MESSAGE**

I am delighted to learn that the University of Edinburgh is hosting the inaugural conference of the Edinburgh India Institute "*Innovative Engagement for Sustainable Development: the Edinburgh-India Story*" on May 15-16, 2014. I am particularly pleased that former President of India, Dr APJ Abdul Kalam is formally opening the Institute and delivering the keynote address.

I send warm felicitations to Professor Sir Timothy O'Shea, Principal and Vice Chancellor of the university and his entire team on this happy occasion.

We deeply value the rich and historic links between India and Scotland in the fields of education, business, tourism and culture. The University of Edinburgh's strong collaborative engagements with a number of institutions of higher learning in India add to this vibrant relationship. It is encouraging to know that the Edinburgh India Institute has brought together academics, researchers and students from across a range of disciplines - Humanities and Social Sciences, Medicine and Veterinary Sciences and Engineering - along with representatives from business, industry, culture and the wider community to celebrate the university's collaborative achievements with India.

I am confident that the Edinburgh India Institute would prove to be a durable symbol of friendship between India and Scotland in the years ahead.

I wish the conference every success.

  
(Ranjan Mathai)





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## Message from the Vice Principal International

The University of Edinburgh has a proud history of partnering with India, in India. The Edinburgh India Institute creates a new platform to engender and share awareness of the diverse cultural and societal issues that bind us. Above all, EII will support an environment that encourages and sustains a type of academic partnering that significantly impacts 21st century futures, in India and the UK.

Professor Stephen G. Hillier, PhD, DSc, FRCPath, FRCOG  
Vice-Principal International  
The University of Edinburgh





## **Message from The University of Edinburgh - India Liaison Office**

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The India Office is proud to be associated and to support the Edinburgh India Institute Conference.

Edinburgh's engagement with India has grown leaps and bounds to encompass legacy links and innovative partnerships all of which give students valuable international experiences and provide a nurturing environment for high impact, creative research and exchange programmes.

My warmest congratulations to George and Dina for putting together such an impressive, meaningful and high profile event. I would like to acknowledge the contribution of the overseas team in India - Pankaj Muthe, Kharishma Captain and Bhagyashri Salunkhe.

We look forward to many more such events and taking the India agenda forward.

**Amrita Sadarangani**

*Director*

*The University of Edinburgh - India Liaison Office*

*Mumbai, India*



## Our Gratitude

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The Edinburgh India Institute Inaugural conference is being organised at an opportune time when both Scotland and India are looking forward to a new era of increased bilateral engagements. As you can see from the programme, the conference has attracted a wide array of academics, researchers, colleagues from business, industry and culture and the wider community both from India and Scotland. While the differences between the two countries are considerable, it is hoped that organising a conference such as this would help bring about greater understanding and enhanced admiration for each other.

We extend a warm welcome to Dr. APJ Abdul Kalam, former President of India for being with us today, especially during this historic election week in India. All of us here are truly fortunate to be in the presence of one of India's greatest presidents who is affectionately known as the People's President.

We are grateful to Professor Sir Timothy O'Shea, Principal and Vice Chancellor of the University for his support and enthusiasm for this conference. We are fortunate to have the support from across the University and its colleges which has made this conference a truly inter-disciplinary event. Our special thanks to Professor Susan Deacon, Assistant Principal Corporate Engagement and Fellow, Academy of Government, whose exciting ideas have enabled us to attract participants from the wider Edinburgh community.

This conference would not have been what it is today without the unstinting support of the Conference Organising Committee, who despite their busy schedule were always available to help us take the conference forward. Our immense gratitude to:

- Frank Gribben, Chair-Conference Organising Committee & the Registrar, College of Humanities & Social Sciences, The University of Edinburgh
- Prof Stephen Hillier, Vice Principal-International, The University of Edinburgh
- Prof Roger Jeffery, Dean-International, India & Director, Edinburgh India Institute, The University of Edinburgh
- Prof Robin Wallace, Dean-International, College of Science & Engineering, The University of Edinburgh
- Prof Jeremy Bradshaw, Dean-International, College of Medicine & Veterinary Medicine, The University of Edinburgh
- Prof Natalie Waran and Prof Anna Meredith, Royal (Dick) School of Veterinary Studies, The University of Edinburgh
- Isabell Majewsky, Acting Deputy Director, International Office, The University of Edinburgh
- Ranald Leask, Press Officer (International), The University of Edinburgh
- Catherine Burns, Research Development Advisor, Edinburgh Research & Innovation Limited, The University of Edinburgh

We would like to thank our speakers, delegates, the Principal's office staff, EII and International Office staff, the India Liaison Office, volunteers and all others who have been a great source of support to us in realising this ambitious project. We hope you find the conference stimulating and that it fills you with a renewed commitment for strengthening Edinburgh-India partnerships.

**Dr George Palattiyil & Dr Dina Sidhva**  
*Conference Organisers, The Edinburgh India Institute*



## An overview of the Conference

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### **Background:**

The Edinburgh India Institute at the University of Edinburgh is a culmination of our longstanding work in India. It aims to encourage a greater awareness of India in Scotland, and to build Scotland's academic, cultural and business ties with India and play its part in encouraging links between Edinburgh's scientists, engineers, medical and veterinary clinicians, social scientists and researchers and their counterparts in India.

Colleagues from across the University have been engaging and collaborating with their Indian counterparts across disciplines over a long period of time, leading to many innovative developments and outputs. Nonetheless, very little has been done to collectively showcase and celebrate these engagements and cement the University's position with India as a leading UK HEI in engaging with India. Therefore there is a need to showcase, celebrate and consolidate our engagements in India and explore opportunities for further collaborations.

With this in mind the Edinburgh India Institute is organising its inaugural conference with the aim of showcasing and celebrating the University's longstanding engagement with India. Conceived as an interdisciplinary gathering of academics and researchers from humanities and social sciences, medicine and veterinary medicine, science and engineering, the conference will provide an opportunity to promote scientific excellence by enabling Edinburgh-India partners to come together and share their work, assess where we are and help shape our future strategy.

### **Conference objectives:**

The key objective of the Edinburgh India Conference is to showcase and celebrate our engagement with India. And, to strengthen and consolidate the relationship between academics, businesses and other interested parties in our two countries by showcasing the existing engagements in the context of its changing economy and development, across disciplines and exploring potential for future collaboration.

In particular, the conference will aim to:

- showcase and celebrate the academic and cultural links between the University of Edinburgh and India;
- be a bridge between Edinburgh and India, aiding understanding and facilitating engagement across disciplines (i.e. – science and engineering, medicine and veterinary medicine and humanities and social sciences);
- promote the opportunities India and Edinburgh offer to students and researchers and help develop effective and sustainable academic links;
- help develop greater awareness of India in Scotland and vice versa and enhance the visibility of the University of Edinburgh's engagement with Indian HEIs;
- help explore and develop new collaborations and partnerships between the University of Edinburgh and India;
- be the major point of reference for Indo-Scottish relations in the areas of education, business and culture;
- position the University of Edinburgh as a key actor in Indian-Scottish relationships, especially enhancing its relationships with undergraduates, postgraduates and alumni;

- help create and sustain internships, research opportunities, faculty and student exchanges, and joint activities in teaching and learning.
- position the University of Edinburgh as a leader in the India-Scottish academic and cultural affairs.

The conference will have a variety of sessions—plenary, abstract-driven presentations and panel discussions/roundtables which will contribute to an exceptional opportunity for academic engagements and networking. Under the over-arching theme of Edinburgh – India story, the conference will focus on three broad strands—medicine and veterinary medicine; science and engineering and humanities and social sciences and will draw on collaborations in research, teaching and knowledge exchange activities with colleagues from India.

The University of Edinburgh has a significant number of links with partner Universities in India. These include MoUs, individual/group research collaborations, staff and student exchanges/mobility and other visits of a general nature.

The conference is taking place at an opportune time particularly as India is a priority for the University's internationalisation strategy. Likewise, the Scottish Government's India Plan recognises the need for closely targeted activity to maximise the economic opportunities and focuses on key areas of tourism, education and science, trade and investment, and cultural links, which underpinned the recent visit by Mr Humza Yousaf (The Minister for External Affairs and International Development, Scottish Parliament) to India.

By showcasing and celebrating our engagements, our success stories; the conference aims to position the University of Edinburgh as a leader in the India-Scotland relations and foster further research and knowledge exchange activities and build greater understanding and cooperation between India and Scotland.

### **Anticipated outcomes of the Conference:**

In many ways, the Edinburgh India conference is a unique and ambitious initiative. It is perhaps the first time that an interdisciplinary gathering of experts - academics, researchers, people from business and culture etc, are coming together under a common umbrella—Edinburgh-India, to share their expertise and celebrate the success of our engagements with India.

By showcasing and celebrating our engagements, it is hoped that the conference will cement our position as a leader in the India-Scotland relations and foster further research and knowledge exchange activities and build greater understanding and cooperation between India and Scotland.

It is anticipated that a number of outcomes will accrue from this conference. In particular:

- Re-emphasising India as a priority for the University's internationalisation strategy
- Enhancing the University of Edinburgh's presence in India
- Increasing the attraction of Edinburgh a destination for Indian students
- Increasing Edinburgh-India staff and student mobility
- Enhancing the potential for ERI-lead spinoffs to develop tie-ups with India's HE and Business sector
- Establishing the Edinburgh India Institute as a reference point for India related priorities vis-à-vis the Scottish Government
- Re-energising the Edinburgh-India connection through the Sir Cawasji Jehangir legacy
- Establishing an India Day at the University with the EII annual lecture and Namaste Edinburgh event
- Organising bi-annual Edinburgh India conference, alternating the event between India and Edinburgh/Scotland, thus providing a platform for all activities across the University of Edinburgh.
- Setting up a EII Advisory Committee, with members from across the 3 colleges, Consulate of India/High Commission, VP-International and the International Office
- Establishing the Edinburgh India Institute as an interdisciplinary centre of excellence in India studies and the University of Edinburgh as leader in Scottish-India relations

## Programme at a Glance

Time	Event	Venue
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### Day 1

**Thursday 15<sup>th</sup> May 2014**

9.00 – 9.45 hrs	Registration & Coffee	The Foyer & Concourse, JMCC
10.00 – 12.00 hrs	Opening Ceremony	Pentland Room, JMCC
12.00 – 13.15 hrs	Lunch	The Foyer & Concourse, JMCC
13.30 – 15.00 hrs	Panel: The Power of Example: India's Approach to Soft-power	Pentland Room, JMCC
15.00 – 15.00 hrs	Tea/Coffee	Concourse
15.30 – 17.15 hrs	Parallel session I: Towards a just and humane society: Building a sustainable future	Pentland West, JMCC
15.30 – 17.15 hrs	Parallel session I: One Medicine for All - Partnering for future global health	Prestonfield, JMCC
15.30 – 17.15 hrs	Parallel session I: Securing a Shared Future: Infrastructure and Energy	Pentland East, JMCC
15.30 – 17.15 hrs	Parallel session I: Sharing our Research: Voices of Doctoral Students	Salisbury, JMCC
18.15 – 19.00 hrs	Drinks reception& networking	The Quad, Old College, South Bridge
19.00 – 21.30 hrs	Conference Dinner	Playfair Library, Old College South Bridge

### Day 2

**Friday 16<sup>th</sup> May 2014**

8.30 – 9.00 hrs	Arrival - Tea/Coffee	Concourse
9.00 – 11.00 hrs	Cross-disciplinary Symposium	Pentland Room, JMCC
11.00 – 11.30 hrs	Tea/Coffee	Concourse
11.30 – 13.00 hrs	Parallel session II: Towards a just and humane society: Building a sustainable future	Pentland West, JMCC
11.30 – 13.00 hrs	Parallel session I: One Medicine for All - Partnering for future global health	Prestonfield, JMCC
11.30 – 13.00 hrs	Parallel session I: Securing a Shared Future: A Science symposium	Pentland East, JMCC
11.30 – 13.00 hrs	Parallel session I: What does Edinburgh mean to me? Reflections from Indian students at the University of University	Salisbury, JMCC
13.00 – 13.45 hrs	Lunch	JMCC Refectory (Downstairs)
13.45 – 14.45 hrs	Panel: Higher Education in India and Scotland	Pentland, JMCC
14.45 – 14.55 hrs	Tea/Coffee & Comfort Break	Tea/coffee available in the Main Hall
14.55 – 16.05 hrs	Symposium: Innovation, Sustainability and Partnership	Pentland, JMCC
16.15 – 17.25 hrs	Panel: The future of Edinburgh-India Relations	Pentland, JMCC



## JMCC floor plan





## Schedule of Programme

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### Thursday 15 May 2014 – Morning Session

9.00 – 9.45 Registration & Coffee – The Foyer & Concourse, JMCC

9.45 – 10.00 Ushering in the delegates to the conference hall by Preston Lodge Pipe Band and Highland Dancers.

