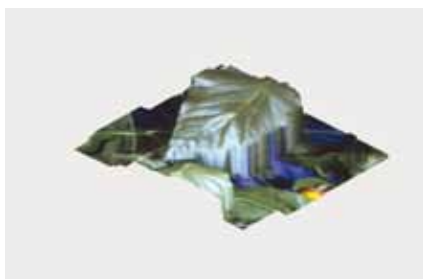


# nexus

## LIFE-SCI VISIONS 2011 CALENDAR SUBMISSIONS

### Submissions from East of Scotland Life Science Related Organisations and Institutions

1. Computer reconstruction of pepper plant leaf surface by combining coarse-resolution range and stereo colour images



**Biomathematics & Statistics Scotland** undertakes research, consultancy and training in mathematics and statistics as applied to agriculture, the environment, food and health. Founded in 1987, BioSS has strong collaborations with many research organisations and universities, and provides high-level quantitative skills to client organisations in both public and private sectors. ([www.bioss.ac.uk](http://www.bioss.ac.uk))

2. Here's looking at you, kid. *Drosophila*

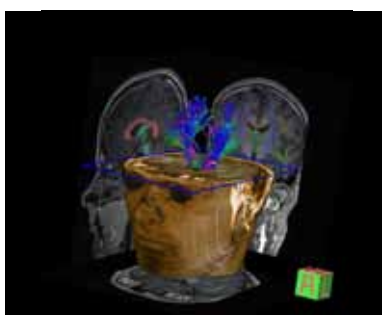


**Brainwave Discovery** is an Edinburgh-based company focussed on enabling new drug discovery for brain diseases. Offering custom brain assay development and chemical screening, and it is developing novel drug development platforms. ([www.brainwave-discovery.com](http://www.brainwave-discovery.com))

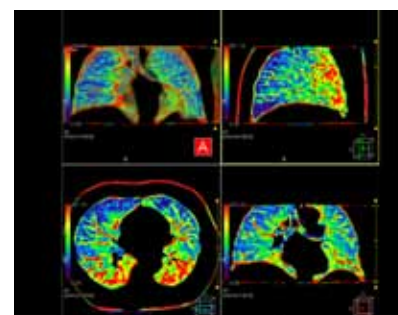
3. Computed Tomography Coronary Angiogram, demonstrating a mixture of atherosclerotic plaque types, ranging from calcified plaque to soft (vulnerable) plaque.



4. Image of tracts within the brain, as obtained using diffusion weighted MR imaging



5. Computed Tomography Lung Perfusion study, demonstrating normal pattern of gravity dependent blood flow through the lungs. This is a novel methodology currently being evaluated at the Clinical Research Imaging Centre.



**3 - 5. The Clinical Research Imaging Centre (CRIC)** is a partnership between the University of Edinburgh and the University Hospitals Division of Lothian NHS Board, jointly managed through the Clinical Research Facility. Based at the University of Edinburgh's Queen's Medical Research Institute, Little France, the CRIC is set to be at the cutting edge of Clinical Research. Images from Dr Scott Semple. (<http://www.wtrcf.ed.ac.uk/CRIC/CRICdefault.htm>).

6. Professor Martin Tangney, Director Biofuel Research Centre.



7. Fermenter used by the Centre for biofuel production.



8. Fermenter used by the Centre for biofuel production.



6 - 8. The **Biofuel Research Centre** was established at Edinburgh Napier University to operate as an internationally recognised portal to serve and supply the diverse sectors that will collectively underpin the development and large scale production of the next generation of biofuel in the UK and beyond. ([www.napier.ac.uk/bfrc](http://www.napier.ac.uk/bfrc))

9. The mixing of science and design.

**i2eye design studio** is a creative print and digital design company established to work with clients primarily within the scientific, technological and healthcare sectors. We marry an experienced and sector focused understanding to an accomplished and diverse design expertise. Our clients prosper as we communicate succinctly with them and their customers. We seek to work with clients who value the results that quality visual communication delivers. ([www.i2eye-design.com](http://www.i2eye-design.com))



10. Ingenza's Kirsty Glendinning, and Harveen Dhariwal, introduce two youngsters to science at The Roslin Family Fun Day.



