Team from Moredun wins
Converge Business Challenge

Moredun leads new BBSRC funded projects

BBC’s Landward features Moredun

www.moredun.org.uk
A very warm welcome to the spring edition of the Moredun magazine.

One of our unique and key strengths is our strong relationship with the farming community through the activities of the Moredun Foundation which I am proud to report now has a membership of over 10 000 individuals across the UK and overseas. We were delighted to welcome Ian Duncan Millar as our new chairman of the Moredun Foundation at our AGM in September.

Our close relationship with our stakeholders and with industry has been a strength of Moredun since its founding in 1920, resulting in many of the technologies developed at the Institute being successfully applied into products to improve the health and welfare of livestock. One of our feature articles, p6, looks at the commercialisation of Moredun’s research and reports on one of our most recent successes where a team from Moredun beat strong competition from across the Scottish academic sector to take the top prize in the Converge Challenge with a new technology to improve vaccine development.

Obtaining sources of funding to enable us to conduct our research is a clear priority for the organisation and we are very pleased to report on two recent grants enabling us to open up new areas of investigation to develop a vaccine against poultry red mite and uncover the role of novel chlamydia-like organisms to cause reproductive failure in cattle, reported on p4 and 8.

We have been out and about at a number of different outreach events, including our very successful animal health roadshows which we hold at different venues across the UK, hosted by our regional advisors. Due to the very wet weather we have been experiencing this year, there was great interest from the community on our research into flukes and an update is provided on p13.

I am also very pleased to announce our new collaboration with Ross University School of Veterinary Medicine on St Kitts in the Caribbean where we are looking forward to conducting some joint research initiatives focusing on epidemiology, zoonoses and public health, featured on p5.

We do hope you enjoy the articles featured in this issue and thank you for your continued support.

Julie Fitzpatrick
Scientific Director and Chief Executive

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Moredun Foundation appoints new Chairman

The Moredun Foundation is delighted to welcome Ian Duncan Millar as its new Chairman after his appointment at the AGM in September.

Ian is a farmer from Aberfeldy with arable, beef, hill and lowground sheep. He is a past Chairman of Highland Glen Lamb Marketing Cooperative and the Scottish Association for Sheep Health. Ian is a qualified Chartered Surveyor and Agricultural Arbiter, and is a former President of the Scottish Agricultural Arbiters and Valuers Association. Ian was awarded an MBE in the 2010 Queen’s New Years Honours List for his services to agriculture.

Ian Duncan Millar, who served as a director of Moredun Research Institute for several years, has great confidence in Moredun. Commenting on his appointment, he said “It is a great honour to be appointed Chairman of the Moredun Foundation. I look forward to working with all involved at Moredun and to build on the work done by my illustrious predecessors.”

Chief Executive and Scientific Director of Moredun, Professor Julie Fitzpatrick, commented, “I am delighted that Ian Duncan Millar is remaining with Moredun albeit in a new role as Chairman of the Moredun Foundation. Ian brings a wealth of knowledge and experience of the farming sector within Scotland. He is an innovative farmer in his own right and has demonstrated practically the benefits of applying the highest levels of animal health and welfare in his own flocks and herds.”

Ian Duncan Millar replaces John Ross, who retired at the AGM after serving his term as Chairman. Paying tribute to John Ross’ dedication over that time, Professor Julie Fitzpatrick, commented: “I have really enjoyed working with John Ross over the last eight years during my time as Director and Chief Executive of Moredun. John has contributed to all aspects of Moredun’s success and has provided me personally with unstinting support and advice.”

Visitors to Moredun

Moredun warmly welcomed a number of visitors to the institute during the autumn months.

October saw a number of visits from representatives of overseas science and business communities keen to exchange best practice. Kazan Federal University in Russia visited on 18th October to hear more about Moredun’s work and to discuss new ideas in business innovation and product development. This visit was followed by a group on Monday 22nd October from Klaster Life Science Krakow, a Polish Life Science Cluster, who were keen to hear about Moredun’s highly successful public-private partnership and to explore possible links between the two science communities.