10.00 – 12.00 Opening Ceremony  
 Venue: Pentland Room, JMCC  
 Chair – Prof Stephen Hillier, VP-International

**The Opening Ceremony will begin with lighting of the lamp by the chief guest**

10.00-10.10: Welcome to the University; Prof Stephen Hillier, VP-International, The University of Edinburgh

10.10-10.20: Welcome to the Edinburgh India Institute Inaugural Conference: Dr George Palattiyil, Conference Organiser

10.20-10.30: Welcoming India to Scotland - Mr Humza Yousaf, Minister for External Affairs and International Development, Scottish Parliament

10.30-10.40: Dr Virander Paul, Deputy High Commissioner of India, London

10.40-10.50: Edinburgh-India Strategic Priorities: Professor Roger Jeffery, Dean International (India) and Director, Edinburgh India Institute

10.50-11.15: Transculturation and Assimilation in early 19th century Delhi: Three Scots at the Court of the Great Mughal; William Dalrymple, Writer and Historian

11.15-11.40: Keynote address - Vision 2030 for Nations of the World; Dr APJ Abdul Kalam, Former President of India and Chief Guest

11.40-11.50: Film – College on Wheels, introduced by Isabell Majewsky, International Office

11.50-12.00: Vote of Thanks; Dr Dina Sidhva, Joint Conference Organiser

12.00 – 1.15 Lunch

1.15 – 1.30: All delegates return to Pentland Room, JMCC

## Thursday 15 May 2014 – Afternoon Session

### Parallel and Panel Sessions:

1.30 – 3.00: **Panel I: The Power of Example: India's Approach to Soft-power**  
Venue: Pentland Room, JMCC

Chair – Salil Tripathi; Author and Journalist, Contributing Editor at Mint and Caravan in India and former board member, English PEN

Panellists:

Sangeeta Bahadur (Sinha), Minister (Culture) & Director, The Nehru Centre, High Commission of India, London

Prof Pami Dua, Director, Delhi School of Economics & Dean, Research Humanities & Social Sciences, University of Delhi

Geoff Pope, Policy Manager Asia Pacific, Africa and the Middle East Scottish Government International Division

Mr Rob Lynes, Director, India, British Council

Prof Yudhishtir Raj Isar, American University, Paris (Author of the India Country Report for the EU's Preparatory Action on Culture in External Relations)

Stuart MacDonald, Executive Director, Centre for Cultural Relations, The University of Edinburgh

3.00 – 3.00: Tea/Coffee – Concourse

3.30 – 5.15: Four Parallel sessions

### Parallel session – Humanities and Social Sciences

Venue: Pentland West, JMCC

### Part I: Towards a Just and Humane Society: Building a Sustainable Future

Chairs: Prof Pami Dua, Director, Delhi School of Economics & Dean, Research Humanities & Social Sciences, University of Delhi & Mr Frank Gribben, Registrar, College of Humanities and Social Sciences, The University of Edinburgh

3.30 – 4.00 **Advances in Research on Globally Accessible Medicine:**  
Prof Roger Jeffery, The University of Edinburgh; Prof Mohan Rao and Prof Ritu Priya, Jawaharlal Nehru University, and Prof K R Thankappan, Achutha Menon Centre for Health Science Studies, Trivandrum, India;

4.00 – 4.15 **Benefit-sharing for an Equitable Transition to the Green Economy: The Role of Law:** Dr Annalisa Savaresi, School of Law, Edinburgh & Natural Justice, India

4.15 – 4.30 **Continuity and Change in Indian Federalism:** Dr. Wilfred Swendon, School of Social and Political Science, The University of Edinburgh & Prof Harihar Bhattacharyya

- 4.30 – 4.45 Supporting Sustainable Leadership Development in the Indian Educational System - Reflections from an Innovative Training Partnership: Mr Graham Thomson, Moray House School of Education , The University of Edinburgh
- 4.45 – 5.15 Para-Situation [Mumbai]: The [Loving] Metropolitan Landscape: Dr. Dorian Wiszniewski, The University of Edinburgh; Dr. Himanshu Burte, Tata Institute of Social Sciences, Mumbai & Prof Rajiv Mishra, Sir JJ college of Architecture, University of Mumbai.

**Parallel session – Medicine and Veterinary Medicine**  
**Venue: Prestonfield, JMCC**

**Part I: One Medicine for All – Partnering for Future Global Health**

Chairs: Prof Natalie Waran and Dr. K. Devada, Ph.D, Professor and Head, Dept. of Veterinary Parasitology, College of Veterinary and Animal Sciences, Kerala Veterinary and Animal Sciences University, Mannuthy, Thrissur

- 3.30 – 4.00: Plenary: The Centre for Brain Development and Repair - The creation of a research collaboration between inStem, NCBS and The University of Edinburgh: Prof Peter Kind (in partnership with Prof Shona Chattarji, inStem/NCBS, Bangalore Prof Siddharthan Chandran, CMVM, University of Edinburgh)
- 4.00 – 4.25: Identification of the molecular basis of differential host responses to rapidly evolving Avian Influenza viruses in different avian species: Prof David Burt, Prof Paul Digard and Prof Nikki Smith, (The Roslin Institute and Royal (Dick) School of Veterinary Studies) and Dr Anamika Mishra, and Dr Ashwin Ashok Raut, (High Security Animal Disease Laboratory, Indian Veterinary Research Institute, Bhopal, India)
- 4.25– 4.50: Establishing a joint Masters in Family Medicine with Christian Medical College, Vellore: An Innovative Teaching Partnership: Dr. Liz Grant, Deputy Director, Global Health Academy, The University of Edinburgh; Prof David Weller, Post Graduate Dean-Teaching, College of Medicine and Veterinary Medicine, The University of Edinburgh and Dr Jachin Velavan, Head Department of Distance Education - Family Medicine, Christian Medical College, Vellore
- 4.50 – 5.15: The impact of bilingualism on cognitive functions in stroke and dementia: Dr Thomas Bak (Centre for Clinical Brain Sciences), The University of Edinburgh and Dr Suvarna Alladi, (Nizam's Medical Institute, University of Hyderabad, India)

## **Parallel session – Science and Engineering**

**Venue: Pentland East, JMCC**

### **Part I: Securing a Shared Future: Infrastructure and Energy**

Chairs: Prof Robin Wallace, Dean – International, College of Science and Engineering, Institute for Energy Systems, School of Engineering, The University of Edinburgh & Dr A Azad, Director, Centre for International Affairs, Anna University, Chennai

- 3.30 – 4.00: Plenary - Future of UK-India Research Partnerships in the Field of Infrastructure and Energy: Prof Pradipta Banerji, Director – Indian Institute of Technology, Roorkee
- 4.00 – 4.15: Learning from the reconstruction of major floods in the Himalaya: examples from Ladakh and Uttarakhand – Prof H. Sinclair., Dr S. Mudd., L. Dingle., and Dr. M. Attal, School of Geosciences, The University of Edinburgh & Dr V. Singh., and R. Devrani, Department of Geology, Centre for Advanced Studies, University of Delhi
- 4.15 – 4.30: Resilience of communities and critical infrastructure to man-made and natural hazards: dealing with uncertainty - Prof CS Manohar (Indian Institute of Science), Prof Asif Usmani and Prof G Ramachandran (School of Engineering, University of Edinburgh) & Professor G Ramachandran, Visiting Professor, The University of Edinburgh
- 4.30 – 4.45: Ensuring Safety of Structures and Components in Nuclear Power Plants under Extreme Loads through Multidisciplinary and Multi-institutional Collaborations - Dr RK Singh (Bhabha Atomic Research Centre) and Dr Pankaj (School of Engineering, The University of Edinburgh)
- 4.45 – 5.00: Advancing the Efficiency and Production Potential of Excitonic Solar Cells (APEX) – a DST/RCUK project involving seven Indian research institutes and five UK Universities. Dr. Satish Ogale and/or Dr. Neil Robertson and/or Prof Hari Upadhyaya.
- 5.00 – 5.15: Concept of integrated wave energy devices and its optimization; Professor S A Sannasiraj. Department of Ocean Engineering, Indian Institute of Technology Madras, Chennai & Dr Vengatesan Venugopal, Institute for Energy Systems, School of Engineering, College of Science and Engineering, The University of Edinburgh.

## **Parallel session – Student-led Research**

**Venue: Salisbury, JMCC**

### **Part I: Sharing our Research: Voices of Doctoral Students**

Chairs – Prof Crispin Bates, Professor of Modern and Contemporary South Asian History and Director, Centre for South Asian Studies and Dr Anuj Kapilashrami, Queen Margaret University

- 3:30 – 3:40: Living with the Weather: Climate and Culture in the Indian Himalayas; Heid Jerstad, PhD candidate, School of Social and Political Science, The University of Edinburgh
- 3.40 – 3.50: Comparative Analysis of Mobile Payment Sectoral Systems of Innovations and Service Innovations between the UK and India; Heather Web, PhD candidate, Business School, The University of Edinburgh
- 3.5 – 4.00: Lived Experiences of Residents in Care Homes in Goa, India; Dr Deborah Menezes, School of Social and Political Science, The University of Edinburgh
- 4.00 – 4.10: Deconstructing the lasting lure of the Sholay cocktail – A tale of nine rasas blended perfect!; Piyush Roy, PhD candidate, School of Social and Political Science, The University of Edinburgh
- 4.10– 4.20: Lifestyle adaptation and its implication on sustainable housing: A contextual study of Mysore, India; Satish Basavapatna Kumaraswamy, Edinburgh School of Architecture and Landscape Architecture, The University of Edinburgh.
- 4.20 – 4.30: Understanding the effects of earthquake and fire hazards on structures: A collaborative perspective, Praveen Kamat, Researcher, Institute for Infrastructure and Environment, The University of Edinburgh
- 4.30 – 4.40: Nanject - A novel drug delivery system using nanowires and nanoparticles, Atif Syed, PhD candidate, School of Engineering and Electronics, The University of Edinburgh
- 4.40-4.50: Quantitative insights of core pluripotency factors in ES cell dynamics, Dr Tapan Kumar Mistri, PhD, School of Biological Sciences, The University of Edinburgh
- 4.50 – 5.00: Establishing India: British Women's Missionary Organisations and their Work with the Women and Girls of India from 1820 to 1870; Dr Caroline Lewis, PhD, School of History, Classics and Archaeology, The University of Edinburgh.

5.00 – 5.15: Final reflections

6.15 – 7.00 Drinks reception and networking – The Quad, Old College

7.00 – 9.30: Conference Dinner, Playfair Library, Old College

## **Friday 16 May 2014 – Morning Session Symposium and Parallel/Panel Sessions**

8.30 – 9.00: Arrival – Tea/Coffee - Concourse

9.00 – 11.00: Cross-disciplinary Symposium  
Venue: Pentland, JMCC

Chair: Prof Susan Deacon, Assistant Principal Corporate Engagement and Fellow, Academy of Government, The University of Edinburgh

9.00 – 9.05: Welcome back; Dr George Palattiyil, Conference Organiser

9.05 – 9.10: Introduction by the Chair

9.10 – 9.30: Harnessing Science and Education for ensuring food security and quality in India: The importance of a cross-disciplinary approach; Prof Ayyappan, Director General-Indian Council for Agricultural Research, Delhi

9.30 – 9.50: From Grassroots to Landscapes; Dilip Khatau, Chairman, The Corbett Foundation

9.50 – 10.10: Regulatory mechanism in biomedical research with special reference to ethical, legal and social issues in Assisted Reproduction in India; Dr R S Sharma, Senior Deputy Director General and Scientist – G; Indian Council of Medical Research, Delhi

10.10 – 10.30: Chemistry as Central Science in Shaping Materials of the Future: Dr Sourav Pal, Director, Council of Scientific and Industrial Research, National Chemical Laboratory, Pune

10.30 – 10.50: Past collaborations and future prospects for Edinburgh-India: A cross disciplinary perspective; Prof Suranjan Das, Vice-Chancellor, University of Calcutta, India & Member, Indian Council of Historical Research, Government of India

10.50 – 11.00 Final Reflections

11.00 – 11.30 Tea/Coffee - Concourse

11.30 – 1.00: Four Parallel sessions



## **Parallel session – Humanities and Social Sciences**

Venue: Pentland West, JMCC

### **Part II: Towards a Just and Humane society: Building a Sustainable Future**

Chair: Dr Hugo Gorringe, Senior Lecturer, Sociology, School of Social and Political Science, The University of Edinburgh

11.30 – 11.50: Oxytocin, Maternal Health and Millennium Development Goal-5 in India - Prof Patricia Jeffery Sociology, SPS, Edinburgh & Dr Abhijit Das, Centre for Health and Social Justice, Delhi and Jashodhara Das Gupta, SAHAYOG, Lucknow, India

11.50 – 1.00: Panel Discussion: Social Exclusion and Marginalisation in India

Panellists:

Dr Crispin Bates, Professor of Modern and Contemporary South Asian History

Dr Aya Ikegame, Visiting Research Fellow at the Open University; Dr Radhika Govinda, Lecturer, Sociology, SPS

Dr Jeevan Sharma, Lecturer in Anthropology and Development, SPS  
Shruti Chaudhry, PhD Candidate at the University of Edinburgh;

Karthikeyan Damodaran, PhD Candidate at the University of Edinburgh

Dr Ramesh Bairy T S; Assistant Professor, Department of Humanities and Social Sciences, Indian Institute of Technology Bombay, Mumbai, India

## **Parallel session – Medicine and Veterinary Medicine**

Venue: Prestonfield, JMCC

### **Part II: One Medicine for All – Partnering for Future Global Health**

Chairs – Chris West, CEO, Royal Zoological Society of Scotland and Prof Thankappan, Director, AMC, Kerala

11.30 – 12.00: Plenary: Learning methods key in the University of Edinburgh-Kerala Veterinary and Animal partnership: Dr B Ashok, IAS, Vice-Chancellor, Kerala Veterinary and Animal Sciences University, Kerala

12.00 - 12.30: One Health – One Welfare: Capacity building and the Indian Veterinary Profession: Prof Natalie Waran, Jeanne Marchig Professor of Animal Welfare Education and Director Jeanne Marchig International Centre for Animal Welfare Education, RDSVS, The University of Edinburgh

12.30–1.00: A KVASU-University of Edinburgh Working Model for Partnership in Wildlife Studies: Dr George Chandy, Assistant Professor and Officer-in-Charge, KVASU Centre for Wildlife Studies, Kerala Veterinary and Animal Sciences University & Dr Anna Meredith, Professor of Zoological and Conservation Medicine, Royal (Dick) School of Veterinary Studies, The University of Edinburgh

### **Parallel session – Science and Engineering**

Venue: Pentland East, JMCC

### **Part II: Securing a Shared Future: A Science Symposium**

Chair - Dr Ram Kumar Singh (Distinguished Scientist & Head, Reactor Safety Division and Senior Professor, Homi Bhabha National Institute, Bhabha Atomic Research Centre, Mumbai) and Prof Hugh McCann (Head, School of Engineering, The University of Edinburgh) and Prof Asif Usmani, School of Engineering, The University of Edinburgh.

