

Bush Telegraph

The House Magazine of the Edinburgh Consortium for Rural Research

HUMAN HEALTH AND ANIMAL MEDICINE

[Editor's note: The following is the text of an article published in the Times Newspaper and reproduced here by kind permission]

There is nothing special about a human being as far as bacteria and viruses are concerned. The privileged ethical status of human life confers no protection against disease. To pathogens, a person is just another potential host, an organism that is worth infecting if it offers an attractive home.

While germs do adapt themselves to certain species, they are opportunists that will gladly infect any warm and wet body that allows them to feed and reproduce. They do not care that some animals are supposedly more equal than others. The H5N1 virus that causes avian flu is an excellent example. Though it emerged among birds, which continue to be its main victims, it has infected at least 170 people, more than half of whom have died, and threatens to mutate into a human pandemic.

But it is far from alone. Well over half the 1,400 human pathogens known to science started out in animals, according to research by **Mark Woolhouse**, of the **University of Edinburgh**. The rate at which these are jumping the species barrier also appears to be speeding up. Of 38 new human diseases identified over the past 25 years, three quarters have animal origins, including Ebola, Sars and HIV.

This growing threat requires both careful surveillance of animal diseases to identify the reservoirs from which new human pathogens might spring, and a rethink of the relationship between human and veterinary medicine. As Woolhouse pointed out this week, the two are separated by a Chinese wall that hinders scientists' ability to track and treat emerging infectious disease. An understanding of how pathogens affect animals and birds can offer valuable insights when the same germs start to colonise the human body, but doctors and even medical epidemiologists often lack knowledge and experience of this field.

Doctors and vets in general practice, who stand on the front line of disease surveillance, rarely correspond or collaborate. Vets treat farm animals with antibiotics that can promote the emergence of resistant strains in people. Medical textbooks start with the first human cases of disease and generally ignore the causative agent's animal past. Animals are valued as models for testing drugs and studying basic physiology but their potential to cast light on how germs behave in the real world is too often overlooked.

In November, the British Medical Journal reached a similar verdict in a special issue highlighting what "Dr Finlay and Mr Herriot could learn from one another".

While increasing recognition of this is welcome, however, it must translate into urgent action on a global scale. Nigeria's experience with bird flu shows how important this can be. Though outbreaks were confirmed this week, H5N1 appears to have reached the country as early as January 10, with a 20-day delay in collecting samples for analysis. Quarantines announced for infected farms appear to exist more in theory than in practice and inadequate compensation is hindering the slaughter of diseased birds. This is a recipe for allowing the virus to become endemic, with worrying consequences for the potential for a human pandemic.

As well as studying the links between human and animal diseases, rich countries need to be investing in veterinary expertise in developing nations that do not have it. Animal diseases are not just a concern for animal lovers. Human medicine is a branch of animal health, not a wholly different discipline. Improving the first involves looking after the second, whenever and wherever the challenges appear.

Mark Henderson

The Times Science Correspondent

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Scientific Director's Notes

ECRR Peter Wilson Lecture: The 2006 ECRR Peter Wilson Lecture, co-sponsored by RSE and IoB (Scotland), took place on 17 February at the RSE. Professor Mark Shucksmith of the School of Architecture, Planning and Landscape, University of Newcastle, addressed us on Social Justice in Rural Areas. This was our first Lecture focused on social issues, and underlined the scientific community's recognition, within ECRR, of their importance, particularly to our applied science endeavours.

Ideas are now sought on a speaker for the 2007 Peter Wilson Lecture which, it is proposed, will be held on Tuesday 13 February at the RSE.

Seminars: At the AGM in November, ECRR Directors agreed to continue our seminar series with one focused on educational outreach, where the main aim will be to share experience among ECRR members, and the knowledge of who is doing what.

The programme for the ECRR Education and Outreach Seminar on 7 June, at Abden House, Pollock Halls, Holyrood Park Road, Edinburgh, is taking shape, with our invited speakers confirmed as John Richardson, Director of SSERC (Scottish Schools Science and Equipment Research Centre) and Jack Jackson, Assistant Chief Inspector of Schools. ECRR contributions will be made from several of our member organisations with strong outreach programmes, particularly focused on schools. They include the Scottish Earth Science Education Forum, Scottish Agricultural College, National Museums of Scotland, Edinburgh University and the UHI Millennium Institute. The Scottish Science Advisory Committee (SSAC) is sending a representative to contribute in the discussion, and, of course all ECRR members are invited and encouraged to send delegates. Immediately following the seminar, ECRR is holding its **Summer Reception**, also at Abden House, when Wilson Sibbett, chairman of SSAC, will join us and provide a brief address on the SSAC's deliberations and emerging conclusions.

It will precede the ECRR Summer Reception to be held at Abden House, Pollock Halls, on 7 June 2006. At the Reception, Wilson Sibbett, SSAC, will provide us with a brief update on the work of the Advisory Committee and its emerging conclusions.

To coincide with the AGM and autumn reception scheduled for 1 November, a postgraduate conference will be organised to bring together our member' research students at a full day event followed by a reception for Directors, guests and delegates.

Forum: The next ECRR Biennial Forum is now set for 30 May 2007 at SNH's Battleby Centre, on the theme of **Scottish Energy**. The event is jointly sponsored by ECRR, SNH and the Aberdeen Research Consortium (ARC).