The Moredun Foundation remains committed in its support of education and were therefore delighted to once more welcome a group of veterinary and veterinary bioscience students from Glasgow University Vet School on Wednesday 24th October.

During the visit the group found out more about Moredun’s research and the importance of the work of The Moredun Foundation through talks, tours and workshops.

Moredun’s growing relationship with SQPs saw a visit from AHDA Council on Wednesday 7th November for a tour of the facilities, whilst policy colleagues from the Scottish Government Animal Health and Welfare Division visited on Thursday 22nd November to present a seminar and hold discussions with Moredun scientists and staff.

Moredun scientists with group from Klaster Life Science, Krakow, Poland.
News

Neosporosis is the subject of a recent collaboration with BBC’s Landward

Dougie Vipond and the Landward film crew visited Moredun in November to film a piece for the popular BBC Scotland farming and countryside programme.

Nigel Miller, President of the NFUS and Moredun’s Lee Innes, joined Dougie to discuss bovine neosporosis and the issue of dog fouling in the countryside.

Bovine neosporosis is caused by the protozoan parasite Neospora caninum and is the most frequently diagnosed cause of bovine abortion in many countries in Europe and worldwide. Cattle may become infected by the ingestion of oocysts shed by infected dogs resulting in significant losses due to abortion, premature culling, reduced milk yield and reduced post weaning weight.

The piece featuring Moredun was broadcast on BBC Two Scotland on Friday 7th December.

Moredun welcomes new board members

Moredun Research Institute has welcomed three new members to the board; Professor Peter Holmes OBE, a distinguished veterinary scientist and Emeritus Professor of Veterinary Physiology at the University of Glasgow; John Bell, a well respected cattle and sheep producer from Fife who currently chairs the QMS Beef and Lamb Farm Assurance Technical Advisory Committee; and Professor Richard Elliot, a renowned virologist and current Chair of Infectious Diseases at the University of Glasgow.

The Moredun Foundation has also appointed Kate Richards a respected veterinary surgeon and chartered marketer to their board.

Professor Julie Fitzpatrick, Chief Executive of the Moredun Foundation and Scientific Director of the Moredun Research Institute was delighted to welcome them all to the boards. “Our board members provide essential advice on all aspects of our activities. Our new members will bring a wealth of experience to our board meetings and I look forward to working with them all”

Moredun would also like to thank our retiring board members for all their advice and support over the past years.

Moredun joins twitter

You can now follow us on Twitter and keep up to date with our latest news and activities, @MoredunComms
Pentlands Science Park – serious work but fun too

Pentlands Science Park staff work hard to provide excellent services to Moredun and the Park tenants but PSP is also central to arranging fundraising and social events which, very importantly, bring people together away from the normal work environment to raise money for worthwhile causes.

During 2012, PSP arranged a Wear It Yellow Day for Marie Curie Cancer Care and a Wear It Pink Day for Breast Cancer Care. Both events saw some extremely flamboyant fancy dress and raised much needed funds. September saw the McMillan Cancer Support Coffee Morning which is always a popular event where staff bake, donate and buy cakes for this worthy cause.

In early November, PSP staged its popular Annual Quiz Night contested by 10 teams with Alba Bioscience triumphing this time.

December saw our annual Christmas Fayre where The Moredun Foundation, Equine Grass Sickness Fund, local craftspeople and other businesses took stands to sell Christmas gifts. The Fayre was opened by TV personality Carolyn Spray, proprietor of Pentland Plants but also a regular on BBC TV’s Beechgrove Garden. Proceeds from the Fayre were given to Penicuik High School Music Dept who entertained at the Fayre with harp music.

The generosity of staff and their capacity for good fun only adds to the special atmosphere here at PSP.

Moredun Scientific’s new disease model for porcine meningitis enables vaccine development

*Streptococcus suis* is a bacterium found in all parts of the world where a pig industry is present. Infections caused by this organism are of major importance to the industry due to the economic impact of disease outbreaks, prevention and control as well as the welfare implications for infected animals.