11. Dr Brown allows school pupils to touch the black carbonized residue resulting from the dehydration of sugar using sulphuric acid



12. Pupils observe Dr Brown setting fire to colleague Dr Reuben Carr's hands after bubbling methane gas into soapy water.



10 - 12. **Ingenza Ltd** are innovators in biotechnology. Ingenza provide cost efficient and practical industrial scale manufacture of chiral chemicals, biopharmaceuticals and fuels. ([www.ingenza.com](http://www.ingenza.com))

13. Research outputs from Moredun Research Institutes include diagnostic kits and vaccines to detect and prevent infectious diseases of livestock.



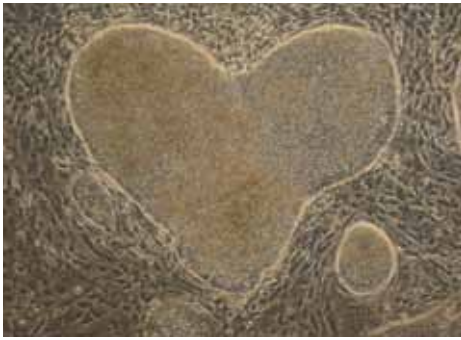
14. Moredun uses innovative science to develop practical solutions to infectious disease control.



15. Research outputs from Moredun Research Institutes include diagnostic kits and vaccines to detect and prevent infectious diseases of livestock.



13 - 15. **Moredun Research Institute** conducts world class research into the prevention and control of livestock diseases. Originally established by Scottish farmers in 1920 and governed by the Moredun Foundation, Moredun's mission is to provide sustainable and effective solutions to combat the many infectious diseases that threaten our livestock industry and may pose a risk to people. ([www.moredun.ac.uk](http://www.moredun.ac.uk))

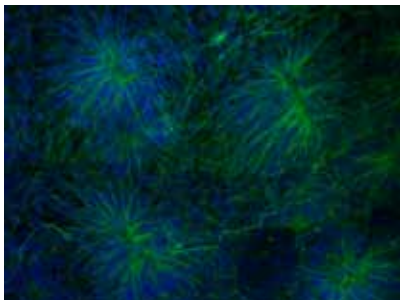


16. "Feel the love." Undifferentiated colony of RCM1 (Roslin Cells Manchester-1) human embryonic stem cells surrounded by differentiated, fibroblast-like "stromal" cells.

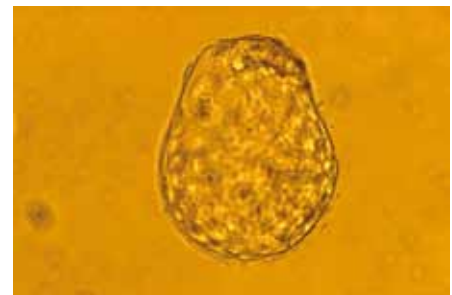
**MRC Centre for Regenerative Medicine (MRC-CRM)** brings together world leading basic stem cell research with established clinical excellence to deliver a "bench-to-bedside" approach aimed at developing new treatments for major diseases including cancer, heart disease, diabetes, degenerative diseases such as multiple sclerosis and Parkinson's disease, and liver failure.

([www.crm.ed.ac.uk](http://www.crm.ed.ac.uk))

17. Human embryonic stem cells differentiated to neuronal rosettes, stained for beta-tubulin II.



18. Human blastocyst hatching out of zona pellucidae. This blastocyst gave rise to Roslin Cells first clinical grade human embryonic stem cell line, RC 9.