Detailed organisation for this event will commence shortly but it will cover leading-edge thinking in energy generation, particularly for, and from, rural areas.

SAGES: At our autumn reception in November, Professor David Sugden (Edinburgh University) presented a new network initiative. With the acronym SAGES, the Scottish Alliance for Geosciences, Environment and Society, now has confirmed funding and arrangements are in-hand for recruitment into several posts created. The project builds on long-standing collaboration networks; initial participants will be the Universities of Aberdeen, Abertay, Dundee, Edinburgh, Glasgow, St Andrews, Stirling, UHI (SAMS) and SUERC. It aims to be inclusive and, in particular, strengthen University links with Scottish institutions, including ECRR members.

SARP: The proposal for a distributed "Scottish Academy of Rural Policy" (UHI Policy Web, Inverness) has progressed following a meeting on funding possibilities. Bids will be made in response to a call by SHEFC for strategic research development grants and, possibly, to SEERAD. There is

agreement between a number of key supporting organisations that there should be a push to secure consortium funding to proceed with the "Academy". ECRR members are involved, and will report in more detail.

SSAC: As noted above, the SSAC Chairman, Wilson Sibbett, will report on the latest outcomes at our Reception on 7 June. One week later, on the 14th, Martin Price will host one of the SSAC's committee meetings at Perth College on behalf of the UHI Millenium Institute.

Chris Browitt
ECRR Scientific Director
May 2006



Rhona Brankin MSP, Deputy Minister for Environment & Rural Development, with Professor Mary Gibby and Professor Steve Blackmore, at the opening of the extension to the Herbarium Building at the Royal Botanic Garden Edinburgh in April 2006

Royal Dick School of Veterinary Studies



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Last year when the ECRR Directors visited the Dick Vet, I shared with you our plans for the School to move to a single site beside our state of the art clinics at Easter Bush, which was enthusiastically endorsed by the University Court in May 2005. Detailed planning is progressing, and the architects have produced outline plans for the new school. These will now be subjected to extensive scrutiny and revision following a series of consultation exercises with teaching staff.

The School has now appointed a fundraiser, Lynsey Cormack, who will assist our dynamic and enthusiastic College fundraiser Chloe Kippen, in raising the School's target for donations of £8-10 million. We have several high profile events planned over the next three years, and we will encourage all of you to join us in this ambitious journey.

At the end of February we received excellent news from the BBSRC that they will provide £35 million towards financing a new 500-person research institute next to the Dick Vet at Easter Bush which will house 100 of

its own researchers, as well as researchers from the **Roslin Institute**, the Institute for **Animal Health's Neuropathogenesis Unit**, and possibly researchers from the **Scottish Agricultural College**. The University has agreed to add another £12 million to this project. The new institute aims to perform research that will benefit the health and welfare of animals, as well as zoonotic threats to the human population. This development will be in close association with the Moredun Research Institute, and will represent one of the largest concentrations of animal bioscience research in the world. This development should also be placed in the context of other major projects in the University including capital development at Kings Buildings to house the vet school's prestigious **Centre for Infectious Diseases**, refurbishment at Teviot to house our **Centre of Neuroscience Research**, and massive investment at the Medical School at Little France, including a Centre for Regenerative Medicine, led by Professor Ian Wilmot. Our educational programme will benefit greatly from the proximity of world-class researchers, and we plan to try to address the global shortage of trained veterinary researchers, by closely involving our undergraduate students.

Our **Veterinary Teaching Organisation (VTO)**, led by Dr Susan Rhind, received excellent news during the winter that, along with the **Medical Teaching Organization**, the School had won

a prestigious Queen's Anniversary Prize for Higher Education for their virtual learning environment. The VLE will be key in developing our new curriculum, due to roll out in 2008. For the 2006/07 session, the School will introduce a bespoke four year Graduate Entry Programme, tailored for students entering the course who already have an appropriate first degree. Featuring a case-based approach to learning, this course will equip direct entry students with the same learning outcomes when they enter third year as students pursuing a traditional five year course. In line with our commitment to undergraduate education, the infrastructure of the VTO has grown over the last two years. We now have in place an Educational Development Manager, two Teaching Fellows dealing with e-assessment and curriculum mapping, and an e-learning development officer. An example of a recent project to keep them right up to date with the students is the use of i-pods and electronic stethoscopes in teaching cardiac and respiratory sounds, and development of a "virtual farm" using web-cams!

In March, the School received full accreditation from the Royal College of Veterinary Surgeons after a formal visitation in spring 2005. The report praised all of our staff, and the facilities and clinics at Easter Bush. The visitors were unanimous in their view of the high international standing of the Dick Vet. We continue to have full accreditation from the American Veterinary Medical Association, with special commendation in 2005 for our plans to move to Easter Bush, for progressing the new research institute, and our outcomes-based approach to curriculum revision.

Plans for our new **Veterinary Cancer Centre** are progressing and a feasibility study and business plan are now complete. The new facility, built as an extension to the **Hospital for Small Animals** will house a linear accelerator and facilities for CT scanning for small animals and horses. The total project will cost in the region of £2 million.

Everyone at the Dick Vet is very enthusiastic over the proposed new developments and would welcome your participation in the events being planned. These will keep you up-to-date with the changing face of the school in the 21st century, changes that take the best of our wonderful heritage forward.