Clinical infections are seen mainly in weaners or growing pigs and less frequently in suckling piglets. The earliest sign of the disease in young piglets is usually fever, which may occur initially without other obvious signs. However, meningitis is the most striking feature of *S. suis* infections and the one on which a presumptive diagnosis is usually based. The onset of disease can be extremely quick and animals can die within 24 hours of initial clinical signs. The first indications of a *S. suis* problem within an infected herd are often dead animals that had previously shown no signs of disease.

Currently there is no licensed vaccine for the disease therefore control is carried out by prophylactic or therapeutic use of antibiotics administered either as an injectable or in feed or water. A number of animal health companies have a focus on the development of vaccines and enhanced therapeutics to prevent and control the disease.

Moredun Scientific has recently completed the validation of a *S. suis* serotype 2, meningitis disease model in weaner piglets. This new development will facilitate the efficacy testing of new and improved medicines to defined quality standards.

The model is available for use by animal health companies on a contract research basis.

For further information contact Moredun Scientific: info@moredun-scientific.com
Research

Moredun Research Institute leads new BBSRC funded project to investigate the development of a vaccine to control poultry red mite

Infestation of hen houses with the poultry red mite is a major health concern of the European poultry industry with significant economic losses. The mites live, off-host, in inaccessible areas of the cages during daylight and emerge during darkness to feed on the hens, biting through the skin to feed on blood. Infestation with these mites has important animal welfare implications including anaemia, feather-pecking and an increased incidence of cannibalism, thus having a significant impact on productivity.

The BBSRC has recently awarded a £0.55 million research grant to Moredun scientists in collaboration with Pfizer Animal Health to develop a vaccine to help protect hens against these blood sucking mites.

Dr Alasdair Nisbet who is heading the project at Moredun commented, “Controlling mite populations is now a major problem, with most pesticides affording only limited or short-lived reduction in the population of mites.”

There is also the issue of development of drug resistance and environmental contamination which means there is an urgent need to develop alternative control strategies.

The team’s approach is to determine whether it might be possible to vaccinate laying hens using specific extracts of the mites thus inducing an immune response in the hens that will attack and kill the mites when they take a blood meal from an immunized hen. Dr Nisbet went on to explain, “Our goal is to identify the bits of the mite that will induce the best immune responses in the hens and produce large quantities of these using recombinant technologies to enable large scale vaccination trials to take place. Preliminary work at Moredun has shown that a vaccination approach is a feasible option to control red poultry mite and we are really excited about progressing this work.”

Japanese Poultry Industry Representatives visit Moredun to discuss Poultry Red Mite Control

Moredun’s Professor Julie Fitzpatrick, Dr Al Nisbet and Dr John Huntley welcomed representatives from Akita Co Ltd and Pfizer Animal Health to the research institute in September to discuss poultry red mite research.

Akita Co Ltd is a Japanese company which employs more than 800 people in their egg production facilities in Japan and are responsible for the importation and distribution of vaccines and pharmaceuticals to the Japanese poultry industry. Their President, Mr Yoshiki Akita and his colleague Mr Hiruhito Fujii were therefore very keen to hear about Moredun’s work in poultry red mite control. The group, which also included Peter Jeffries from Pfizer Animal Health, discussed possible collaborative research into poultry red mite vaccine development.
Moredun and Ross University School of Veterinary Medicine sign partnership agreement

Moredun has entered into a new partnership with Ross University School of Veterinary Medicine (RUSVM), St. Kitts, to foster scientific research collaborations and provide education and training opportunities for veterinary students and research scientists in endemic and exotic zoonotic diseases.

“I am delighted that Moredun Research Institute and Ross University School of Veterinary Medicine have consolidated their partnership with the aim of training research scientists and veterinary students in the increasingly important area of animal health and global food security” said Professor Julie Fitzpatrick, Scientific Director of Moredun Research Institute. “Working together on infectious diseases in Scotland and in St. Kitts allows transfer of skills and technologies to address the challenges of feeding the nine billion people estimated to exist in 2050.”