11.30: 11.45: Plenary – Envisioning Future and Preparing for It; Professor RK Shevgaonkar, Director, Indian Institute of Technology, Delhi

11.45 – 12.00: What happens to structural materials at high temperatures? Professor Ananth Ramaswamy and Prof JM Chandra Kishen, Department of Civil Engineering, Indian Institute of Science, Bangalore & Prof Asif Usmani, Head of the Research Institute for Infrastructure and Environment, The University of Edinburgh

12.00 – 12.15: What do snow and bone have in common? – Prof Suhail Ahmad, Head of the Department of Applied Mechanics, IIT Delhi & Dr Pankaj Pankaj, Reader, The University of Edinburgh

12.15 – 12.30: How to make buildings safer under multiple hazards of earthquake followed by fire? – Prof Umesh Kumar Sharma, Associate Prof Department of Civil Engineering, IIT Roorkee and Prof Asif Usmani, Head of the Research Institute for Infrastructure and Environment, The University of Edinburgh

12.30 – 12.45: Indian Efforts towards harnessing wave energy. Dr M.A. Atmanand, Director, National Institute of Ocean Technology, Chennai; Prof A R Wallace, Dean International - College of Science and Engineering, Institute for Energy Systems, School of Engineering, The University of Edinburgh and Dr Vengatesan V.Venugopal, College of Science and Engineering, Institute for Energy Systems, School of Engineering, The University of Edinburgh

12.45 – 1.00: Critical evaluation of available toxicity due to silver nanoparticles (AgNPs) in Indian Sundarban mangrove wetland, A UNESCO World Heritage Site – A UKIERI collaborative project with the University of Calcutta; Helfrid Schulte-Herbrüggen, EPSRC Doctoral Prize Fellow & Lecturer, Institute for Infrastructure and Environment The University of Edinburgh and Prof SK Sarkar, Professor in Marine Science, University of Calcutta

**Parallel session - Voices of students**

Venue: Salisbury

**Panel Discussion III - “What does Edinburgh mean to me?” Reflections from Indian students at The University of Edinburgh**

Chairs – Mrs Janet Rennie, Director of Academic and Student Administration, College of Humanities and Social Sciences & Dr Dina Sidhva, Honorary Fellow, Edinburgh India Institute, The University of Edinburgh

1.00 – 1.45: Lunch - JMCC Refectory (Downstairs)

**Friday 16 May 2014 – Afternoon Session  
Edinburgh and India – The Way Forward**

**1.45 – 2.45: Panel II: Higher Education in India and Scotland – Prospects and Challenges**

Venue: Pentland, JMCC

Chair: Dr Sue Rigby, Vice Principal Learning & Teaching, The University of Edinburgh

Panellists:

Pawan Agarwal-IAS, Adviser - Higher Education, Planning Commission, Government of India Prof M Rajaram, Vice Chancellor – Anna University, Chennai; Prof Suranjan Das, Vice-Chancellor, University of Calcutta

Kate Walker, Head of Education, British Council, Scotland David Lott, Deputy Director (Policy), Universities Scotland Prof Sethu Vijayakumar, Professor of Robotics and Director of the Institute of Perception, Action and Behaviour, The University of Edinburgh

Graham Thomson, Moray House School of Education , The University of Edinburgh

2.45 – 2.55: Comfort Break (Tea/coffee available in the Main Hall)

- 2.55 – 4.05 Symposium: Innovation, Sustainability and Partnership – Looking Ahead**  
**Venue: Pentland, JMCC**
- Chair – Jim Eadie MSP, Scottish Parliament
- 2.55 -3.00 Opening Remarks, Chair – Jim Eadie MSP**
- 3.00 -3.20 Pawan Agarwal-IAS, Adviser - Higher Education, Planning Commission, Government of India, Title (tbc)**
- 3.20-3.40 Salil Tripathi, Director of Emerging Issues, Institute for Human Rights and Business London, formerly with Amnesty International in London, and author and journalist**
- 3.40-4.00 Dr Rashneh Pardiwala, Founder and Director, Centre for Environmental Research & Education, Mumbai and Alumni UoE, Title (tbc)**
- 4.00-4.05 Reflections by Chair – Jim Eadie, MSP**
- 4.05 – 4.15: Comfort Break (Tea/coffee available in the Main Hall)**
- 4.15 – 5.25: Panel III: The Future of Edinburgh-India Relations**  
**Venue: Pentland, JMCC**
- Chair: Prof Susan Deacon, Assistant Principal Corporate Engagement and Fellow, Academy of Government, The University of Edinburgh
- Panellists:
- Prof Steve Hillier, Vice Principal-International, University of Edinburgh
- Prof Roger Jeffery, Dean International (India) and Director, EII
- Prof Natalie Waran, Director (Jeanne Marchig International Centre for Animal Welfare Education, The University of Edinburgh
- Dr B Ashok, IAS, Vice-Chancellor, Kerala Veterinary and Animal Sciences University
- Mr Rob Lynes, Director, India, British Council
- Prof RK Shevgaonkar, Director, Indian Institute of Technology, Delhi
- Dr George Palattiyil, Deputy Director, Edinburgh India Institute
- 5.25-5.30 Dr Dina Sidhva, Conference Organiser – Final reflections and Thank You**

## Detailed programme with abstracts of presentations

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### Thursday 15 May 2014

10.00 – 12.00 Opening Ceremony

#### Panel Discussion

1.30 – 3.00: Panel 1: The Power of Example: India's Approach to Soft-power

Chair: Salil Tripathi; Author and Journalist, Contributing Editor at Mint and Caravan in India and former board member, English PEN

The event will bring together practitioners and academics from India, the UK and elsewhere to discuss the nature and significance of India's approach to soft power. India's approach to soft power has been led by the Indian Council for Cultural Relations since it was founded by in 1950 by Maulana Abul Kalam Azad, independent India's first Education Minister. The approach is "...about a communion of cultures, a creative dialogue with other nations," pursuing cultural relations as an end in itself. More recently, as India's cultural exchanges have grown with globalisation, the question has arisen of whether India's non-instrumental approach should take on a more explicit soft power dimension, to more overtly promote India's international influence.

This debate is central to the practice of cultural relations in the UK and the EU. The British Academy's March 2013 report "The Art of Attraction: Soft Power and the UK's Role in the World" urges Government to "...refrain from direct interference in soft power assets" and "to understand that the power of example is far more effective than preaching".

The question for debate therefore is "Is example is the most productive approach to cultural relations?" A panel discussion designed to impact on policy development (Scottish Government's India Plan) and to develop proposals for further cultural relations collaborations with India on research, exchanges, engagement activities etc.

Panellists: Sangeeta Bahadur (Sinha), Minister (Culture) & Director, The Nehru Centre, High Commission of India, London; Prof. Pami Dua, Director, Delhi School of Economics & Dean, Research Humanities & Social Sciences, University of Delhi; Geoff Pope, Policy Manager Asia Pacific, Africa and the Middle East Scottish Government International Division; Mr Rob Lynes, Director, India, British Council; Professor Yudhishtir Raj Isar, American University, Paris (Author of the India Country Report for the EU's Preparatory Action on Culture in External Relations); Stuart MacDonald, Executive Director, Centre for Cultural Relations, The University of Edinburgh

3.30 – 5.15: Parallel sessions (4 sessions running simultaneously)

## **Parallel session – Humanities and Social Sciences**

### **Part I: Towards a just and humane society: Building a sustainable future**

#### **Presentation 1: Advances in Research on Globally Accessible Medicine (AROGYAM)**

Synopsis: This project is designed to stimulate cross-disciplinary discussions, writing and research proposals on social science aspects of public health, involving specialists from Medical Sociology, Medical Anthropology, Public Health Sciences (including social epidemiology), Health Policy, Political Economy and Health Economics, Medical History and other medical humanities, Social Work and Law. The project brings these disciplines together from four institutions - Edinburgh, Jawaharlal Nehru, Sri Chitra and Heidelberg - to address four main themes, each of which will have European and Indian co-coordinators:

Non-communicable diseases, with special reference to issues surrounding diabetes, obesity, mental health and tobacco use, and the implications when populations cross national boundaries.

Communicable diseases, with special reference to HIV/AIDS, malaria and TB.

Innovations in Biomedical technology and healthcare delivery with special reference to stem-cells, bio-banking, clinical and public health research trials, community health monitoring and pharmaceuticals.

Transcultural health studies, with particular reference to medical tourism and Asian Medical Systems, including work on indigenous medical systems, and how far they are adapting to (or resisting) biomedical domination, both in India and (through the introduction of Ayurveda etc.) in Europe.

In this presentation we will outline the main areas of work so far and our plans for the future

Contributors: Professor Roger Jeffery, CHSS, SPS, Edinburgh India Institute, The University of Edinburgh; Professor Mohan Rao, Centre of Social Medicine and Community Health, Jawaharlal Nehru University; Professor Ritu Priya, Centre of Social Medicine and Community Health, Jawaharlal Nehru University & Professor K R Thankappan, Director, Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, India;

#### **Presentation 2: Benefit-sharing for an Equitable Transition to the Green Economy: The Role of Law**

Synopsis: Benefit-sharing refers to the allocation of advantages arising from the conservation and use of natural resources. Although the concept of benefit-sharing is increasingly deployed in a variety of contexts, no comprehensive analysis exists of its conceptualisation and operationalisation as a tool for environmental governance. BENELEX, a five-years European Research Council Starting Grant project initiated in November 2013 at Edinburgh Law School of under the leadership of Dr Elisa Morgera, will investigate



whether benefit-sharing can serve as a constructive legal tool for equitably addressing global environmental challenges, by accommodating the special circumstances, cultural preferences and vulnerabilities of developing countries and indigenous peoples and local communities in transitioning to the green economy. BENELEX combines doctrinal and comparative analysis of sources of international law and of normative developments under multilateral environmental, human rights and corporate accountability processes. This black-letter approach is enriched with real-world insights through participation in selected multilateral negotiations and the organisation of divulgation events; and empirical research investigating the implementation of benefit-sharing arrangements at the national/ local level. A series of research visits will be carried out in partnership with international NGO Natural Justice, which has pioneered the use of bio-community protocols as a basis for communities' cooperation with governments and private companies in a number of countries, including India.

Contributor: Dr. Annalisa Savaresi, Research Fellow, School of Law, The University of Edinburgh

### **Presentation 3: Continuity and Change in Indian Federalism**

**Synopsis:** Dr. Wilfried Swenden will present the key aims of a Leverhulme International Network on Continuity and Change in Indian Federalism. The network is led by the University of Edinburgh (School of Social and Political Science) but it also brings together specialists from the University of Delhi, the University of Hyderabad and the University of Burdwan in India as well as the Universities of Nottingham (Institute of Asia-Pacific Studies) and Bristol in the UK. It runs over 34 months and started on 1 April 2014.

Since 1989 Indian federalism has gone through a profound process of informal change as a result of two parallel processes: (1) the fragmentation of the Indian party system and the consolidation of broad based coalition governments at the centre and (2) the transformation of the Indian economy from a 'command to a more liberalized demand economy'. The key aim of the Leverhulme research network is to provide an assessment of what these changes have meant for the practice of centre-state relations in India. More concretely, the research network will analyse change (and continuity) in the practice of Indian federalism in three important arenas: (1) the processes, dynamics and outcome of intergovernmental relations; (2) Indian fiscal federalism (3) the capacity to regulate ethnic conflict. Each theme brings together a group of established and early career scholars from well-known research centres in India and the UK. Jointly, they will deliver the first comprehensive and cross-thematic review of Indian federalism since 1989.

Contributors: Dr Wilfred Swenden, Senior Lecturer of Politics, School of Social and Political Science, The University of Edinburgh & Professor Harihar Bhattacharyya, Department of Political Science, University of Burdwan



#### **Presentation 4: Supporting Sustainable Leadership Development in the Indian Educational System: Reflections from an Innovative training partnership;**

Synopsis- This session will describe how an educational leadership resource designed by Edinburgh University's School of Education is being used in India and how it is leading to closer ties with Indian educational colleagues within the school sector and beyond.

In 2013 the School of Education ran a six-week training programme for a small group of Indian colleagues interested in developing their capacity to support high quality learning for school principals as part of the Government of India's integrated flagship education development 'Sarva Shiksha Abhiyan'.

A key element of the programme was the exploration of an educational leadership training resource, containing 50 hour of materials, designed to help principals to support the development of teachers' capacity to respond effectively to change and impact positively on Teaching and Learning.

The resource and programme have acted as a catalyst for closer links with Indian educational colleagues around educational leadership which includes organisational inputs and presentations from Edinburgh University colleagues to the following: International Conference 'Transforming Schools for Quality Education' Delhi, April 2013; 'UKIERI – MHRD Consultative Workshop on Higher Education (HE) Leadership Development Programme' Delhi, November 2013; Tata Institute of Social Sciences and the Ministry of Human Resource Development Study visit to Edinburgh University, April 2014, on ways of developing high impact educational leadership in a sustainable and cost effective way in the Higher Education sector.

Contributor: Graham Thomson, Director of Scottish Centre for Studies in School Administration; Moray House School of Education, The University of Edinburgh.

#### **Presentation 5: Para-Situation [Mumbai]: The [Loving] Metropolitan Landscape**

Synopsis: Wiszniewski, Mishra and Burte have been in conversation since September 2013. For all cities, but particularly in Mumbai, we can say that the city is formed as a correspondence between people and processes. Perhaps we see too often how bureaucracy suffocates rather than facilitates this correspondence. However, in Mumbai what we see more ubiquitously than in European cities is a city as multiple series of "customised places for use". The processes are in constant flux and so therefore is the customization as an aspect of urban process. The contemporary European city is frequently organized through paradigms of either high- or low-density. However, in the work on Mumbai, the focus is more on "ecological" rather than conventional models of population and building density. Learning from Mumbai and India, the territorial paradigm moves away from one of centre and edges to the notion of edges (between people, architecture, urbanity and landscape) as being the re-current condition in a continuous and open landscape of different occupations.

The enriched representational techniques developed by Wiszniewski's mode of research is working together with Mishra's and Burte's deep practical, theoretical and, most of all, local Mumbai knowledge to afford accessibility for different disciplines, communities and actors more readily to grasp different paradigms for urban transformation. The practice-based output harnesses, represents and disseminates data, knowledge and skills acquired from





the differing communities and multiple disciplines that contribute to the vast knowledge and experience base of urban studies in Mumbai.

Burte, Mishra and Wiszniewski steered the Symposium PARA-Situation [Mumbai], in The Sir JJ College of Architecture, Mumbai, on January 20th 2014. Other respected participants included Brinda Somaya (Somaya and Kappala Architects), Darryl D'Monte (Ex editor of The Times of India and current Chairperson, Forum of Environmental Journalists of India), Neera Adarkar (Editor, The Chawls of India, Galleries of Life and co-author 100 Lives 100 Stories), Rajesh Rokade (Professor, Sir JJ College of Architecture), Rohan Shivkumar (Deputy Director, KRVA School of Architecture, Mumbai), Sam Barclay and Mitul Desai (Ex Studio Mumbai, architects and photographers), and Rahul Srivastava and Matias Sendoa Echanove (URBZ / Urbanology, Dharavi, Mumbai).