MRC Human Reproductive Sciences Unit



Professor Robert Millar

Director

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NEW HOME FOR UNIT

The MRC Human Reproductive Sciences Unit which was established in 1972 is now housed in the state of the art Queen's Medical Research Institute at Little France in Edinburgh. The Unit represents a strategic MRC investment in reproductive health research in the UK. It is supported by a £19m core grant from April 2006 and substantial outside funding.

The MRC Unit is an integral and major part of the Centre for Reproductive Biology which includes the Division of Reproductive and Developmental Sciences. This constitutes the largest centre of reproductive health research in Europe and builds on a strong tradition of clinical research in reproductive medicine in Edinburgh. The Centre together with the Cardiovascular and Inflammation Centres constitutes the Queen's Medical Research Institute. Close links and interactions also exist with the Cancer Research Centre at the Western General.

The Unit's mission statement covers a number of aspects:

- Undertaking leading-edge fundamental and clinical research in reproductive health
- Fostering the translation of discoveries into medical practice and policy formulation for improved reproductive health
- Providing a stimulating and nurturing environment for training and career development in reproductive health research
- Collaborating globally with researchers with complementary skills for the advancement of research

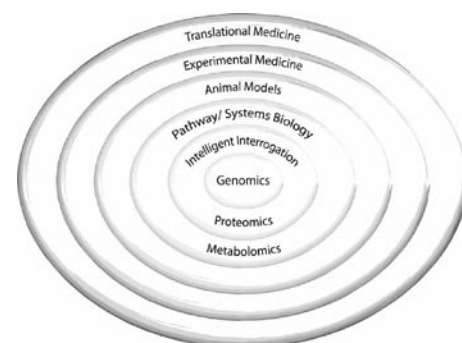


The Queen's Medical Research Institute

- Engaging with national and international agencies, policy makers, educational institutions, the media and the public at large for the promotion of research in reproductive health

The clinical research foci of the unit can be categorized under gender with endometriosis, fibroids, menorrhagia, PCOS, cancers, infertility and contraception on the female side and prostatic disease, infertility, contraception on the male. Research programmes target these diseases and are structured using a systems approach to deliver new findings into practice. Core facilities include the bio-molecular facility, the exploratory research group, immunoassay services, histology and imaging, informatics and large animal and primate models.

The Little France Biomedical Site is unique in Scotland. It includes the 900 bed New Royal Infirmary with its Wellcome Clinical Research Centre and the Chancellor's Building with over 300 researchers involved in the Scottish Genome Technology & Informatics. The Queen's Medical Research Institute currently has 600 researchers within its three major centres of Reproductive Biology, Inflammatory Research and Cardiovascular Research. There will also be an Institute



for Regenerative Medicine on the newly commenced Biomedical Science Park to the south and east of the site.

The MRC Human Reproductive Sciences Unit has developed its own commercial arm with its unique company: Ardana. Ardana initially had exclusive rights to exploit all of the Unit's intellectual property but for now this is limited to selected areas. This provides an income stream to the Unit as well as demonstrating to government that funded research findings are reaching stakeholders. Ardana was founded in July 2000 with a seed funding of £1M and has since raised over £70M, and listed on the London Stock Exchange. The company has made acquisitions in licensed products which are currently being marketed through its 50+ sales force, and moved its own in house products towards the market.

Royal Botanic Garden Edinburgh



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NEW BIODIVERSITY RESEARCH FACILITY

The race to protect global biodiversity through identification and documentation of the Earth's plant species received a major boost when Rural Affairs Minister Rhona Brankin MSP opened a £1.5 million extension to the Herbarium building at the Royal Botanic Garden Edinburgh in April. In a century when one-third of all plant species are threatened with extinction, this increases the capacity for preserved plant specimens by 20 per cent – providing space for about half-a-million new specimens – and enabling RBGE to further advance its scientific work at the fore of international conservation.

Currently housing more than two-and-a-half million precious preserved specimens – many of which are already under threat, or even extinct, in the wild – the herbarium acquires around 10,000 new "accessions" each year. However, as botanic gardens assume a greater lead in the fight against climate change and other threats to the environment, Edinburgh scientists require the space offered by the 400 square metre extension to sustain their science and conservation efforts in more than 40 countries around the world.

Ms Brankin said: "The extension to the Herbarium we are funding will expand Scotland's National Preserved Plant Collection. It contains many unique and historic plant specimens, especially those in the collection brought back by Charles Darwin. The herbarium is world renowned and is a valuable resource to the world's scientific community."

The project is part of a £5.6 million ERAD (Environmental and Rural Affairs Department) programme to improve the infrastructure at all four of Scotland's national botanic gardens Edinburgh, Benmore, Dawyck and Logan.

MOLECULES MATTER EXHIBITION

The Royal Botanic Garden Edinburgh is running a striking new exhibition throughout its Glasshouse called Molecules Matter where visitors can discover for themselves some of the vital molecules in plants and find out more, in a fun and informative way, about how man has put them to use.

Running through each of the Glasshouse zones, Molecules Matter places massive molecular sculptures next to the plants from which the molecules come. See the Caffeine in the Coffee, the Vitamin C in the fruit and the DNA in us all. Discover the molecular primordial soup from which we all originate, how the Jojoba bush saved the whale, how the star anise will save us in a flu epidemic and much, much, more.