RUSVM is located in St. Kitts, an island in the Eastern Caribbean region, which provides novel opportunities for collaborative research in focused areas, such as public health and epidemiology, zoonotic infections and parasitic diseases. RUSVM’s island location and innovative curriculum incorporates technology and simulations to provide veterinary students with a unique backdrop for developing exciting research experiences. The university’s research focuses on wildlife and marine conservation medicine, as well as, trends in infectious and zoonotic disease patterns in developing countries.

“This new partnership supports our commitment to developing a sustainable international research program and places Scotland at the centre of this. The research opportunities presented by our location in a developing country in the Caribbean are tremendous. We want to concentrate our research efforts on areas of relevance and strategic importance to the global livestock industry, as well as improving human lives,” said Professor Elaine Watson, Dean of RUSVM. “I believe that Moredun in particular, and Scotland in general, with its highly developed network of scientists working on veterinary diseases, can make a real difference to global animal and human health and welfare, and food security. The Caribbean, with its strategically important location on the doorstep of the developed world, and St. Kitts with its island environment and genetically distinct species, together provide an excellent model for detection and study of patterns of disease.”

Moredun’s current research programmes will benefit from this new interaction, especially molecular diagnostics, zoonoses and parasitic diseases.

Professor Jacqui Matthews, Head of Disease Control at Moredun, concluded, “We are delighted to embark on this exciting new collaboration with colleagues at Ross University which we anticipate will further our joint interests in promoting the health and welfare of farm livestock through education and targeted research.”

Jacqui Matthews, Willie Donachie (Moredun), Tammi Kreczak and Elaine Watson (seated) Ross University
Commercialisation of Moredun’s Research: From laboratory to the field

The mission of the Moredun Group is to improve the health and welfare of livestock through the application of innovative science to prevent and control diseases. The translation of research findings into practical application has in fact been a strength of Moredun since its founding in 1920. This philosophy has successfully resulted in taking knowledge from the laboratory to the field and seen the development of new and improved diagnostic tests, vaccines, scientific services and management techniques which has brought both economic and societal benefits as well as an improvement to the health and welfare of livestock worldwide.

As well as the direct benefits to livestock health, Moredun’s innovative approach helps to reduce the economic and environmental burden of disease. The total cost of animal disease to the UK economy is around £1 billion and the outputs of Moredun’s research could reduce this cost by a quarter. Furthermore an independent economic impact study has shown that for every £1 of funding Moredun Research Institute received from the Scottish Government Research Programme in 2006-2011, Moredun’s research generated £5 for the Scottish economy.

Vaccines offer effective solutions to control disease, while minimising effects on the environment, as they reduce reliance on pharmacological drugs and pesticides. Moredun has achieved notable successes in developing effective vaccines against viral,
bacterial and parasitic diseases of livestock. An example of this involved research in understanding how Pasturella bacteria obtain iron from their hosts which they require to survive and grow. This led to the discovery that targeting the immune response to proteins used by the bacteria to obtain iron was effective in preventing the pathogen colonising the host animal. This breakthrough led to the development of effective vaccines to prevent and control pneumonia in sheep and cattle. Today the Heptavac P family and Bovipast are market leaders generating over £16 million in sales annually.

Bridging the gap
Moredun’s world class scientific research provides a range of commercialisation opportunities but the journey from laboratory to the field can be a long and difficult one. To help bridge the gap between conducting the scientific research and developing a usable product, Moredun has worked with a number of commercial partners and industrial companies to help translate science into products.

In 2010 a new Moredun company was set up with the specific remit to bring new vaccines to market. Inocul8 will develop the manufacturing, evaluation and registration of the products, secure the intellectual property associated with the invention and help attract funding to support the development of the product. Dr Richard Mole, Moredun Group Commercialisation Manager is responsible for Inocul8’s development portfolio which currently includes new or improved vaccines for haemorrhagic septicaemia (Pasturella multocida), Haemonchus contortus and caseous lymphadenitis (CLA). Anticip8 is another Moredun based company that will focus on the commercialisation of diagnostic reagents and products arising from Moredun’s research.

Innovative research and business idea wins award
Caseous lymphadenitis (CLA), a bacterial infection of small ruminants, is the subject of Moredun’s recent success in a national competition to find the best new business start up based on innovative scientific research.