Contributors: Dr. Dorian Wiszniewski, Senior Lecturer, Edinburgh School of Architecture and Landscape Architecture, Edinburgh College of Art, The University of Edinburgh; Dr. Himanshu Burte, Assistant Professor, School of Habitat Studies Tata Institute of Social Sciences, Mumbai & Professor Rajiv Mishra, Principal, Sir JJ college of Architecture, University of Mumbai.

## **Parallel session – Medicine and Veterinary Medicine**

### **Part I: One Medicine for All – Partnering for future global health**

#### **Presentation 1: The Centre for Brain Development and Repair - the creation of a research collaboration between inStem, NCBS and University of Edinburgh**

Synopsis: Disorders of the brain represent a growing and major public health threat to India. Although these are a disparate group of currently untreatable conditions that include acquired, developmental and ageing related diseases there are nonetheless common themes and needs. These include the recognition that key molecular mechanisms and biological processes are shared across many of these diseases indicating that discoveries in one disease group will inform the other and vice versa. Uniformly the unmet need is for a human based and led approach to investigating the cause(s), consequence and ultimately treatment of these diseases. The Centre for Brain Development and Repair is a DBT-funded, collaborative research program involving researchers from inStem, NCBS and the University of Edinburgh brought together to bridge this major gap in Indian Translational Medicine. We have adopted a targeted approach focusing on neurodevelopmental conditions, namely autism spectrum disorders (ASDs) and intellectual disability (ID; previously known as mental retardation), which have recently become genetically tractable and amenable to laboratory study. Collectively, ASD/ID, with prevalence estimates of up to 2-4% of the population, have enormous impact on individual quality of life as well as attendant major societal and financial burden. Tens of millions are affected in India alone. The urgent unmet clinical need, therefore, is for the development of effective therapeutics. In turn this first requires both (1) improved understanding of the aetiology and pathogenesis of ASD/ID and (2) better pre-clinical translational platforms. Achieving these twins goal requires a new and integrated approach involving a range of expertise not currently represented in the portfolio of the Department of Biotechnology or other Governmental Agencies. In addition the technology platforms and infrastructure that this proposal will establish - including world-leading human stem cell capability and development of next generation

of translational neuroscientists –also positions Indian science and medicine to address, in future, these other major neurological disorders.

Contributors: Professor Shona Chattarji, Director, inStem/NCBS, Bangalore, Associate Directors: Professor Peter Kind, Professor Siddharthan Chandran, CMVM, The University of Edinburgh.

### **Presentation 2: Identification of the molecular basis of differential host responses to rapidly evolving Avian Influenza viruses in different avian species**

Synopsis: Avian Influenza, caused by the highly pathogenic avian influenza virus H5N1, is taking a huge toll on the Indian poultry industry since the first outbreak in 2006. Despite eradication and confirmation of disease free status, re-emergence continues. Since each outbreak needs eradication of all poultry within a 3km radius, every episode has a major economic and social impact on small and marginal poultry farmers of rural India. This is particularly acute in India where backyard poultry is popular and thickly populated villages usually lie within the eradication zone. As a notifiable disease, Avian Influenza can have serious implications for international trade and further harm the poultry industry of India. Due to its zoonotic potential it has public health concerns and owing to the co-habitation of poultry and humans with a culture of live bird markets, there is always a fear of the emergence of pandemic flu.

H5N1 affects several avian species, including chickens, turkeys, quails, guinea fowl as well as wild birds; however the response to infection varies widely. Ducks and waterfowl are often resistant i.e. they become infected but are capable of clearing the virus or carry the virus without symptoms, and act as reservoirs. In contrast, poultry are highly susceptible i.e. they become infected and are not able to clear the virus, which results in high mortality.

In this talk we will present an outline how our labs are working together to understand these species differences in resistance towards different strains of Avian Influenza. In particular, how we are sharing resources and facilities: with the expertise at Roslin in avian genomics, bioinformatics and virology matched by the high containment facilities and virology expertise at HSADL-Bhopal.

This work is supported by a new scheme jointly funded by the BBSRC (UK) and DBT (India) to support research in the area of "Farm Animal Disease and Health (FADH)".

Contributors: Professor David W. Burt, Chair of Comparative Genomics, The Roslin Institute and Royal (Dick) School of Veterinary Studies, The University of Edinburgh; Dr Anamika Mishra, Scientist, High Security Animal Disease Laboratory (HSADL) OIE reference Lab on Avian Influenza, Indian Veterinary Research Institute, Bhopal, India; & Dr Ashwin Ashok Raut, Senior Scientist (Biotechnology), High Security Animal Disease Laboratory (HSADL), OIE reference Lab on Avian Influenza, Indian Veterinary Research Institute, Bhopal, India.



### **Presentation 3: Establishing a joint Masters in Family Medicine with Christian Medical College, Vellore: An Innovative Teaching Partnership**

Synopsis: Since the World Health Assembly in 2009 identified Family Medicine as the discipline best equipped to marry together the requirements for a more sophisticated and comprehensive primary health care vision with overall health system strengthening there has been a renewed interest in developing and rolling out a training programme that prioritises equitable, accessible comprehensive person and family centred healthcare. The Family Doctor/ General Practitioner is a person who can deliver family medicine, functioning as a “specialist generalist” within communities and District Hospital settings and who can act as a gatekeeper resolving more and referring less thus providing expert healthcare and reducing the burden on overstretched health services.

The new Masters in Family Medicine MFM will be taught jointly between the University of Edinburgh (the first University in the world to establish a chair in General Practice/ Family Medicine and CMC Vellore, one of India's premier Medical Schools). Building on CMC Vellore's successful distance-learning Diploma model of training family medicine doctors, the Masters will be delivered online enabling students to remain working in their local environment.

Edinburgh's expertise in developing and managing innovative action learning online, and CMC's expertise in primary healthcare clinical responses will be shared in the series of programme courses tackling clinical issues and principles, ethics and practice of family medicine. To complement the online teaching an internship period has been built into the programme where senior global faculty from the International Christian and Medical Dental Fellowship will mentor students face to face for 30 days.

Contributors: Dr. Liz Grant, Deputy Director, Global Health Academy, The University of Edinburgh; Professor David Weller, Post Graduate Dean-Teaching, College of Medicine and Veterinary Medicine, The University of Edinburgh & Dr Jachin Velavan, Head Department of Distance Education - Family Medicine , Christian Medical College, Vellore

### **Presentation 4: The impact of bilingualism on cognitive functions in stroke and dementia**

Synopsis: India is not only the greatest multilingual country on earth but also one which has embraced multilingualism as part of their national identity. This offer exceptional opportunities for the scientific study of multilingualism. Until recently studies of multilingualism focused on language acquisition in children and on social and cultural aspects. However, recent research suggests that bi- and multilingualism can improve cognitive functions in aging and counteract dementia. In a recent, much publicised study of 648 patients from Hyderabad we have demonstrated that bilingualism delayed the onset of three different types of dementia by 4-5 years. Our new study, which we currently prepare for submission, shows that bilingualism had a positive influence on the cognitive outcome in stroke patients. We would like to discuss these findings in the light of current theories of bi/multilingualism and its impact on cognition.

Contributors: Dr Thomas H. Bak, Centre for Clinical Brain Sciences, The University of Edinburgh & Dr Suvarna Alladi, Nizam's Medical Institute, University of Hyderabad, India

## **Parallel session – Science and Engineering**

### **Part I: Securing a Shared Future: Infrastructure and Energy**

#### **Presentation 1: Future of UK-India Research Partnerships in the Field of Infrastructure and Energy**

Synopsis: After the 1970s, the relationship in science and technology between the UK and India saw a period of almost complete neglect, due to diverse factors. It was only in the early 2000s, when India began to be noticed as a relatively significant player in global science and technology, that the UK government started to revisit their policies. In 2006, the first phase of the UK-India Education and Research Initiative (UKIERI) was proposed with significant financial contribution from the UK Government. This was more successful than it was ever imagined, and led to the second phase of the UKIERI in 2011, with funding now from both governments. These have led to increased research collaborations in Science and Technology, many of the projects being in the area of Infrastructure and Energy. It is now imperative to build on these successes, to be able to jointly develop technology that can solve the incredible variety of issues due to aging infrastructure and need for new forms of sustainable energy sources in both UK and India. The talk will focus on certain possibilities for policy and funding mechanisms to enable sustainability of the UK-India S&T research relationship in the future.

Contributors: Prof Pradipta Banerji, Director, Indian Institute of Technology, Roorkee & Prof Asif Usmani, Head of the Research Institute for Infrastructure and Environment, The University of Edinburgh

#### **Presentation 2: Learning from the reconstruction of major floods in the Himalaya: examples from Ladakh and Uttarakhand**

Synopsis: Major floods across the Himalaya and Gangetic Plains devastate communities and reshape the landscape. Therefore, it is essential that we learn from these events, and develop tools to improve mitigation strategies and build resilience. The reconstruction of rainfall distributions during an extreme storm event is a challenge that is usually tackled using satellite data; however, the temporal and spatial resolution of these data is limited. Using a range of new geomorphological techniques, we have been able to reconstruct storm rainfall with great precision, and develop new approaches to predicting the impact of extreme storms. We firstly applied these approaches to the 'Cloudburst' event in Ladakh in the summer of 2010 where we demonstrated that the devastating storm rainfall was localised over a very limited area, and that particular hillslope characteristics increased the impact of this event, driving debris flows that ripped through villages. In a more recent study on the Kedarnath Floods of 2013 in Uttarakhand, we have applied a new technique for analysing river catchments from digital topography to demonstrate that much of the devastation of the event could have been predicted. Through joint supervision of PhD studentships between our Universities, we are now expanding these approaches to understanding the major rivers of the Gangetic Plains. Dr Singh's expertise on the dating of ancient river



sediments and their sedimentological interpretation is combining with new and established technical facilities and expertise in Edinburgh (Sinclair and colleagues) in efforts to improve our understanding of the susceptibility of these rivers to extreme floods.

Contributors: Dr. Vimal Singh, Assistant Professor, Department of Geology, Centre for Advanced Studies, University of Delhi & Prof. Hugh D. Sinclair, Chair of Surface Geodynamics, School of GeoSciences, The University of Edinburgh

### **Presentation 3: Resilience of communities and critical infrastructure to man-made and natural hazards: dealing with uncertainty**

Synopsis: Extreme loads such as earthquakes and fires on structures produce large deformations and large stresses. The nature of these loads as well as structural properties in the high temperature/stress regimes are characterized by large amount of uncertainties. While probabilistic methods remain as the preferred tools for uncertainty modeling, their application, however, requires adequate data to be available to make acceptable stochastic models. When data is scanty, alternative methods of uncertainty quantification, such as, those based on interval analysis, convex modeling, and (or) fuzzy set theory become more relevant. Combining these tools with computational structural modeling (such as those based on finite element analysis) offer several challenges and the present study addresses two questions: (a) beginning with limited data, how to arrive at acceptable uncertainty models for loads and (or) structural properties and how to incorporate them into structural safety analysis? and, (b) how to rank order different sources of uncertainties based on their relative contribution to the response variability? The answer to the first question is developed by using convex models for data using theory of super-ellipsoids and a measure of safety is derived by solving an optimization problem. The second question is tackled by using notion of distance between two uncertain quantities. Illustrative examples involving response analysis of structural systems with uncertain parameters are presented.

Contributors: Professor C.S. Manohar, Professor, Indian Institute of Science; Professor Asif Usmani, Head of the Research Institute for Infrastructure and Environment, The University of Edinburgh, Professor G Ramachandran, Visiting Professor, The University of Edinburgh

### **Presentation 4: Ensuring Safety of Structures and Components in Nuclear Power Plants under Extreme Loads through Multidisciplinary and Multi-institutional Collaborations**

Synopsis: Over the past couple of decades it has become apparent that pooling of expertise, from multiple disciplines and organisations, is essential for ensuring safety of nuclear power plant structures and components. The safety of these systems is driven by the requirement to demonstrate that they are not vulnerable under extreme events of overload, impact, blast and fire. In the past decade, very rapid progress has been made in the numerical simulation and experimental verification of the entire damage scenario resulting from these extreme loads. The damage simulation problem is highly complex and involves multi-physics coupling and multi-scale modelling concepts from a range of disciplines. Rapid growth in computational power in conjunction with novel concepts of computational mechanics has enabled us to explore these multi-physics problems, which was not conceivable earlier. A few examples in this area will be presented. In recent years computer simulation has been

supplemented with novel experimental techniques that permit measurement at different length scales. Notable examples are optical crack profiling, digital image correlation and the acoustic emission techniques.

Bhabha Atomic Research Centre (BARC), Trombay, recently build and tested a large scale model of a prestressed concrete containment structure, which was approximately 15m tall and equipped with more than a thousand sensors. The aim was to subject this structure to high internal pressure that a plant would experience in case of an accident and monitor its behaviour as the structure was progressively destroyed. This was the largest such test ever conducted in the world. The details of the BARC containment (BARCOM) test model and the manner in which it was to be tested was made available to the international community to simulate and predict the behaviour of BARCOM. Sixteen organisations from around the world accepted the challenge. The University of Edinburgh was involved with this exercise right from its inception and has been the only academic institute to do so from the UK; two UK based consulting companies later joined the participants' group. This presentation will discuss the pre- and post-test evaluation of BARCOM and compare it to the predictions of the international participants. The experience of sharing expertise from around the world in general and with the University of Edinburgh in particular will be highlighted. Further the ongoing collaborative work in the area of thermal damage evaluation of structures under extreme event of fire will be also presented.

Contributors: Professor Ram Kumar Singh, Distinguished Scientist & Head - Reactor Safety Division, Bhabha Atomic Research Centre, Mumbai & Dr Pankaj Pankaj, Reader, School of Engineering, The University of Edinburgh

### **Presentation 5: Advancing the Efficiency and Production Potential of Excitonic Solar Cells (APEX) - a DST/RCUK project involving seven Indian research institutes and five UK Universities**

Synopsis: The EPSRC-DST funded project "Advancing the Efficiency and Production Potential of Excitonic Solar Cells (APEX)" has run from 2010 – 2014 and involves five UK Universities (Heriot-Watt, Edinburgh, Oxford, Cambridge, Imperial College) and seven Indian Research Institutes (NPL New Delhi, NCL Pune, IICT Hyderabad, JNCASR Bangalore, IISc Bangalore, IIT Delhi, IIT Kanpur). The collaborative project has involved student exchange, sample exchange, joint publication and participation in regular consortium meetings in the UK and India. We will give an outline of the aims and achievements of the project along with the challenges and rewards of working in a large transnational consortium.