The creator of the exhibition, Dr Graeme Jones, is a science entertainer who is spending one year as a NESTA Dreamtime Fellow putting molecules where we least expect to find them: He commented, "I love molecules, and making molecular sculptures is a wonderful way of showing people the complex architecture of our molecular world. Don't come along for a science lesson – just enjoy these majestic structures."

NATIONAL BIODIVERSITY CENTRE

The Gateway – Scotland's National Biodiversity Centre, is a major new capital initiative being developed by RBGE to showcase the Garden and to highlight what Scotland has to offer across a spectrum of science and conservation activities. This project has progressed significantly over the past few years for one of Scotland's best loved institutions.

In early April the Scottish Executive announced a further £3 million of funding towards this project, to add to their existing promise of £2 million. In addition, the Heritage Lottery Fund confirmed approval for £3.2 million, providing another major step towards the target for

the project. The Gateway has also received over £1 million of support from a number of companies, trusts and individuals. Negotiations will continue with grant bodies for a further £3 million and companies, individuals and charitable foundations will all be asked to help fill the remaining funding gap.



The model of the molecule Nordihydroguaiaretic Acid (NDGA). American Indian folklore uses chapparral tea made from Larrea tridentata/ as a remedy for many ailments. In 1995 scientists found that NDGA, the active component in chapparral tea, inhibited the growth of breast cancer cells in a laboratory. However, it is not effective against cancer inside a living organism. NDGA is termed a lead compound – it leads scientists towards better anti-cancer drugs. Unfortunately, some people latched on to the first bit of good news, and drank chapparral tea as an alternative therapy against cancer, and even as a preventative medicine. However it appears that prolonged exposure to NDGA leads to cysts on the kidneys and liver poisoning. Please be careful: some molecules in plants can harm you!

Photo courtesy of Eamonn McGoldrick

Scottish Agricultural College



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STRATEGY FOR AGRICULTURE

SAC has welcomed the findings of 'A Forward Strategy for Scottish Agriculture: Next Steps' published in March 2006. SAC Chief Executive, Professor McKelvey has been involved in the evolution of the updated strategy which gives a clear indication of national priorities and specific goals. Building on its current role of supporting the land-based industries in Scotland; SAC will work with ERAD and other stakeholders to support the strategy, both through its research work and through its training and consultancy services.

TRAINING EXCEEDS EXPECTATIONS

With 1000 people in the Highlands and Islands Enterprise area benefiting from an ESF-funded SAC training initiative, the project has already exceeded expectations. Launched in June last year, it was anticipated that 600 trainees would participate in training courses through the project over a twelve month period. Now, with several months of the project still to run, the number of trainees benefiting from the subsidised training opportunities on offer is still growing. SAC won this ESF funding for the HIE area for the first time in June 2005.

AVIAN FLU INFORMATION

Dr Nick Sparks, Head of SAC's Avian Research Group, and SAC Veterinary Investigation Officer, Jason Barley spoke at a meeting in Stornoway which aimed to raise awareness among poultry keepers of what they can do to protect their birds and themselves from avian influenza. This was the most recent in a series of ERAD funded meetings which

SAC has been running in Scotland which have been providing background information on avian influenza and the Government's contingency plans. It was the first of the series to be held outwith the Scottish mainland where there are a number of poultry keepers and many kinds of migrating birds.

POWDERY SCAB TREATMENT

SAC has secured Specific Off-Label Approval (SOLA) for the use of the fungicide 'Shirlan' which will help potato growers in their fight against powdery scab. Although seed potato growers have made great strides in combating powdery scab by careful field selection and husbandry measures, the longevity of powdery scab in soil means that these measures alone are insufficient. The option of control using a fungicide has not been possible until now.

In Great Britain powdery scab, which is caused by *Spongospora subterranea*, is one of the most intractable diseases facing seed potato growers and 75% of all varieties grown are judged to be susceptible or highly susceptible. One estimate sets the loss for seed production in Scotland during wet seasons at £7m. Losses relate to the proportion of tubers graded out to bring a stock up to certification standards and the extra manpower needed to achieve this.

COMMUNICATING THE MESSAGE

Ensuring that new knowledge is made available to those who can put it to good use, is the impetus behind a major new SAC campaign, "Success through Knowledge". The campaign will promote the findings from SEERAD funded research to audiences throughout Scotland.

The campaign, led by Professor George Marshall, builds on SEERAD's new research strategy as laid out in, "A Forward Strategy for Scottish Agriculture: Next Steps",

published in March 2006. It will promote the findings of SEERAD funded research carried out by SAC and also the findings from other relevant research, funded by SEERAD, and carried out by the main research providers.

VISITING PARLIAMENTARIANS

A group of Irish TDs (ie Teachtaí Dála - members of the Irish parliament) were welcomed to SAC's facilities at Bush in April by Professor John Oldham, Head of Research and Development and Dr Tony Waterhouse, Sustainable Livestock Systems Group, SAC where they heard about SAC's role in providing support to the land-based industries. The TDs were part of a cross border parliamentary group in Scotland on a visit hosted by NFU Scotland.