A team from Moredun Research Institute beat strong competition from across the Scottish academic sector to take the top prize in the Converge Challenge in September.

The team led by Dr Mike Fontaine, Dr Richard Mole and Professor Willie Donachie have developed a new platform technology that will allow the development of novel and effective vaccines against important bacterial diseases of livestock. The animal health market is a global multi-billion dollar industry and this new technology is well placed to make a strong impact to generate novel products to prevent and control animal diseases.

Dr Mike Fontaine said, “We are delighted and honoured to win this award and have learned so much from the whole experience of taking part in Converge Challenge. The training and interaction with the other participants has really helped us to develop our business idea and I am now really looking forward to working with the new company ArxBio to develop new and effective vaccines to prevent animal and human disease”.

Converge Challenge, run by Heriot-Watt University, gives students and members of staff of every Scottish university and research institute the chance to develop the commercial potential of their inventions through a series of business mentoring and training, before being short-listed for the final prize. Converge Challenge 2012 involved 50 applicants from across Scotland’s academic sector.
Research

Moredun leads new BBSRC funded project to investigate the association of novel Chlamydia-like organisms with reproductive failure in cattle

The BBSRC has recently awarded a £1.1 million grant to a research and industrial collaboration led by Moredun Research Institute to investigate the role of Chlamydia-like organisms as a potential cause of reproductive failure in dairy cattle in the UK. The research collaboration involves scientists from the Moredun Research Institute and the Royal Veterinary College London, in partnership with Pfizer Animal Health, who are co-funding the work, and DairyCo.

Reproductive failure in cattle is one area of great concern to the agricultural sector, as it has a major impact on productivity in UK cattle herds. While there are many factors contributing to reduced rates of reproduction in livestock systems, infection plays a key role, with 77% of diagnosed cases of bovine foetal death reported as resulting from infectious causes. However, diagnosis of the infectious causes of pre-natal death in cattle is poor, with 80% of cases remaining undiagnosed. This may be explained in part by a failure to detect the presence of other unidentified disease causing organisms.

In recent years, there has been an increase in the identification of a group of new emerging bacterial organisms that are found in the environment and have been shown to be associated with a variety of conditions in humans, such as pneumonia and miscarriage. These organisms, which share similar biological characteristics to Chlamydia species that are known to cause a broad range of infections in humans and animals, such as sexually-transmitted infections, pneumonia, blindness and foetal death, are referred to as Chlamydia-like organisms. These Chlamydia-like organisms are also increasingly becoming recognized as
potential disease causing organisms of livestock, being particularly associated with the pre-natal death of calves. Indeed, they have been found in over a quarter of the cases analyzed in the UK, and thus could account for some of the 80% unaccounted, undiagnosed cases reported by DEFRA.

The lead scientist in the research collaboration, Dr David Longbottom from Moredun is very excited about starting the new research project, he commented: “We plan to follow up our preliminary studies to investigate the presence of these Chlamydia-like organisms on dairy farms across the UK, determine how they may be transmitted to cattle from the environment and find out how the pathogen affects reproductive performance”. The team at the Royal Veterinary College London, led by Prof Javier Gutian, will determine which pathogens are present in UK dairy cattle experiencing poor reproductive performance, while the team at Moredun will isolate the Chlamydia-like organisms for characterisation and to determine their role in disease.

The team hope that this three year project will greatly increase our understanding of the disease causing potential and role of this group of emerging bacteria in cattle reproduction. The outcomes will lead to improved diagnoses of cattle reproductive failure, inform and educate the industry to the presence of these organisms, lead to improved management systems and determine whether vaccination may be an option to control the disease.
Out and About

Roadshow round up

The 2012 Moredun Animal Health Roadshow was an outstanding success with record numbers of farmers, vets and SQPs attending the 10 free events throughout the UK. The roadshow ran from 12th to the 29th November and featured subjects including BVD, liver fluke, worm control, cryptosporidiosis, bovine neosporosis, sheep pneumonia and sheep abortion. Moredun’s roadshow exists to support the livestock industry, help promote livestock health and answer queries about disease control. The 2012 series saw meetings take place across the UK from Inverness in the North to Exeter in the South and provided a great opportunity for local producers and those working in livestock health to come together and discuss animal health issues.