Contributors: Dr Neil Robertson, Reader, School of Chemistry, The University of Edinburgh; Dr Satish Ogale, Chief Scientist, CSIR-National Chemical Laboratory, Pune & Professor Hari Upadhyaya, Professor, Heriot Watt University

### **Presentation 6: Concept of integrated wave energy devices and its optimization**

Synopsis: The enormous consumption of fossil fuel and the subsequent irreversible changes observed in ecological and environmental balance have generated renewable energy awakening in the latter half of twentieth century. Periods of research suggested that it can be realised through harnessing energy available in renewable energy sources





viz. Sun light, wind and ocean resources. Related to ocean resources, research is progressing to develop fine tuned systems for converting energy from ocean waves. This is due to the availability of waves over a large extent of area and also due to the high intensity of energy concentration compared with wind and sun light. In wave energy conversion, an interface device is needed to convert wave energy to mechanical energy before converting it into electric energy. These devices are known as Wave Energy Converters (WECs). Numerous concepts have been proposed, power rating ranging from a few Watts to mega Watts capacity. The existing concepts in WECs are broadly classified into three main categories; overtopping devices, wave activated bodies and Oscillating Water Column (OWC). Among these OWC has got the unique distinction of having turbine, the only moving component above the water surface. So the operation and maintenance are simple and easier.

Physically, OWC device needs to be installed near the shore. Due to the scarcity of land availability near the coast, it is advantageous to integrate such energy extraction devices with a coastal system, such as a breakwater or a coastal protection structure such as groin or an offshore breakwater. Numerous advantages can be obtained, mainly from the economy of the construction in addition to the coastal protection. A series of devices to be installed along the breakwaters makes a harbour to a green harbour and, also the absorption of the energy would be an additional stability to the breakwater.

In the present study, a series of laboratory study has been carried out to optimize an OWC device. The system parameters considered are energy conversion chamber width (B), bottom opening (O), mouth clearance (h) and the air vent opening. The effect of shape of the chamber, in particular the bottom profile of the chamber needs an optimum profile to attract more energy into the chamber. The spacing between two units is of great concern if these devices are integrated with an offshore breakwater. The salient observations from the laboratory will be presented.

Contributors: Professor S A Sannasiraj, Department of Ocean Engineering, Indian Institute of Technology Madras, Chennai & Dr Vengatesan Venugopal, Senior Lecturer, College of Science and Engineering, Institute for Energy Systems, School of Engineering, The University of Edinburgh

## **Parallel session – Student-led Research**

### **Part I: Sharing our Research: Voices of Doctoral Students**

#### **Presentation 1: Living with the Weather: Climate and Culture in the Indian Himalayas**

Synopsis: Weather constitutes a material risk to the body in rural Himachal Pradesh, north India. For purposes of livelihood, villagers work in the weather that arrives. They use various strategies to alleviate weather discomfort, involving diurnal rhythms, the built environment and social relationships. Particularly in the way neighbours relate to and host each other, the material-social characteristics of the environment facilitate the management of the thermal situation. In the low Himalayas, bodies, the built and unbuilt environment and social relationships both within the household and between neighbours all play in to the experience and implications of heat in the hot season.

Speaker: Ms Heid Jerstad, PhD Student, School of Social and Political Science, The University of Edinburgh

## **Presentation 2: Comparative Analysis of Mobile Payment Sectoral Systems of Innovations and Service Innovations between the UK and India**

Synopsis: The financial services industry is one of the most rapidly growing industries worldwide. Although mobile payment (m-payment) systems have generated a lot of hype, not all supportive infrastructures are in place where one firm's service can be applied globally. Technology has provoked major changes in this industry with how firms operate and innovate as well as how they adapt their business models. Additionally, how services expand and understanding the ways new services are developed in different countries are becoming increasingly relevant. This qualitative, multidisciplinary study compares the sectoral system of innovation (SSI) and service innovation of m-payment systems between a developed country, the United Kingdom (UK), and a developing country, India. The dissertation draws upon 27 original interviews in the UK and India in order to analyse and identify the drivers of innovation.

Findings from the research will show a lack of an all-encompassing and exhaustive perspective of m-payment systems. A hindrance of innovation has caused a fundamental problem identified in the UK showcasing a lack of strong innovative, specific institutions; while in India, poorly managed implementation of institutions has led to strengthening of cognitive institutions amongst firms. In particular, innovation in emerging fields that have yet to reach their technological maturity is just as strong in developing countries as compared to developed countries. Furthermore, innovation happens in developing countries through processes that are more complex than originally conceptualised.

Speaker: Heather Web, PhD candidate, University of Edinburgh Business School

## **Presentation 3: Lived Experiences of Residents in Care Homes in Goa, India**

Synopsis: My research explores the care processes and practices in the care homes and how far they are attuned to the needs, lives and identities of their residents. An understanding of the experiences of residents as they have been undergoing different stages of entering and settling into a residential care setting has been the main focus of this study, which illuminates the context in which resident experiences were embedded. I achieved this by exploring views and experiences of the different stakeholder involved. The study retrospectively examines residents' experiences during various stages – pre-entry, entry, post-entry and exit – of their residential career, the drivers and constraints during these stages, and the role of family, state, and the staff and management of care homes in contributing to these experiences. These experiences are presented as narratives – interleaved stories highlighting (some) important aspects of life in care homes in Goa. I have included the various responses made by residents to the different stages of their residential career – their ambivalences as well as their certainties, their anger as well as their passive acceptance, their dependence as well as their agency – and to interpret residents as sometimes vulnerable, sometimes invincible, and sometimes struggling. In doing so, I have provided insights into the ups and downs of life in care homes in Goa, through exploring paradigms that were crucial to residents' lives in my study. The hope is that this understanding will contribute to the development of improved policy and practice that better reflects the needs and wellbeing of older people and their families.

Speaker: Dr Deborah Menezes, School of Social and Political Science, The University of Edinburgh





#### **Presentation 4: Deconstructing the lasting lure of the Sholay cocktail - A tale of nine rasas blended perfect!**

Synopsis: Sholay (Embers, 1975), repeatedly reviewed by Hindi cinema fans and critics as the 'Greatest Bollywood Film Ever', four decades after its release, remains the 'ideal' manifestation of Salman Rushdie's description of the Indian film format as an 'epico-mythico-tragico-comico-super-sexy-high-masala (mix of conventional Western cinema genres) art form'. Sholay's 'most perfect masala film' iconicity, I will source to its 'balanced' evoking of the Nāṭyasāstra's (Sanskrit Poetics) nine prescribed rasas or primary emotions to be achieved from any dramatic achievement. This will be evidenced through an event by event analysis of each of the film's dramatic scenes, and the dominant projected emotion in the nature of its characters, each of who is constructed as triggers of a certain rasa in the audience. Seminal scenes of the film, directly inspired by 1960s' Hollywood Westerns will be compared and analysed to explore how the rasa evoking imperatives differentiate this 'Curry Western' from its 'Spaghetti Western' sources.

Speaker: Piyush Roy, PhD candidate, School of Social and Political Science, The University of Edinburgh

#### **Presentation 5: Lifestyle adaptation and its implication on sustainable housing: A contextual study of Mysore, India**

Synopsis- This paper reflects the findings of the research exploring the sustainable housing strategies acknowledging the peoples aspirations. This bottom-up approach will be a useful tool for the architects to promote sustainable housing and will be appropriate, when the Government of India implements its national mission on 'Sustainable Habitat', one of the eight national missions, identified to tackle climate change. This research presents the results of extensive fieldwork research in the southern-Indian city of Mysore to define the values held by the emergent middle-class in respect of the built environment. Common areas and shared spaces have traditionally been very actively used and have played a crucial role in both passive cooling strategies and the maintenance of socially sustainable communities. Field work shows that the built environment is polarised between well-maintained and protected housing interiors and poorly organised and maintained external spaces and examines as how these transition spaces are used to reflect their values and concerns. The paper examines whether earlier traditions in sustainable building design in Mysore, India, have relevance in a contemporary context and the importance of understanding the changing preferences and values of a newly affluent demographic.

Speaker: Satish Basavapatna Kumaraswamy, Edinburgh School of Architecture and Landscape Architecture, The University of Edinburgh.

#### **Presentation 6: Understanding the effects of earthquake and fire hazards on structures: A collaborative perspective**

Synopsis: Mitigation of natural and man-made hazards is an issue of major significance for the modern built environments and infrastructure in order to reduce the risk to the loss of life and property. San Francisco (1906) and Tokyo (1923) are regarded as the two greatest disasters in which the losses of life and property were as great as or even greater than the losses attributed to the earthquakes themselves. A lot of earthquakes in the past couple

of decades: Northridge (1994), Izmir (1999), Fukushima (2011), Haiti (2010) and Chile (2014) have reported small fires to large conflagrations (Kobe 1995) causing significant loss of life and property. Although the occurrences of such disasters are inevitable, a risk reduction scheme can be devised by thoroughly understanding the behavior of structures under such extreme loading conditions. A fast-growing urban infrastructure in the major cities located on the 'ring of fire', are particularly vulnerable to fire following earthquake events. In an effort to scrutinise the global scenario of fire following earthquakes and their effect on reinforced concrete structures, a team of researchers from Indian Institute of Technology (IIT) Roorkee and the University of Edinburgh embarked upon a collaborative project in 2009 with the aid of UK – India Education and Research Initiative (UKIERI). The team at IIT Roorkee conducted a series of full-scale and laboratory based tests on reinforced concrete structures which were first damaged by subjecting them to simulated earthquake loading and then exposed to fire. The results of these tests were used by the University of Edinburgh team to compare against computational models in order to develop a deeper understanding of the behavior of earthquake damaged RC structures in fire.

Speaker: Pravin Kamat, Researcher, Institute for Infrastructure and Environment, The University of Edinburgh

### **Presentation 7: Nanject - A novel drug delivery system using nanowires and nanoparticles**

Synopsis: According to the World Health Organization, about 12.7 million new cancer related cases are being reported worldwide in 2008 and about 4 million people die due to cancer in Asia alone. Chemotherapy and radiotherapy methods are being used for cancer treatment but patients are left with numerous side-effects. An alternative to this is targeted drug delivery where the drug is engineered to target only the affected area in the body.

Nanject is a proposed device which looks similar to a pharmaceutical patch made out of flexible polymer which can be applied to the skin where functionalized biocompatible superparamagnetic nanoparticles (SPIONs) made out of iron (II,III) oxide are potentially delivered through the hair-follicles using zinc oxide (ZnO) nanowires and ZnO nano-needles. ZnO nanowires are synthesized and chemically etched in such a way that the tip of the nanowire has a diameter of about 20 nm which gradually increases to about 1-2 microns till it reaches the base. The reported ZnO nanowires have a hexagonal crystalline structure and are aligned in the c-direction. Characterization was done by using a Scanning Electron Microscope (SEM), Atomic Force Microscope (AFM) and X-Ray Diffraction (XRD).

Speaker: Atif Syed, PhD Student, Institute for Integrated Micro and Nano Systems (IMNS) Scottish Microelectronics Centre, School of Engineering and Electronics, The University of Edinburgh

### **Presentation 8: Quantitative insights of core pluripotency factors in ES cell dynamics**

Synopsis: Pluripotent embryonic stem (ES) cell dynamics is controlled by a set of core pluripotency factors centred on Nanog, Sox2, Oct4 and Esrrb. The choice of ES cell fate between differentiation and self-renewal depends on the level of these factors. However, the mechanism by which these factors control the cell fate decision is not fully understood.



In this study, we used biophysical and novel biochemical assays to quantitatively measure how those factors communicate with each other. We measured the complex fraction of the protein-protein binding using fluorescence correlation spectroscopy (FCS) in the presence or absence of DNA. We used novel co-immunoprecipitation followed by FCS (COIP-FCS) to validate our quantitative findings. We found that a unique interplay is involved among them in the absence of DNA. Nanog strongly binds with Sox2 and Oct4 while it weakly binds with Esrrb. However, Oct4 strongly binds with Esrrb and Nanog while it weakly binds with Sox2. In addition, Sox2 does not bind with Esrrb. Surprisingly, these trends are reversed in the presence of cognate DNA. Oct4 cooperatively binds with Sox2 in the presence of sox-oct cis motif and Sox2 binds with Esrrb on sox-esrrb cis motif. Therefore, weak protein-protein interaction is balanced by the support of cognate DNA. Taking into account these strong protein-protein interactions and weak but DNA assisted cooperative binding interactions, our findings clearly provide insight into how these pluripotency factors communicate with each other to control ES cells dynamics.

Speaker: Dr Tapan Kumar Mistri, PhD, School of Biological Sciences, The University of Edinburgh

### **Presentation 9: Establishing India: British Women's Missionary Organisations and their Work with the Women and Girls of India from 1820 to 1870**

Synopsis: My work explores how Scottish and English women's missionary organisations established India as a key field for British Protestant missionary endeavour in the mid nineteenth century. I argue that India became privileged for Scottish and English women for reasons that historians have overlooked or misunderstood. Although accounts of Indian women saturated British missionary publications in the nineteenth century, the reasons why they became the focus of evangelical outreach were located in complex, and rather unexpected, local concerns for English and Scottish women. I also argue that the work with the women and girls of Indian that Scottish and English missionary women undertook has been distorted and misrepresented. Early British missionary women in India had little interest in high-caste Hindu women of the zenana; however, they actively sought engagement with more socially and racially marginal groups of girls and imagined that these groups held the key to the christianisation of India.

Speaker: Dr Caroline Lewis, PhD, School of History, Classics and Archaeology, The University of Edinburgh

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## **Friday 16 May 2014**

9.00 – 11.00: Cross-disciplinary Symposium

### **Presentation I: Harnessing Science and Education for ensuring food security and quality in India: The importance of a cross-disciplinary approach**

Synopsis: With a billion plus population in India constituting about 17% of world, food security has to be the core agenda of Agricultural Development. The task becomes much more challenging considering the population growth and limited availability of land and

water resources i.e. about 2.3% of global land and about 4.2% of water resources. Added to this is the issue of improving the income levels of about 60% of the population dependent for their livelihood on Agriculture that constitutes just 14% of the total GDP. Sustained growth in Agriculture sector is essentially required from crop diversification, agri-processing, and secondary agriculture to provide ancillary income to the farmers. India being one of the largest agriculture economy, has now achieved highest ever foodgrain production of over 259 mt, 262 mt of horticulture produce, 132 mt of milk, 6 mt meat and 90 mt fish. Studies on estimations of food demand by 2020 indicate that our national requirement would be about 280 million tonnes (MT) for food grains including 22 MT pulses, 35 MT oilseeds, 96 MT fruits, 152 MT for milk and milk products, and 87 billion eggs. This implies a quantum jump in the present level of production and productivity. The target of achieving 4% growth in agriculture while ensuring food security through additional production to bridge the demand supply gap was the prime drivers of all initiatives of the Government.