COSTS AND BENEFITS

Dr Dominic Moran of SAC is to lead a £100k DEFRA-funded project which will undertake an economic evaluation of national genetic research priorities. The project will help identify the elements of future research, in both plant and animal genetics, that most closely meet DEFRA's policy objectives as laid out in documents such as the Strategy for Sustainable Farming and Food, and the Animal Health and Welfare Strategy.

The project, "The rationale for DEFRA investment in R&D underpinning the genetic improvement of crops and animals" will involve wide consultation with research providers both in the UK and overseas. Additional project inputs will be sought from research partners including Edinburgh University, the Roslin Institute, ADAS, and Rothamsted.

Royal Society for the Protection of Birds



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The Corn Bunting is a sparrow-like bird that favours open, arable and mixed farming landscapes. It is a true farmland specialist, and in 1900 occupied almost every lowland farming and crofting area in Scotland. It has since undergone a massive range contraction and population decline, and there may now be as few as 800 territorial males remaining. Most are concentrated in eastern Scotland, especially Aberdeenshire, and also Moray, Angus and Fife. Small populations persist in Inverness-shire and in Dumfries and Galloway. All of these populations are thought to be in decline. There is also an isolated population on the Uists and Benbecula, which has declined by 62% in the last ten years. Several island and regional extinctions have occurred during the last decade and the threat of further extinctions is very real.

Current RSPB research is assessing the impact of the Rural Stewardship Scheme (RSS), Scotland's main agri-environment scheme, on Corn Bunting populations at the farm scale, by monitoring breeding and wintering populations on a number of RSS and 'control' farms. Farms are monitored during the summer and winter, to count and map the location of Corn Bunting territories on each farm and to record habitat use. Other farmland bird species of conservation concern are also recorded. Baseline territory counts were made in 2003 and repeat surveys will be carried out in 2006 and 2008. Winter fieldwork has shown that Corn Buntings and other species make substantial use of prescriptions such as unharvested crops and stubbles. Corn Buntings particularly favour those unharvested crops that are rich in cereal grain, typically crops that are in their first winter as opposed to kale-dominated crops left standing for two winters.

Further research has investigated nest locations of Corn Buntings and shown that 34% of first nesting attempts were within silage fields. Spring sown-cereals, especially weedy fields, were favoured later in the season, from July onwards. The majority of nests in silage were destroyed during mowing when the first cut was made, typically during June. Consequently, the number of successful nesting attempts that Corn Buntings make may be reduced, as two broods can be reared where conditions are favourable.

Allied to the research project, RSPB, supported by SNH and FWAG, are running a recovery project, Farmland Bird Lifeline (FBL), in East Scotland, where farmers in Corn Bunting 'hotspots' are paid to manage set-aside and to adopt management prescriptions similar to those in RSS. This project began in 2001 and 24 farms have participated in the project. Monitoring has shown that the number of Corn Bunting territories was less likely to have decreased in areas with FBL farms compared with areas not in the scheme. In

recent years, many farms have entered into RSS as it has become more widely available. Consequently, FBL is now focusing on testing specific management prescriptions that aim to provide safe nesting habitats for Corn Buntings. In 2006, twelve participating farms will delay mowing of silage to allow nests in these fields to fledge successfully. Monitoring will enable us to identify a mowing period that allows most nests to fledge successfully, and, given appropriate compensation for loss of yield and quality, is acceptable to farmers.

For more information contact Allan Perkins or Hywel Maggs allan.perkins@rspb.org.uk



A corn bunting in song

Centre for Ecology & Hydrology



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EUROPEAN GLOBAL NITROGEN CHALLENGE

The NitroEurope Integrated Project - or NEU for short - started on 1 February 2006 and will run for 5 years. NEU consists of a consortium of 64 European and international research organizations, led by the UK Centre for Ecology and Hydrology (CEH), from its Edinburgh Research Station at the Bush Estate, near Edinburgh. The project has a total budget of £27 million, with a contribution allocated from the European Commission of £16.6 million.

The global nitrogen problem is one that has so far received little attention. By comparison, issues such as the carbon cycle and global warming, acid rain, loss of biodiversity, water quality and the effects of air pollution on human health are already well known. However, it turns out that excess nitrogen is contributing substantially to each of these problems, linking them up through multiple interactions in the nitrogen cycle.