We would like to thank QMS, HCC, Elanco, Novartis Animal Health and MSD for their kind sponsorship, and all the speakers for their time and knowledge delivering the excellent sessions. Once again all meetings received AMTRA SQP CPD accreditation.

Feeding the 9 billion at Dundee Science Festival

The demand for food is expected to rise 70% in 2050 to meet the anticipated global population growth which poses real challenges going forward.

This highly successful public debate about Food Security, first run at the Edinburgh International Science Festival in April last year, has been successfully repeated at further festivals across Scotland. Feeding the 9 Billion featured on the bill at the 2012 British Science Festival in Aberdeen in September, and more recently at the Dundee Science Festival on 13th November.

www.moredun.org.uk/feeding-7-billion

Midlothian Science Festival

Moredun were actively involved in the successful launch of the first Midlothian Science Festival. Moredun were involved as part of the festival planning committee and also provided exhibitions and workshops during the festival which ran from Saturday 13th October to Sunday 21st October. In its first year the festival succeeded in bringing the world of science to the communities within Midlothian through a varied programme of talks, films, shows, interactive workshops and drop in activities. Plans are underway for October 2013, please see www.midlothaniencefestival.com for details.
Science on a plate

This exhibition about food production and food safety in association with the knowledgescotland partners and the Food Standards Agency Scotland hit the road for the last six months of 2012 reaching audiences in Orkney and Aberdeen, and at MacDuff Fishfest, Scottish Sea Bird Centre and Dundee Science Centre to name but a few.

CoZEE Autumn Conference

Moredun hosted a two day conference looking at intervention strategies to prevent and control zoonoses which was held at the Discovery Centre in Dundee on 29-30th October. The first day of the conference involved a debate with various stakeholders from the industry covering primary production, processing, retail, water, environment and food and drink to look at the knowledge gaps and needs and where science could best be applied to develop more effective prevention and control strategies. 

www.cozee-zoonosis.net

Royal Highland Education Trust

Moredun took part in the Food and Farming Day hosted by RHET in Ayrshire in September. Moredun’s PhD students helped to deliver educational activities on animal health and welfare to over 100 school children taking part in the event.

Forthcoming Shows & Events 2013

Tuesday 2nd April
Evening debate:
The Dark Arts of Innovation, Edinburgh International Science Festival

Thursday 4th and Friday 5th April
Interactive family exhibition:
Disease Explorers, Edinburgh International Science Festival

Tuesday 21st May
Welsh Sheep, Llandeilo

Thursday 23rd May
Beef Expo, Malvern

Wednesday 5th June
North Sheep, Harrogate

Thursday 20th to Sunday 23rd June
Royal Highland Show, Edinburgh

Work Shadowing Scheme

Moredun coordinated another successful work shadowing scheme where scientists from the Scottish Research Institutes, were placed on short-term placements with colleagues in the Scottish Government to help improve science-policy connections.

The scheme included a reception at the Royal Society of Edinburgh where Rebekah Widdowfield, Head of RESAS and Ian Duncan Millar, Chairman of the Moredun Foundation spoke about the importance of connecting science and policy. The participants spent time at the Scottish Parliament attending a committee meeting, chamber debate and a visit to the Scottish Parliament Information Centre (SPICE). Feedback from both groups was again very positive.

www.moredun.org.uk/knowledgescotland
The Moredun Foundation Scholarship

The Moredun Foundation, as a charitable body, exists to promote animal health and welfare through research and education. The Foundation launched a scholarship scheme at the end of 2011 to provide an opportunity for individuals in the UK to pursue a short term project that would benefit the UK livestock industry.

The 2012 Moredun Foundation Scholarship Scheme supported three projects that were selected by a panel of scientists, farmers and members of the press. The projects were completed and presented at The Moredun Foundation AGM in September.