The cutting edge research on the science and technology development in Indian agricultural sector has been internationally acknowledged. With the objective of building global visibility in research and education, total 34 Niche Areas of Excellence and to provide skill oriented hands on training to the students, Experiential Learning Units have been established in 43 Universities. With over 80% population in the age group of 25-49, the Young India is continuing its efforts to enhance the efficiency of human capital, and the Council is implementing (a) consortia research platforms on select thematic areas, (b) Farmer FIRST approach to achieve indigenous linkages in agri-sector development, (c) Student READY approach to capacitate the agricultural students to develop entrepreneurial skills and ARYA to attract rural youth in agriculture.

To meet the challenges of the 21st Century, particularly concerning feeding the swelling population of our country, heavy investments for developing the requisite infrastructures and other areas of agriculture are essentially required in order to linkages from 'seed to market' and also to have efficient 'lab to land' transfers in order to meet the ends of the recently enacted National Food Security Act 2013.

Speaker: Dr S. Ayyappan, Director General, Indian Council for Agricultural Research, New Delhi

## **Presentation II: From Grassroots to Landscapes**

Synopsis: From Grassroots to Landscapes' takes one through a two decade long journey of The Corbett Foundation, one of the leading charities of India, highlighting its work at the grassroots level in some of the finest tiger reserves and unique wilderness landscapes of India such as Corbett Tiger Reserve, Kanha Tiger Reserve, Bandhavgarh Tiger Reserve, Kaziranga Tiger Reserve, Kanha-Pench Corridor and the Greater Rann of Kutch. The presentation raises important conservation issues, especially with a focus on mitigating the man-animal conflict that is the root cause of many bigger challenges faced by the government and conservation NGOs at a landscape level. The Corbett Foundation has demonstrated several interventions and programmes of a harmonious co-existence of wildlife and human beings in critical wildlife habitats through conservation, research, awareness, human health, veterinary care and sustainable livelihoods. The Corbett Foundation's association with the University of Edinburgh in the areas of veterinary care in these landscapes has been dealt with in greater detail. The Corbett Foundation's programmes have made direct and indirect positive impact on the habitat of flagship species such as the Royal Bengal Tiger, Asian Elephant, Swamp Deer, Sloth Bear, Greater One-horned Rhinoceros and Great

Indian Bustard. Mr. Dilip Khatau, Founder-Chairman of The Corbett Foundation strongly believes that conservation efforts should be approached in a holistic manner identifying links between local population's socio-economic fabric, dependence on forests, livestock and interface for interaction of various stakeholders. Community's involvement and support are vital for success of any conservation initiatives and The Corbett Foundation's approach revolves around it.

Speaker: Dilip Khatau, Chairman and Founder, The Corbett Foundation, India

### **Presentation III: Regulatory mechanism in biomedical research with special reference to ethical, legal and social issues in Assisted Reproduction in India**

Synopsis: The Indian Council of Medical Research (ICMR) has a critical and unique mission in India, which is to promote better health through research, over the years ICMR has grown as one of the prime biomedical research organization known nationally and at international level. The overall scientific performance of the ICMR is of high quality, and in the past years it has made significant progress in the scope and quality of its research output. The biomedical research at ICMR Hqrs. is being monitored and regulated by appropriate committees consisting experts from the relevant field of biomedical research. Simultaneously, all the proposals related with biomedical research needs to be approved by the respective Institutional Ethics Committees before processing for funding and the progress made under these projects and any deviation from the original protocol also needs to be informed to the respective Institutional Ethics Committees.

The advent of any new scientific development that have wide applications and which impinge on human life raise several technical and moral dilemmas and poses many ethical and technical challenges. The Assisted Reproductive Technology (ART) is no exception. ART also raises questions from society on their ethics and safety; in some instance moral issues also are raised. An additional factor arises when technology becomes privatized, with a possible loss of Govt. control. Under the National Guidelines as well as the draft Assisted Reproductive Technology (Regulation) Bill developed by ICMR, all the concern technical, ethical, moral, social and legal issues related with all aspects of ART including surrogacy have been addressed. The salient features of the draft ART (Regulation) Bill along with regulatory mechanism of biomedical health research at ICMR will be discussed during the presentation.

Speaker: Dr. R. S. Sharma, Senior Deputy Director General and Scientist – G; Indian Council of Medical Research, New Delhi

### **Presentation IV: Chemistry as Central Science in Shaping Materials of the Future**

Synopsis: Novel smart materials will play important role in meeting many of the global challenges of energy, environment and health. Materials, used as novel catalysts, optoelectronic, magnetic, gas adsorption and separation materials will be used for solution to these problems. Chemical science will provide inputs to the development of such smart and functional materials. A combination of retro-synthesis, understanding of structure-property relations by the use of spectroscopic tools as well as computational methods will be crucial in the above solution. In this talk, scope of chemistry in shaping materials

of the future will be discussed. An overview of specific work of hydrogen and CO<sub>2</sub> storage, renewable energy solution in terms of hydrogen and solar resources, designer catalysts from our laboratory will be presented.

Speaker: Dr. Sourav Pal, Director, Council of Scientific and Industrial Research-National Chemical Laboratory, Pune, India

**Presentation V: Past collaborations and future prospects for Edinburgh-India: A cross disciplinary perspective; Prof Suranjan Das, Vice-Chancellor, University of Calcutta, India & Member, Indian Council of Historical Research, Government of India**

11.30 – 1.00: Parallel sessions (4 sessions running simultaneously)

### **Parallel session – Humanities and Social Sciences**

#### **Part II: Towards a just and humane society: Building a sustainable future**

##### **Presentation 1: Oxytocin, Maternal Health and Millennium Development Goal-5 in India**

Synopsis: In rural Uttar Pradesh in 1982-3, during a project on the social organisation of childbearing, I observed a number of women in labour. Having presumed that birthing in rural north India would not be medicalised—in the fashion that was being widely critiqued at the time in the global north—I was astonished on the first such occasion to observe the labouring woman being injected with oxytocin to augment her labour. Subsequent research in the same area indicated that this extremely dangerous practice was becoming increasingly common. It also became clear from discussions with researchers working on other parts of South Asia that this use of oxytocin was not unique to western UP.

International protocols for the use of oxytocin specify that it should be administered intra-partum only by intravenous drip, with both mother and baby closely monitored and emergency obstetric care immediately available. None of these conditions applies in rural home deliveries. Further, although oxytocin is a scheduled drug in India and can supposedly be obtained only on prescription, phials of oxytocin can readily and cheaply be obtained over the counter from pharmacies even in small towns.

Millennium Development Goal-5 specifically targets maternal health, and the injection of oxytocin immediately post-partum was one of the recommended means of preventing or arresting post-partum haemorrhage (a major cause of maternal mortality in the global South). Supplies of oxytocin were to be made available through the formal channels of the government health care delivery system—in apparent ignorance of the widespread unsafe use of oxytocin intra-partum and its widespread availability on the open market.

This presentation will outline these findings and indicate how they have contributed to global health policy, particularly through the Gates Foundation funded "Oxytocin initiative" conducted by PATH (Program for Appropriate Technology in Health).





Contributors: Professor Patricia Jeffery, Sociology, School of Social and Political Science, The University of Edinburgh; Dr Abhijit Das, Centre for Health and Social Justice, Delhi and Jashodhara Das Gupta, SAHAYOG, Lucknow, India.

## **Panel Discussion 2: Social Exclusion and Marginalisation in India**

Chair: Dr Hugo Gorringe, Senior Lecturer, Sociology, School of Social and Political Science, The University of Edinburgh

**Synopsis-** Arguably one of the thorniest predicaments for post-colonial India lies in the fact that promises of (and aspirations towards) social justice and equality are set against continuing and myriad forms of inequality along lines of class, caste, gender, age and region. State authorities attempt to gloss over such inequalities and project the image of a modern, united and developed nation. The electorates' response, by contrast, points to the pervasive nature of discrimination, injustice, under-development and inequality in the everyday lives of many. What, however, accounts for these disjunctures between state rhetoric and everyday experience? How can we explain the persistence of forms of inequality whose demise was frequently predicted and anticipated in the post-colonial era?

In this panel a range of scholars based here at the University of Edinburgh will discuss their research relating to social exclusion and the marginalisation of low caste and adivasi populations. We will reflect on the situation in India today, think through the implications of this both in terms of research and in terms of socio-political interventions. We will ask what forms marginalisation takes, how such exclusion is perpetuated despite legal challenges to structures of dominance, and reflect on pathways to and movements for change.

Panellists: Dr Crispin Bates, Professor of Modern and Contemporary South Asian History, The University of Edinburgh; Dr Aya Ikegame, Visiting Research Fellow at the Open University; Dr Radhika Govinda, Lecturer, Sociology, School of Social and Political Science, The University of Edinburgh; Dr Jeevan Sharma, Lecturer in Anthropology and Development, School of Social and Political Science, The University of Edinburgh; Shruti Chaudhry, PhD Candidate at the University of Edinburgh; Karthikeyan Damodaran, PhD Candidate at the University of Edinburgh; Dr Ramesh Bairy T S; Assistant Professor, Department of Humanities and Social Sciences, Indian Institute of Technology Bombay, Mumbai, India

## **Parallel session – Medicine and Veterinary Medicine**

### **Part II: One Medicine for All – Partnering for future global health**

#### **Presentation 1: Learning methods key in the University of Edinburgh-Kerala Veterinary and Animal partnership**

**Synopsis:** This collaboration between Kerala Veterinary and Animal Sciences University and University of Edinburgh is a testimonial of the possible outcomes in a planned partnership between Universities. It has been instrumental at least in three spheres of interventions: (a) the enhanced capacity of KVASU Faculty in PBL teaching methodologies in Veterinary and Animal Sciences, with a focus on animal welfare issues (b) Enrichment of content and

research prioritization in the Centre for Wild Life Studies (CWS) of KVASU (c) Faculty and student visits from KVASU at graduate and post-graduate levels.

The three workshops, conducted by University of Edinburgh (with the visit of five faculty members) in the two campuses of KVASU benefitted 48 faculties in the field of Animal Welfare Sciences, Production Animal Health & Welfare and Companion Animal Welfare & Clinical Education.

These tangible outputs like applying PBL in the classes wherever possible and the faculty finding better learning outcomes of the classes are noteworthy. Pioneering the concept of introducing PBL into veterinary curriculum in India was highly appreciated by the Vice Chancellors and officers from Universities of South India in the National Workshop organized as a part of the collaboration.

A weeklong Academic Visit of KVASU faculty to School of Veterinary Medicine, Edinburgh, UK exposed them to the teaching, research, clinical facilities and farms of University of Edinburgh, bringing qualitative perception change for modifying approaches in Veterinary Education. Five Post Graduate students from Centre for Wild Life Studies and four Under Graduate students from KVASU had weeklong visit to UoE. Reporting to the Academic Council of Kerala Veterinary and Animal Sciences University, the students mentioned these visits as their best lifetime experience initiating a change in outlook. The collaboration with Centre for Wild Life Studies of KVASU had lectures in Kerala Veterinary and Animal Sciences University by faculty from Edinburgh and a plan to arrange teaching modules on Conservation Medicine for the current batch with UoE is in progress. More domains of partnerships are under development.

Contributors: Dr B Ashok, IAS, Vice-Chancellor, Kerala Veterinary and Animal Sciences University, Kerala

## **Presentation 2: One Health - One Welfare: Capacity building and the Indian Veterinary Profession**

Synopsis- One Health as a concept is concerned with improving the lives of all species—human and animal—and promotes the importance of a greater focus on precautionary measures, disease surveillance, controls and research, in order to reduce the incidence of animal diseases and minimise the impact of outbreaks when they do occur. There is increasing recognition that emerging health issues are linked to increasing contact between humans and wildlife, intensification and integration of food production and the increasing numbers of companion (pet) or stray small animals living in close proximity with humans. Animal Welfare is intrinsically linked to the physical and psychological health of an animal and is a concept designed to minimise the suffering of animals over which we have a duty of care. There is a growing appreciation that higher animal welfare standards have both a direct and indirect impact on food safety and quality and lead to fewer public health issues. In 2011, two of the world's largest veterinary medical associations issued joint statements stating that 'global efforts are needed to help ensure the health, safety and welfare of both animals and people'. In addition they were clear that veterinarians play an essential role in protecting and promoting the welfare of all animals and animal welfare science should become a major subject in the curriculum of every veterinary school. At the end of 2011, a veterinary meeting was jointly organised by CABI and the University of Edinburgh and hosted by ICAR in Delhi, where the issue of strengthening the veterinary profession in India to improve food security was discussed and where recommendations were made related to international collaboration to enable best practice to be based on evidence, and to provide





information and support in developing the Indian veterinary curriculum. This meeting has led to a number of initiatives and collaborative projects over the past two years and more recently a major veterinary conference co-organised by Edinburgh and the CVA and hosted by ICAR's NIANP in Bangalore with the collaboration of the Karnataka Veterinary School. In this talk I will discuss the way in which the relationship between Animal Welfare and Human Welfare and the important role of the veterinarian, is being promoted within the context of work in India by the Jeanne Marchig International centre for Animal Welfare Education within the RDSVS.