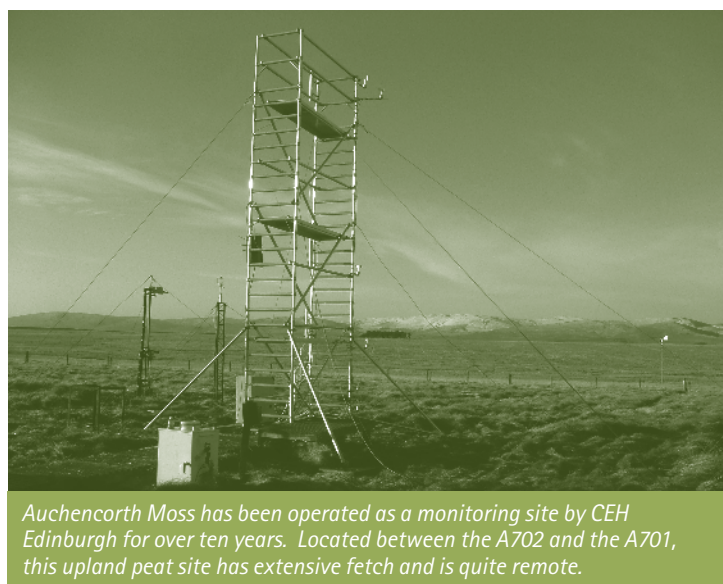
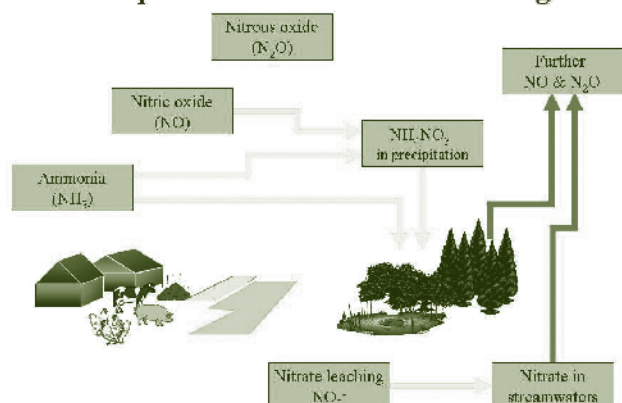
NitroEurope will establish an integrated programme of research that links six main scientific components:

- **C1: NEU Flux Network** will establish the first European nitrogen flux monitoring network, including: "Super Sites" - intensive scientific analysis and interactions, "Regional Sites" - extending the long term monitoring capability, and "Inferential Sites" - providing N data at existing carbon flux research sites.
- **C2: NEU Manipulation** will establish a new European network that brings together ecosystem manipulation experiments addressing the interactions of nitrogen, land management and global change.
- **C3: NEU Plot-scale modelling** will develop ecosystem-level mathematical models of nitrogen and its interactions with the carbon cycle, for forests, grasslands, arable and shrublands/wetlands, allowing interactions with climate and management to be addressed.
- **C4: NEU Landscape Analysis** will provide the first European assessment of the landscape interactions of nitrogen, linking models that considers management of farms, fields and forests, source and sink areas, plus atmospheric and water dispersion at a fine spatial scale.
- **C5: NEU Integration** will develop models to upscale nitrogen and greenhouse gas fluxes to provide European maps, as well as assess past changes and future scenarios.
- **C6: NEU Verification** will analyse independent datasets to provide a check on the European models, delivering estimates of uncertainty and assessing the extent to which the data indicate national compliance with emissions targets under UN conventions.

With an integrated programme that links measurements, modelling, and continental up-scaling, NitroEurope will develop the scientific basis to support European countries and the EU in negotiations under several UN conventions, in particular those on climate change, transboundary air pollution and biodiversity.

For further details, contact Dr Mark Sutton or Dr Stefan Reis, CEH Edinburgh
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Multi-pollutant interactions for nitrogen



Auchencorth Moss has been operated as a monitoring site by CEH Edinburgh for over ten years. Located between the A702 and the A701, this upland peat site has extensive fetch and is quite remote.

In Brief. . .

Strategic Science Advisory Panel

A new group which will act as an expert independent source of strategic scientific advice to the Department of Environment & Rural Affairs was announced by Rhona Brankin MSP in November 2005. Members who are drawn from end-users, the research community and other funders include:

- Professor Peter Holmes, Vice Principal for Biomedicine at Glasgow University
- Professor Janet Sprent, Emeritus Professor of Plant Biology, Dundee University
- Professor Chris Pollock, Research Director at the Institute of Grassland and Environment Research
- Ian Duncan Millar, a farmer from Perthshire
- Professor Joe Brownlie, Professor of Veterinary Pathology, Royal Veterinary College, London
- Professor Mark Shucksmith, Professor of Planning, University of Newcastle on Tyne
- Dr Susan Walker, consultant in water and land management
- Dr Jeremy Wilson, Head of Research for the RSPB in Scotland
- Dr James Robb, a farmer in Lanarkshire.

The Panel held its first meeting in January 2006. Papers from the Panel's deliberations can be viewed at the ERAD web site.

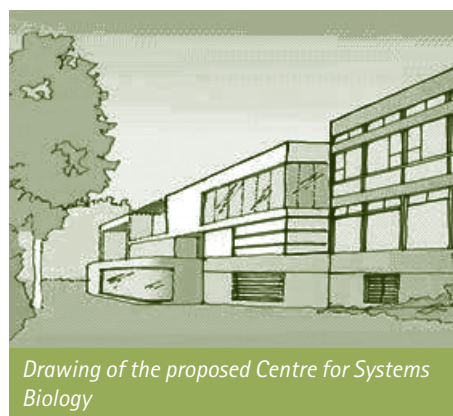
New centre for systems biology

Edinburgh University is one of three British universities to benefit from a £27million funding package which will support research in the emerging discipline of integrative systems biology. The award, £8.5m of which will go to Edinburgh, has been made by the Biotechnology and Biological Sciences Research Council (BBSRC).

Systems biology is revolutionising the way scientists think and work by enabling multidisciplinary research to take place which combines theory, computer modelling and laboratory-based experiments. The new centres, to be located at the Universities of Edinburgh, Nottingham and Oxford, will bring

together biologists, mathematicians and computer scientists. The three centres will focus specifically on the workings of dynamic biological systems, such as the biological clock, the nature and behaviour of plant roots and signalling pathways in bacteria and yeasts.