**Roslin Cells Ltd** are world leaders in the isolation of new clinical grade undifferentiated stem cells for use in research and therapy. Partners and collaborators benefit from highly characterised, thoroughly tested and documented undifferentiated stem cell lines, derived and tested in our cGMP compliant facility. ([www.roslincells.com](http://www.roslincells.com))

19. 'A fly in the ointment' – during an examination of embryo culture dishes, this tiny fly, about 1 mm, sank into the oil. When exposed to UV, the lenses of its compound eye lit up with the green colour.

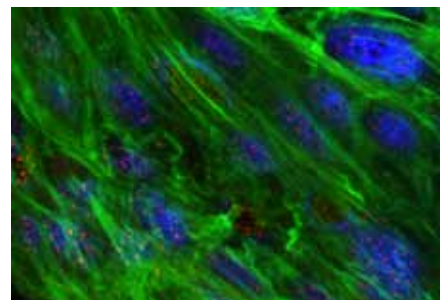


**Roslin Embryology** is a company teaching the enabling techniques required to carry out: Nuclear Transfer, Transgenic Technologies and ES Cell micromanipulation in large animals mice and rabbits ([www.roslinembryology.co.uk](http://www.roslinembryology.co.uk))

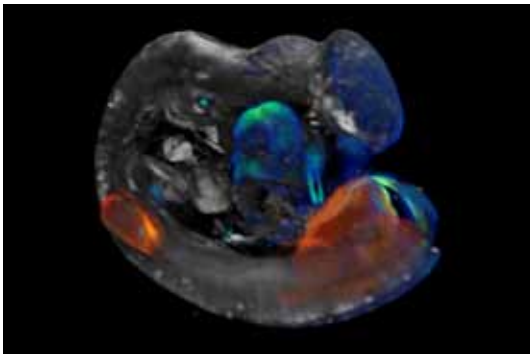
20. Intra-nuclear localisation of transcription factor "Slug" in a Primary Bovine Rectal epithelial cell.



21. Scanning Electron Micrograph demonstrating Salmonella Typhimurium interaction with a specialised antigen sampling M cell.



The **laboratory of Professor David Gally** at the Roslin Institute works in the co-ordination of bacterial surface factor expression during infection and the development of vaccines to limit bacterial zoonotic diseases. ([www.roslin.ed.ac.uk](http://www.roslin.ed.ac.uk))

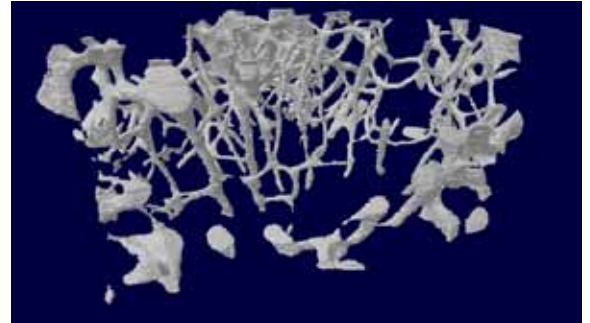


22. Three-dimensional gene expression domains of a chick embryo using combined fluorescent and brightfield optical projection tomography.

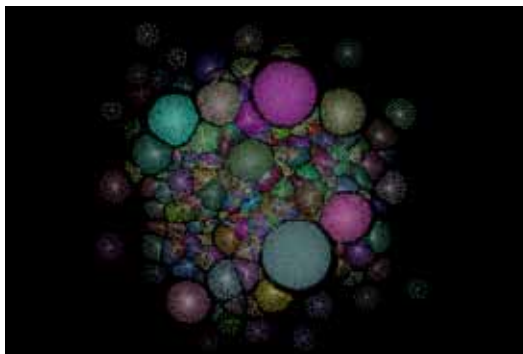
The **laboratory of Professor Dave Burt** at the Roslin Institute uses comparative genomics and bioinformatics to understand biological systems in birds and mammals, in particular genes in development, physiology and disease. Image from Dr Frances Wong. ([www.roslin.ed.ac.uk](http://www.roslin.ed.ac.uk))