Contributor: Professor Natalie Waran, Jeanne Marchig Professor of Animal Welfare Education and Director Jeanne Marchig International Centre for Animal Welfare Education, RDSVS, The University of Edinburgh

### **Presentation 3: A KVASU-University of Edinburgh Working Model for Partnership in Wildlife Studies**

Synopsis- The Kerala Veterinary and Animal Sciences University is located amidst the pristine forest clad hills of Wayanad District of Kerala, a part of the Nilgiri Biosphere Reserve region of the Western Ghats. The University established the KVASU Centre for Wildlife Studies (KVASU-CWS) in 2011, as a mark of its commitment to developing academic and research programmes in wildlife studies. A dialogue was initiated between faculty on both sides since 2011 with a motive of establishing a formal relationship that would mutually benefit the students and faculty on both sides and contribute to wildlife welfare and conservation. An MoU for mutual collaboration with special thrust on wildlife studies and conservation medicine was signed between both Universities on 19th February, 2013. Dr. Anna Meredith, Professor of Conservation Medicine, University of Edinburgh, visited the KVASU-CWS during July, 2013, and taught post graduate wildlife biology and veterinary students a module on Conservation Medicine. The introduction to this concept was an eye opener for the students. Subsequently, the University of Edinburgh extended an invitation to five students of the MS (Wildlife Studies) programme of KVASU and one faculty to visit Edinburgh to learn about wildlife management in the Scottish scenario. The five day visit to the University of Edinburgh, Edinburgh Zoo, Highland Wildlife Park and the Scotland National Museum was a unique experience to the visitors which gave the group a quick glimpse of Scottish life and helped gain insight about wildlife management in Scotland. The visit was important because it was the first officially sponsored overseas travel by KVASU students. The fact that one of the students was an indigenous tribal girl from Wayanad made the event more special. The partners are looking forward to developing collaborative student and faculty research and exchange programmes that will further support the cause of wildlife conservation.

Contributors: Dr George Chandy, Assistant Professor and Officer-in-Charge, KVASU Centre for Wildlife Studies, Kerala Veterinary and Animal Sciences University & Dr Anna Meredith, Professor of Zoological and Conservation Medicine, Royal (Dick) School of Veterinary Studies, The University of Edinburgh

## **Parallel session – Science and Engineering**

### **Part II: Securing a Shared Future: A Science symposium**

#### **Presentation 1: Envisioning Future and Preparing for It**

Synopsis: Most of the progress of modern science and engineering has taken place in last hundred years. Many of the fundamental principles of modern science were established in just in the last century. However, the scientific and technological progress in the last century has been catastrophic which changed the paradigm of life and societal development. The two primarily factors which changed the world are rapid transportation and high speed communication. The first one contributed to creation of mega cities while the second one contributed to creation of A3 knowledge society. In twenty first century the world exists simultaneously in two spaces, namely cyber and physical. The two have very different impacts on society and have different rates of growth. The physical world is linear while the cyber world is exponential. It is therefore important that one understands both the worlds while envisioning the future and preparing for it. The future envisioning exercise can be either an extrapolation exercise or path defining exercise. If envisioning the future is an extrapolation exercise, then extrapolation of the physical world is rather straightforward from the past, but as the history tells, the extrapolation of the cyber world is just impossible beyond even a decade. On the other hand, if it is a path defining exercise (that is what it should be), it is worthwhile to ask what is the correct path for human development! Science and engineering can solve the problems but correct problems are to be defined. The definition of problem should include human comfort, values, sustainability, happiness, equity, inclusiveness etc. The engineers and social scientists therefore have to closely work in defining correct problems and paradigm of development that is sustainable, energy efficient, harmonious with the nature and will uplift the humanity as a whole. A new education paradigm beyond the information and skill development needs to be developed. It is worrisome that many of the natural resources are at the verge of exhaustion just in one century due to their excessive use. A new value system is to be developed for making the society perennially sustainable. Creation of value system is a slow process. It may require generations. The current century therefore should focus on taking corrective measures needed for sustainable and inclusive development and on advancing technology for humanity as a whole.

Contributor: Professor RK Shevgaonkar, Director, Indian Institute of Technology, Delhi

#### **Presentation 2: What happens to structural materials at high temperatures?**

Synopsis: Components of turbines, combustion chambers, multi-layered electronic packaging structures, and nuclear reactors are subjected to transient thermal loads during their service life. The same is true of built infrastructure, where there is a risk of fire, and the materials of construction such as steel, concrete and timber. This presentation will highlight the complex physicochemical processes that take place in concrete, when exposed to fire and also present possible rehabilitation methods using a combination of fibre reinforced polymer fabric wraps and geo-polymer mortars applied as a strengthening method on the primary concrete structural member and assess the potential benefits accrued.

In the presence of a discontinuity, such as a crack, exposure to heating can create high



temperature gradients, which, in turn, causes stress intensification at crack tips. This causes damage and instability of the system thereby reducing its service life. The concepts of thermal fracture mechanics and its major parameters, known as the thermal stress intensity factors, greatly help in the assessment of stability and residual life. The evaluation of thermal stress intensity factors (SIF) becomes computationally difficult when a structural or mechanical component contains an interface or a joint between two different materials. Mathematically, the SIF's at bi-material interfaces are complex due to the oscillatory singularity that exists at the crack tip. This talk will also present some of the difficulties associated with the evaluation of the SIF's at bi-material interface cracks when subjected to mechanical and thermal loads.

Contributors: Professor Ananth Ramaswamy, & Professor JM Chandra Kishen, Department of Civil Engineering, Indian Institute of Science, Bangalore & Prof Asif Usmani, Head of the Research Institute for Infrastructure and Environment, University of Edinburgh

### **Presentation 3: What do snow and bone have in common?**

Synopsis: This presentation discusses a collaboration that not only spans continents, but also crosses material boundaries. It would appear that there are no discernable similarities between bone and snow. In fact international research groups conducting research on these two materials are entirely distinct and unattached. However, in this collaboration it was realised at an early that there are considerably similarities between the two materials; they are both porous and their micro-architecture is surprisingly not dissimilar. We decided to use identical techniques to examine the micro-architecture, with great success. We then went step further and developed procedures that permit the prediction of the mechanical behaviour of the two materials using identical approaches. The presentation also discusses how this collaboration was extended to include probabilistic analysis of bone fracture, which is necessitated by the randomness of material properties. In addition to our scientific curiosity our interest in these materials emanates from our ambition to be able to predict avalanches and bone fractures. Ability to do this will lead to appropriate preventative measures to be undertaken. We believe that exploiting complementary expertise via collaborations that do not appear natural at the first sight will be a big step towards sustainable development.

Contributors: Prof Suhail Ahmad, Head of the Department of Applied Mechanics, IIT Delhi & Dr Pankaj Pankaj, Reader, University of Edinburgh

### **Presentation 4: How to make buildings safer under multiple hazards of earthquake followed by fire?**

Synopsis: Events such as Hurricane Katrina and 2011 Tohoku earthquake and tsunami have demonstrated starkly that even the most highly developed nations on earth were caught desperately short of preparedness and foresight in their ability to mitigate the effects of such disasters. The potential for severe environmental, economic and social impacts is even greater in newly industrialising and rapidly urbanising countries such as India. It is therefore vital that policy makers and planners in both India and UK ensure that researchers work to develop solutions and strategies for hazard mitigation. This presentation describes an innovative partnership between the UK and Indian partners to build a comprehensive framework for future research into the area of infrastructure resilience. Such a framework

will mean potentially expensive infrastructure related research can be made more affordable through economies of scale and by sharing resources and expertise between research institutions internationally.

Contributors: Professor Umesh Kumar Sharma, Associate Professor Department of Civil Engineering, IIT Roorkee & Professor Asif Usmani, Head of the Research Institute for Infrastructure and Environment, The University of Edinburgh

### **Presentation 5: Indian Efforts towards harnessing wave energy**

**Synopsis:** The world over the effort to tap renewable sources of energy is being attempted on a war footing. Land based renewables will soon be facing constraints due to conflicts over land use and the rising land costs. While solar, wind, biomass and other forms are already being tapped across the globe, energies which can be harnessed from the vast ocean have yet to move from the research arena. Ocean energy can be harnessed in the form of waves, currents, tides and temperature gradient.

The Waves are caused by winds blowing on the surface of the ocean, which in turn are due to pressure differences, due to temperature gradients caused by Sun. Wave power devices extract energy directly from the motion of waves at the surface or from pressure fluctuations just below the water surface.

As far as the Indian scenario goes, for nearly two decades research has been carried out on an oscillating water column (OWC) device at a place called Vizhinjam in Kerala in the south west coast. This was a large OWC in a caisson near the breakwater in 10m water depth. A lot of insight was derived as a part of the process in which several power module designs with Wells turbine and Impulse turbine of different configurations were tried out. The power generated was also used to run a reverse osmosis based desalination plant of capacity 10,000 liters per day. This was the first ever self-sustaining system where power was generated from the sea to make fresh water out of sea water. However from the complexities in the structural and hydrodynamic point of view leading to high cost and also the low wave climate in the tropical regions, work is now being focused on smaller floating wave powered devices for coastal locations. Laboratory studies as well as actual field trials are being conducted to optimize such devices and their associated turbine generator modules. The low wave power makes it challenging to design commercially viable systems but from another viewpoint may make designs easier and more cost effective.

NIOT has been working extensively on the floating device called the Backward Bent Ducted Buoy (BBDB). Initial open sea trials have indicated that further optimization of turbine performance along with the pneumatic efficiency is possible. Towards that end, CFD studies and more sea trials are being carried out. The resulting data will enable scaling up the device. Hydrodynamic studies and effect of mooring on the floating body are also being studied. A scaled up prototype version will be designed in the next few months. The vision for the future is small modules of low cost wave powered devices to serve coastal communities. Preliminary work on conversion of ocean currents into useful power is also underway.

Contributors: Dr M.A. Atmanand, Director, National Institute of Ocean Technology, Chennai; Professor A.R.Wallace, Dean International - College of Science and Engineering, Institute for Energy Systems, School of Engineering, The University of Edinburgh and Dr Vengatesan V.Venugopal, College of Science and Engineering, Institute for Energy Systems, School of Engineering, The University of Edinburgh

**Presentation 6: Critical evaluation of available toxicity due to silver nanoparticles (AgNPs) in Indian Sundarban mangrove wetland, A UNESCO World Heritage Site - A UKIERI collaborative project with the University of Calcutta.**

The Indian Sundarban mangrove delta is subject to contamination from e.g. textile industry. A collaborative, multi-disciplinary research project, funded by the UKIERI (British Council) to conduct the first assessment for the quantification, speciation and toxicity of silver nanoparticles in surface marine sediment samples from intertidal mudflats of Sundarban mangrove wetland. The work describes the spread of silver (and other heavy metals including arsenic) contamination along the river delta and also attempts to characterise the silver present (ionic or nanoparticulate form).

Contributors: Helfrid Schulte-Herbrüggen, EPSRC Doctoral Prize Fellow & Lecturer, Institute for Infrastructure and Environment The University of Edinburgh and Professor SK Sarkar, Professor in Marine Science, University of Calcutta

**Panel Discussion III – What does Edinburgh mean to me? Reflections from Indian students at the University of University**

Chairs – Mrs Janet Rennie, Director of Academic and Student Administration, College of Humanities and Social Sciences & Dr Dina Sidhva, Honorary Fellow, Edinburgh India Institute

Synopsis: This round table discussion seeks to ascertain the lived experiences of students of Indian students as they journey through their academic lives in the University of Edinburgh. Indian students from across the University will explore, question and reminiscence about their journey from the time they decided to come to Edinburgh, studying and wider life in the University to their achievements and their legacy. It is hoped that this round table besides examining the highs and lows of students' experiences will also attempt to determine the factors that may be crucial in supporting and enhancing the 'student experiences' in the University.

**Friday 16 May 2014 – Afternoon Session**

**Edinburgh and India – The Way Forward**

1.45 – 2.45: Panel Discussion IV: Higher Education in India and Scotland – Prospects and Challenges

Venue: Pentland, JMCC

Chair: Dr Sue Rigby, Vice Principal Learning & Teaching, The University of Edinburgh

Synopsis: Scotland and India have much to offer in the field of higher education. As a pioneer in providing education at all levels, Scotland's history is rich in figures whose work has greatly influenced modern thinking around the world. The Scottish Enlightenment

produced great thinkers like David Hume, Adam Ferguson and Joseph Black, pioneers who all studied here at Edinburgh. Today, that tradition of innovation and excellence in a wide variety of fields means Edinburgh is ranked as one of the world's top 20 universities. India too can lay claim to a history rich in innovation and discovery. This is a land which produced the Vedas – considered the earliest literary record in Indo-aryan civilisation – and where scholars such as Pingala and Aryabhata constructed the modern decimal-based numbers system.

Today, India's requirement for a well-educated workforce is greater than ever and Scotland is well positioned to work in partnership to help achieve this. Edinburgh's existing partnerships with Indian institutions demonstrate that there is a capacity and willingness to learn from each other, but what does the future hold? Can India's aim of tripling its higher education enrolment numbers by 2020 be achieved? How well-positioned is Scotland to help? Can we find a future that is mutually beneficial?

Against this backdrop, the panel aims to explore some of the opportunities for engaging with India's HE sector and to explore some of the challenges that might need tackling in working transnationally where strengths are appreciated and differences understood and work together to developing equal and sustainable partnership.

Panellists:

Pawan Agarwal-IAS, Adviser - Higher Education, Planning Commission, Government of India; Prof M Rajaram, Vice Chancellor – Anna University, Chennai; Prof Suranjan Das, Vice-Chancellor, University of Calcutta; Kate Walker, Head of Education, British Council, Scotland; David Lott, Deputy Director (Policy), Universities Scotland; Prof Sethu Vijayakumar, Professor of Robotics and Director of the Institute of Perception, Action and Behaviour, The University of Edinburgh; Graham Thomson, Director of Scottish Centre for Studies in School Administration; Moray House School of Education, The University of Edinburgh.

2.55 – 4.05 Symposium: Innovation, Sustainability and Partnership – Looking Ahead;  
Venue: Pentland, JMCC

**Presentation I: Pawan Agarwal-IAS, Adviser - Higher Education, Planning Commission, Government of India**

**Presentation II: Sustainability and Business: the Human Rights Link**

Synopsis- Companies from emerging economies have begun investing internationally, often in other developing countries. Since economic liberalisation in 1991, Indian companies have made significant investments in all parts of the world. Like companies elsewhere, many Indian companies view human rights as the responsibility of the state primarily. But according to the UN Human Rights Council-endorsed Guiding Principles which apply to all companies in all contexts, companies have independent responsibility to respect human rights. That should not be difficult for Indian companies - they have to look at their own best practices, their past behaviour, and Gandhian principles of trusteeship. While Gandhian economics stresses preference for labour over mechanisation and rural over urban areas, it also focuses on environmentally-sound business principles, non-confrontational labour management relationships, and acceptance of limits on growth. Many modern business ideas owe their origin to Gandhian thought - sustainability, the focus on the bottom-of-the-pyramid, on the vulnerable, marginalised, and the poor. We see it in many ideas of low-cost





technology and products being developed in India - ranging from eyecare, automobiles, pharmaceuticals, and hand-held computers. Businesses can be sustainable only if they take into account their impact on society, and if they take urgent steps to mitigate adverse impacts. It is true of environment, and it is as true for human rights.