The Centre for Systems Biology in Edinburgh will bring together researchers from the **Schools of Biological Sciences, Informatics and Medicine** at the **University of Edinburgh**, and the **Department of Mathematics** at **Heriot-Watt University**, among others. It will be housed in the C. H. Waddington Building, a new £6m facility at the University's King's Buildings campus.



Drawing of the proposed Centre for Systems Biology

Scientists partner MPs

Three Edinburgh scientists visited Westminster for the 2005 Royal Society MP-scientist pairing scheme. Established in 2001, the programme aims to familiarise scientists with how policy and law is formulated in Westminster, as well as educating MPs on issues relating to science.

2005's participants included Dr Mike Billett (**Centre for Ecology and Hydrology**), Dr Emma Cunningham (**Edinburgh University, School of Biological Sciences**) and Dr Axel Thomson (**MRC Human Reproductive Sciences Unit**).

The Royal Society invites post-doctoral scientists to apply for the MP-scientist pairing scheme. More information can be found at www.royalsoc.ac.uk.

Spatial planning in Northern European peripheral regions

Effective sustainable development, particularly for remote, dispersed populated rural areas, requires a coordinated approach to strategic policy making at all levels of government. SpatialNorth is an EU-funded project being implemented in four partner regions with these characteristics: the Highlands and Islands of Scotland; Västernorrland (Sweden); North Karelia (Finland); East Iceland. The lead partner in the Highlands and Islands is the **UHI Millennium Institute**; the work is being undertaken by a team based at the **Centre for Mountain Studies** at Perth College.

Scottish institutions join international network of excellence

Scottish scientists are to form part of a European-wide "Network of Excellence" in research into a key area of genetic regulation, which links to an ever-growing list of diseases including certain types of cancer and neurodegenerative disorders.

Research teams led by Professor Angus Lamond in the **School of Life Sciences, University of Dundee**, Professor John Brown at the **Scottish Crop Research Institute**, Professor Jean Beggs at the **University of Edinburgh** and Dr Javier Caceres at the **MRC Human Genetics Unit, Edinburgh**, are among 30 laboratories from 11 European countries and Israel and Argentina who will make up the network, aimed at delivering a better understanding of the problem of "alternative splicing". Alternative splicing is the name for a process by which a single gene can give rise to different proteins and different functions. Defects in the control of alternative splicing frequently cause, or exacerbate pathological conditions and link to many diseases including various cancers and neurodegenerative conditions.

The Network will integrate wide-ranging expertise from different organisms. "One of the really exciting aspects of this Network is the bringing together of research, ideas and approaches from different organisms - the four Scottish labs study human, nematode, plant and yeast systems - to address a hugely important area of biology" said Professor Brown of SCRI.

Conference: What will organic farming deliver?

The Association of Applied Biologists in association with the Colloquium of Organic Researchers is holding a three day conference on **18–20 September 2006 at the Edinburgh Conference Centre, Heriot-Watt University**. This biennial conference aims to provide a forum where approaches to, and unresolved issues arising from research in organic farming systems can be aired and new thinking enabled. This conference, takes as focus the question on the lips of many policy-makers and consumers – what will organic farming deliver and how can this be facilitated? Online booking has now opened on the AAB website (<http://www.aab.org.uk/>). The full programme will be available shortly.

Conference: Phenological change, causes and consequences: from genes to landscapes

Phenology, the study of the dates of biological phenomena such as flowering, has recently received new emphasis because of the implications of climate change. Spring seems to be occurring earlier and earlier! Up to now, however, there has been rather little interaction between people observing different types of organism, between them and the researchers investigating the mechanisms of development, and between these two groups and the people considering the implications of climate change for agriculture, forestry and nature conservation.

To address these gaps, the Association of Applied Biologists and the Royal Botanic Garden, Edinburgh is organising a one day meeting on **Friday October 20th 2006 at the RBGE**. The programme is currently being developed and will include contributions not only on plants but also on invertebrates and other organisms. There will be an emphasis on mechanisms. This meeting should be

of interest to scientists who wish to make contacts with people working in related fields, enthusiastic amateurs and policy makers. Contact Graham Russell (g.russell@ed.ac.uk) for further details.

Conference: Genomics for Development? The Life Sciences and Poverty Reduction

The 2006 Annual Conference of **Innogen**, the ESRC Centre for Social and Economic Research on Innovation in Genomics, will address current questions around the role of science and technology in providing solutions to end hunger, disease and poverty. Despite the impressive scientific and technological advances and their promise, questions still remain about what tangible advances link science and technology policy with education, health or economic policies in developing countries where poverty reduction and development is needed.

- Has the rise of international life science networks and partnerships increased the access to necessary drugs, medicines, diagnostics, farming techniques and food?
- What impact does ever-increasing global connectedness have on regulation and industrial capabilities?
- Can genomic technology and life sciences innovation assist in building sustainable development, economic growth and poverty reduction in developing countries and transitional economies?

These are the sorts of questions this conference aims to address. The conference is being held on **5 and 6 September 2006** at Regent's College, London. For further information see www.innogen.ac.uk.