23. A 3D reconstruction of under-mineralised mouse trabecular bone taken from a 22 week old mouse.

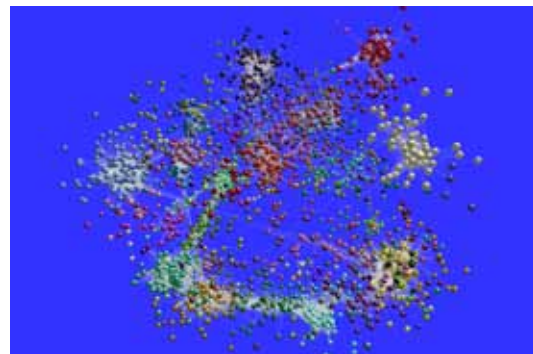
The **laboratory of Professor Bruce Whitelaw** at the Roslin Institute works to enhance fundamental knowledge of the control of cellular growth and differentiation aiming to underpin the development of better disease intervention strategies with particular focus on; animal stem cells, tissue and organ development, tissue damage and repair and regulatory networks in development. Image from Dr Neil McKenzie. ([www.roslin.ed.ac.uk](http://www.roslin.ed.ac.uk))



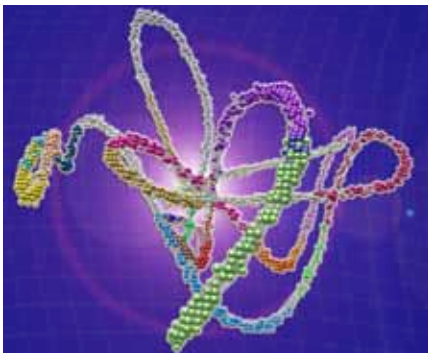
24. Cancer Clusters. 'Network graph derived from melanoma gene expression data'



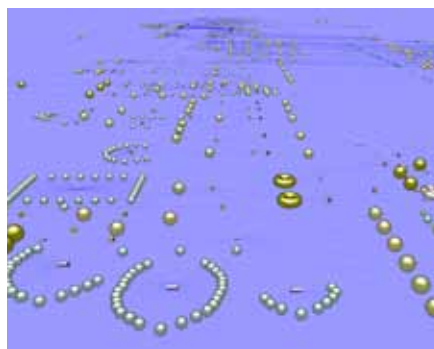
25. HGMP mouse tissue atlas MAS5 view



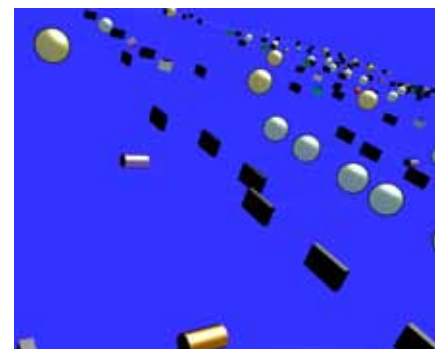
26. Network reconstruction of DNA sequence



27. Integrated Map of Macrophage Pathways view



28. Signaling Petrinet Pathway



24 - 28 The **laboratory of Dr Tom Freeman** at the Roslin Institute works within modelling and experimental manipulation of clinically relevant immune pathways. ([www.roslin.ed.ac.uk](http://www.roslin.ed.ac.uk))



Since its inception, Nexus has been funded by the European Regional Development Fund, the Scottish Enterprise Network, Glasgow City Council and the University of Glasgow. Additional funding is now also provided by East Dunbartonshire Council; the Edinburgh Science Triangle (comprising the University of Edinburgh, Heriot-Watt University, Moredun Research Institute, Roslin Foundation, NHS Lothian, Scottish Enterprise, Edinburgh Technopole, Heriot-Watt Research Park, Pentlands Science Park, Roslin BioCentre and the councils of The City of Edinburgh, Midlothian, West Lothian and East Lothian); Glasgow Caledonian University; the Glasgow:Edinburgh Collaboration; NHS Greater Glasgow and Clyde; North Lanarkshire Council; Renfrewshire Council; SEEKIT; the University of Strathclyde and the University of the West of Scotland.