Speaker: Salil Tripathi, Director of Emerging Issues, Institute for Human Rights and Business London, formerly with Amnesty International in London, and author and journalist

### **Presentation III: The Changing Face of Sustainability in India - Looking Ahead through Case Studies**

Synopsis- India has often been compared to an elephant because initially, the economy was slow and prone to ambling but when it finally surged forward, it shook the world and withstood the crisis of a global recession. Many Indians would rather do away with that analogy, but being an elephant has its inherent advantages like a memory that is impossible to erase and an intelligence that promotes innovation. Similarly, India too, is at an advantage because embedded in its memory is a culture of frugality and a survival instinct rooted in 'jugaad' or the creative use of meagre resources. These have been a part of the Indian psyche long before Global Warming and Climate Change made 'sustainability' a buzz word and an essential practice. However, unfortunately, in the last two decades, in a quest to achieve rapid economic development, India veered off the path of 'sustainability' with grave consequences. But now with the pressures of over-population leading to resource depletion and rising inflation combined with climatic changes, the country has once again been forced to revisit its ancient wisdom of 'resource consciousness'. These compulsions are driving innovations in all the sectors and the coming years will witness more refined models of sustainability through public-private partnerships with the new Companies Act 2013 that mandates a 2% spend on Corporate Social Responsibility (CSR). The Indian elephant is now ready to charge and one hopes that through responsible innovations and strategic partnerships, the country will truly embrace and redefine 'sustainability' for a better planet.

Speaker: Dr Rashneh Pardiwala, Founder and Director, Centre for Environmental Research & Education, Mumbai and Alumni-The University of Edinburgh.

#### **4.15 – 5.25: Panel V: The future of Edinburgh-India Relations; Venue: Pentland, JMCC**

Chair: Professor Susan Deacon, Assistant Principal Corporate Engagement and Fellow, Academy of Government, The University of Edinburgh

Synopsis: Huge potential exists to combine the skills and expertise that exist across India and within the University of Edinburgh. Much has been achieved – much more can be achieved. What practical steps need to be taken in the short, medium and long-term to bring about the strategic aims that have been identified? What can individuals and institutions within Edinburgh and across India now do to ensure the momentum engendered at this conference continues? How can we make the discussions at this conference the beginning of an epic journey of intellectual discovery that will help change lives for the better? How can the India Institute be a game changer in engaging with not only the academic community but forge links with the wider community both here and in India?



Panellists: Prof Steve Hillier, Vice Principal-International, University of Edinburgh  
Prof Roger Jeffery, Dean International (India) and Director, EII  
Prof Natalie Waran, Director (Jeanne Marchig International Centre for Animal Welfare Education, The University of Edinburgh; Dr B Ashok, IAS, Vice-Chancellor, Kerala Veterinary and Animal Sciences University; Mr Rob Lynes, Director, British Council India; Prof RK Shevgaonkar, Director, Indian Institute of Technology, Delhi; Dr George Palattiyil, Deputy Director, Edinburgh India Institute



## Directory of engagements between the University of Edinburgh and Higher Education Institutions in India

Partner Institutions	UoE Subject Areas	Types
Indian Council for Cultural Relations	South Asian studies	General MOU
Maulana Azad Medical College, India	Medicine, Clinical surgery	General MOU
Delhi University	Mathematics, GeoSciences, Politics, South Asian studies, Literature, Social Anthropology, History, Philosophy, Sports	General MOU, Student Mobility, Research Collaboration, faculty exchange
National Centre for Biological Sciences(NCBS)	Stem cell research, Autism, spectrum disorders, intellectual disabilities	Research collaboration, student mobility, joint project
Mahatma Gandhi University	Engineering	Staff Mobility
Department of Biotechnology, Ministry of Science & Technology	Biological and Biomedical Sciences	General MOU
Jawaharlal Nehru University	Social Anthropology, Sociology, History, Sociology, South Asian studies, Social Work, Philosophy, Politics and International Relations	Research Collaboration, Student Mobility, General MOU
Centre for Studies in Social Sciences	Social Anthropology	Research Collaboration
Akvo Foundation	GeoSciences	Other
University of Hyderabad	Stem Cell Research, English, South Asian studies	Research Collaboration, Staff Mobility
Public Health Foundation of India	Population Health Sciences	Research Collaboration
University of Mumbai	Architecture, Social Work	Research Collaboration
Delhi School of Economics	Sociology	Research Collaboration
Nagaland University, Kohima Science College	Divinity and Religious Studies	Research Collaboration
Deccan College, Institute for Social and Economic Change (ISEC)	English, Linguistics	Research Collaboration
Burdwan University	Politics	Research Collaboration
Institute of Social Sciences	Politics	Research Collaboration
University of Jammu	GeoSciences	Research Collaboration
University of Kashmir	GeoSciences	Research Collaboration
National Institute of Animal Biotechnology (NIAB)	Biological and Biomedical Sciences, Veterinary Studies	General MOU
National Museum of Ethnology (Minpaku)	History	Research Collaboration
Institute of Advanced Studies Hyderabad	History	Research Collaboration
Indian Institute of Science, Bangalore	A wide range of subjects	General MOU
Indian Institute of Technology Madras	A wide range of subjects	General MOU
University of Calcutta	South Asian studies	General MOU, Staff Mobility
Kurukshetra University	GeoSciences	Research Collaboration
Gujarat University	Mathematics	Other
Indian Veterinary Research Institute	Veterinary Studies	Research Collaboration
Indian Council of Agricultural Research	Veterinary Studies	Research Collaboration

<b>Partner Institutions</b>	<b>UoE Subject Areas</b>	<b>Types</b>
Venky's, Centre for the Development of Advanced Computing (CDAC)	Veterinary Studies	Research Collaboration
University of Calcutta	Engineering	Research Collaboration
Delhi School of Economics	Economics	Research Collaboration
Visva Bharati University	Divinity and Religious Studies	Research Collaboration
Krishnanath College	Divinity and Religious Studies	Research Collaboration
Jadavpur University	Divinity and Religious Studies, Literature, Social Anthropology, Sociology	Research Collaboration, Student Mobility
Madras Institute of Development Studies	South Asian studies	Research Collaboration
Goa University	South Asian studies	Research Collaboration
Centre for Development Studies	Sociology, South Asian studies	Research Collaboration
Nagaland University	South Asian studies	Research Collaboration
Centre for Studies in Social Sciences	Architecture	Research Collaboration
Indian Institute of Information Technology, Hyderabad	Speech Technology	Research Collaboration, Student Mobility
Indian Institute of Technology Guwahati	Speech Technology , Computing Sciences (Informatics)	Research Collaboration, Student Mobility
Centre for Studies in Ethics and Rights, Mumbai	Law, Social Anthropology, Sociology	Research Collaboration
Central Institute for Research on Goats	Veterinary Studies	Staff Mobility
Centre for Health and Social Justice	Social Anthropology, Sociology	Research Collaboration
Society for Economic and Social Studies	Social Anthropology, Sociology	Research Collaboration
Social Science Baha	Social Anthropology, Sociology	Research Collaboration
Sree Chitra Tirunal Institute for Medical Sciences and Technology	Regenerative Medicine	Research Collaboration, Student Mobility
Veterinary Council of India	Veterinary Studies	Networks
Kerala Veterinary & Animal Sciences University	Veterinary Studies	Visits, knowledge exchange
Animal Welfare Board of India	Veterinary Studies	Networks
Indian Institute of Technology Roorkee	Engineering	Research Collaboration
University of Jammu	GeoSciences	Research Collaboration
University of Kashmir	GeoSciences, Politics and International Relations	Research Collaboration
Indian Institute of Technology, Bombay,	Social Anthropology	Research Collaboration
Central Institute of Indian Languages	Social Anthropology	Research Collaboration
National Institute of Advanced Studies	Biological Sciences	Research Collaboration
Zydus Cadilla Healthcare	Social Anthropology, Sociology	Research Collaboration
Kenyatta University	Computing Sciences (Informatics)	Research Collaboration
National Centre for Biological Sciences	Computing Sciences (Informatics)	Joint Degree Programme
KTH Royal Institute of Technology	Computing Sciences (Informatics)	Joint Degree Programme
Indian Institute of Technology Hyderabad	BioEnergy	Staff Mobility



<b>Partner Institutions</b>	<b>UoE Subject Areas</b>	<b>Types</b>
MS Swaminathan Research Foundation	Business Studies	Research Collaboration
Indian Institute of Management Bangalore	A wide range of subjects	General MOU
Indian Council for Medical Research	A wide range of subjects	Research Collaboration, Staff Mobility, Student Mobility
The Institute for Research in Reproduction	Biological and Biomedical Sciences,	Research Collaboration, Staff Mobility, Student Mobility
Tata Institute for Fundamental Research Mumbai	Computing Sciences (Informatics), Mathematics, Physics & Astronomy	Research Collaboration, Staff Mobility
The United Theological College Bangalore	Divinity and Religious Studies	Student Mobility
Tamilnadu Theological Seminary	Sociology	Research Collaboration
Madras Institute of Development Studies	Sociology	Research Collaboration
Tata Institute of Social Sciences	Sociology, Social Work	Research Collaboration
Victoria Memorial Hall	Humanities and Social Sciences	Networks, Research Collaboration
Jamia Milia Islamia	South Asian studies, Politics and International Relations	Research Collaboration
National Archives of India	South Asian studies	Research Collaboration
National Institute of Advanced Studies	South Asian studies	Research Collaboration
Institute of Economic Growth	South Asian studies	Research Collaboration
Ballabh Pant Institute of Social Sciences	South Asian studies	Research Collaboration
Nagarjuna University	Law	Research Collaboration
Centre for Policy Research	Law	Networks
Sree Chitra Tirunal Institute for Medical Sciences and Technology	Social Work, South Asian studies	Research Collaboration
Nizam's Institute of Medical Sciences - NIMS	Psychology	Research Collaboration
Sree Chitra Tirunal Institute for Medical Sciences and Technology	Psychology	Research Collaboration
Manipal Clinic	Psychology	Research Collaboration
Association of Neuroscientists of Eastern India	Psychology	Research Collaboration, Staff Mobility
Alzheimer's and Related Disorders Society of India	Psychology	Research Collaboration, Staff Mobility
Apollo Clinics	Psychology	Research Collaboration, Staff Mobility
Voluntary Health Services	Psychology	Research Collaboration
National Brain Research Centre	Psychology	Research Collaboration
Foundation for Research in Community Health	Sociology	Research Collaboration
Foundation for Medical Research	Sociology	Research Collaboration
Lalbbhai Dalpatbhai Institute of Indology	Literature	Other
Dr. B.R. Ambedkar University	Literature	Other, Research Collaboration
West Bengal State University	Literature	Other, Research Collaboration

<b>Partner Institutions</b>	<b>UoE Subject Areas</b>	<b>Types</b>
Centre for Developing Societies	Philosophy	Research Collaboration
The Energy and Resources Institute (TERI)	Social Anthropology	Research Collaboration
National Institute of Advanced Studies	Social Anthropology	Research Collaboration
Indian Institute of Technology, Bombay	Chemistry	Research Collaboration
Indian Institute of Technology Kanpur	Physics & Astronomy	Research Collaboration
Institute of Mathematical Sciences Chennai	Mathematics	Research Collaboration
Shanmugha Arts, Science, Technology & Research Academy [SASTRA]	Mathematics	Research Collaboration
Saha Institute of Nuclear Physics (SINP)	Mathematics	Research Collaboration
Harish Chandra Research Institute (HRI)	Mathematics	Research Collaboration
National Institute of Animal Biotechnology (NIAB)	Biotechnology, Veterinary Studies	Research Collaboration
Public Health Foundation of India	Population Health Sciences	Research Collaboration
All India Institute of Medical Sciences	Medicine	Research Collaboration
National Institute of Virology	Population Health Sciences	Research Collaboration
National Institute of Oceanography (NIO)	GeoSciences	Staff Mobility
Bharathidasan University	Biochemistry	Research Collaboration
Indian Institute of Technology Delhi	Engineering	Research Collaboration, Staff Mobility, Student Mobility
Banaras Hindu University	Politics and International Relations	Research Collaboration
University of Pune	Politics and International Relations	Research Collaboration
National Law University	Social Anthropology	Research Collaboration
The Corbett Foundation	Veterinary Medicine	Workshop
Christian Medical College, Vellore	Medicine	Collaboration, visits
Sir JJ College of Architecture	Architecture	Symposium
National Physical Laboratory	Energy	Research Collaboration
National Chemical Laboratory	Energy	Research Collaboration
Indian Institute of Technology Kanpur,	Energy	Research Collaboration
Indian Institute of Chemical Technology	Energy	Research Collaboration
Indian Institute of Technology Delhi,	Energy	Research Collaboration
Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR)	Energy	Research Collaboration
United Theological College Bangalore	Divinity and Religious Studies	Student Mobility
Scottish Church College, Calcutta	Wide subjects	Visit
National Archives of India	Anthropology	Visit
National Institute of Immunology	Veterinary	Visit
Indian Society of International Law	Law	Visit
National Centre for Advanced Science Research	Research	Visit

<b>Partner Institutions</b>	<b>UoE Subject Areas</b>	<b>Types</b>
Azim Premji Foundation	Education	Visit
United Theological College Bangalore	Divinity studies	Visit
Anna University Chennai	Engineering	Visit
IACR	Medicine	Visit
Commonwealth Veterinary Association (CVA), Karnataka Veterinary Animal Fisheries Sciences University (KVAFSU), National Institute of Animal Nutrition and Physiology (NIANP)	Veterinary Research	International Conference
CVA, Karnataka Veterinary Council	Veterinary Research	Lecture

## **Preston Lodge Pipe Band and Highland Dancers:**

### **Pipers:**

Pipe Major Lee Moore

Ben Muir

Courteney Ritchie

Erin Ritchie

Kimberley McKay

Lucy Thomson

Reece Campbell

### **Drummers:**

Leading Drummer Kerilee Doran

Becky Pollard

Mairi Allan

Hannah Yorkston

Emma McDonald

Siobhan Menzies

### **Highland Dancers:**

Brooke Ritchie

Farzaneh Dastkhordi

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