Seminar: The future of farming in Scotland : issues and options

A seminar will focus on the findings of recently-completed projects at SAC. The issues include farm succession and farm labour and the options considered are new routes to market and genetically modified crops. The seminar takes place on **Tuesday 13 June 2006** from 10.00am to 4.00pm in the Peter Wilson Building, King's Buildings, Edinburgh. For further information please contact Michael MacLeod (email: michael.macleod@sac.ac.uk).

Conference: 9th National Heathland Conference

The 9th National Heathland Conference has been arranged to examine the impacts of climate change and pollutants on upland and lowland heathlands; look at access to these environments and explore increasing interest in landscape scale approaches to sustainable management and expansion of the heaths. The conference has the theme "Changing landscapes" and is being held on 8–10 August 2006 at King's College, University of Aberdeen.

To register an interest please contact: Heathland.conference@snh.gov.uk

Seminar: Future of Upland Biodiversity

The Centre for Mountain Studies is organizing a seminar on various aspects of upland biodiversity. The seminar is scheduled to take place on 8 December 2006. For further information please contact Professor Martin Price (email: martin.price@perth.uhi.ac.uk).

People & Events

ECRR DIARY

2007

Jun 7	Workshop – Science outreach	Abden House, Marchhall Place, Edinburgh	13.00 – 17.00
	Summer reception	Abden House, Marchhall Place, Edinburgh	17.00 – 19.00
Aug 28	Directors' lunch	Scottish Agricultural Science Agency Gogar, Edinburgh Host: Prof Gordon Machray	12.30
	Executive Committee	Venue – SASA	10.30
Oct 2	Directors' lunch	British Geological Survey, Edinburgh Host: Dr Martin Smith	12.30
	Workshop – Scientific data visualization	British Geological Survey, Edinburgh	14.00 – 17.00
Nov	Main Board Meeting & AGM	Venue TBA	15.00
	Postgraduate training and careers – workshop	SAC, Kings Buildings	
	Winter reception		17.00
Dec 4	Directors lunch	Biomathematics & Statistics Scotland Host: Prof David Elston	

WELCOME TO ERAD'S NEW CHIEF SCIENTIFIC ADVISOR



Professor Margaret Gill took up post as the Chief Scientific Advisor at the Environment and Rural Affairs Department on 1 February 2006. Since 2000, she had been Chief Executive and Director of Research at the Macaulay Land Use Research Institute in Aberdeen.

Maggie Gill has a BSc in Agricultural Science from the University of Edinburgh and a PhD from Massey University, New Zealand. She worked as a researcher on the nutrition of sheep and cattle in the south of England from 1976 to 1989, when she moved jobs to work in the research arm of the UK Government's Overseas Development Administration, initiating and consulting on projects on dairy cattle nutrition in Bolivia, Kenya and India, amongst many other countries.

Maggie is an Honorary Professor of the University of Aberdeen and was a member of the Scottish Science Advisory Committee from 2002 to 2004. She retains an active interest in agricultural research for developing countries, being a member of the Consultative Group for International Agricultural Research Standing Panel on Mobilising Science. She was elected a Fellow of the Royal Society of Edinburgh in 2003.

ECRR Member Organisations

University of Edinburgh	www.ed.ac.uk
College of Science & Engineering	
College of Medicine & Veterinary Medicine	
College of Humanities & Social Science	
Scottish Agricultural College	www.sac.ac.uk
Research & Development	
Education & Training	
Heriot Watt University, School of Life Sciences	www.sls.hw.ac.uk
Napier University, School of Life Sciences	www.napier.ac.uk/fhls/lifesciences
University of Stirling, Institute of Aquaculture	www.aquaculture.stir.ac.uk
UHI Millennium Institute	www.uhi.ac.uk
University Marine Biological Station Millport	www.gla.ac.uk/centres/marinestation
Moredun Research Institute	www.mri.sari.ac.uk
Forest Research, Northern Research Station	www.forestry.gov.uk
Roslin Institute	www.roslin.ac.uk
Biomathematics and Statistics Scotland	www.bioss.sari.ac.uk
British Geological Survey	www.bgs.ac.uk
Centre for Ecology & Hydrology Edinburgh	www.ceh.ac.uk
DEFRA Lasswade Veterinary Laboratory	www.defra.gov.uk/vla
MRC Human Reproductive Sciences Unit	www.hrsu.mrc.ac.uk
National Museums of Scotland	www.nms.ac.uk
Royal Botanic Garden Edinburgh	www.rbge.org.uk
Royal Society for the Protection of Birds – Scotland	www.rspb.org.uk
Scottish Agricultural Science Agency	www.sasa.gov.uk
Scottish Crop Research Institute	www.scri.sari.ac.uk
Scottish Natural Heritage	www.snh.org.uk
Scotland & N. Ireland Forum for Environmental Research	www.sniffer.org.uk
Edinburgh Centre for Tropical Forests	www.nmw.ac.uk/ectf
Scottish Centre for Animal Welfare Sciences	

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FUTURE ISSUES

Contributions to the Bush Telegraph are welcomed. All contributions, comments and suggestions can be emailed to Mike Steele at mike.steele@sac.ac.uk.

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ON THE WEB

Back issues can be viewed at <http://www.ecrr.org.uk>

COPY DEADLINE

Deadline for copy in the next issue is 1 September 2006