Investigating the value of fallen stock necropsy to sheep farmers, with emphasis on ewe mortality

Estimated annual ewe mortality rates suggest approximately 700,000 – 980,000 ewes are lost per year. However estimates of the profile of diseases which contribute to these losses to the industry are lacking.

In a pilot study Fiona Lovatt of the Castle Vet Group, and Ben Strugnell from AHVLA Thirsk, conducted a survey of ewe mortality using carcasses from a large fallen stock collection centre in the North East of England.

A diagnosis was reached in 72% of cases, with acute mastitis being the most frequently diagnosed disease. This pilot study was co-funded by EBLEX and the project holders hope that expanded use of this concept may prove useful for the sheep and other livestock industries.

Detecting digital dermatitis lesions in cattle using a thermal camera

Digital dermatitis is an infectious cause of lameness, endemic on dairy farms across the UK.

The aim of this study was to identify whether digital dermatitis lesions could be detected by collecting thermal images of the heel bulb. Sarah Harland from the University of Bristol Vet School put this to the test by analysing the hind feet of dairy cows and comparing thermal images to digital images and a visual scoring system.

Increasing the Scottish livestock industry’s understanding and awareness of psoroptic mange in cattle

Psoroptic mange (cattle scab) is a serious skin disease that has recently been introduced into herds in England and Wales. It is highly contagious and treatment can be problematic.

Lisa Roberts and Lorna Paterson, NFU Scotland Regional Managers, aided by additional funds from NFUS, did this project to raise awareness of psoroptic mange with Scottish farmers and vets, and to assess the presence and mobility of psoroptic mange in the Scottish cattle herd. Results from the project show no evidence of the disease yet in Scotland and there is a real lack of awareness of the condition.

Full reports from all three of these scholarship projects can be found on the Moredun website www.moredun.org.uk/scholarship

'It is useful for a farmer to know if a ewe died of mastitis, for instance, as it could factor into their decisions and improve animal welfare'
Fluke update

The summer of 2012 has been one of the wettest summers on record and it is held responsible for the extraordinary levels of disease and death in sheep due to liver fluke, a highly pathogenic flatworm parasite.

The weather has been ideal for fluke transmission because wet, mild conditions favour the fluke’s intermediate host snail, leading to heavy contamination of pasture with infectious fluke cysts. Flooding events have served to compound the problem by disseminating infected snails and parasites. As a result, we have seen fluke outbreaks in previously fluke-free areas and unusually severe fluke problems in areas that would traditionally be able to control the parasite. In fact this past autumn and winter, the occurrence of death due to liver fluke had increased 10-fold compared to 2011 values, based on submissions to veterinary diagnostic centres. Such has been the burden of fluke infection on pasture this year that animals are becoming rapidly re-infected and suffering severe liver damage, often despite effective flukicide treatment.

We have also seen the emergence of another fluke parasite, rumen fluke, which has a similar life-cycle to liver fluke, and may even utilise the same species of intermediate host snail. Adult rumen fluke appear to be well-tolerated in the stomach of grazing livestock but heavy infestations of stock with immature rumen fluke have recently been associated with clinical disease and deaths in both sheep and cattle. Both fluke species are traditionally diagnosed by detection of eggs in faecal samples but their eggs look very similar and could be confused. Differential diagnosis is important because most flukicides do not kill rumen fluke and because a false diagnosis of liver fluke treatment failure could be made.

The need for early diagnosis of fluke infection has never been more urgent. Over the past year, Moredun, with support from QMS, has been evaluating a new diagnostic test, the so-called faecal antigen ELISA, for liver fluke on sheep and cattle farms in Scotland. Dr Philip Skuce, a principal research scientist at Moredun commented, “The new test lived up to its promise in experimental studies in sheep but proved to be less sensitive than the traditional egg count when used in natural outbreaks. The new test was, however, able to give a rapid and clear indication of flukicide treatment outcome in established infections, at seven days post-treatment, compared to the standard three weeks by egg count. This would allow an alternative flukicide treatment to be administered, if necessary. The test proved to be specific for liver fluke, it did not cross-react with rumen fluke, and preliminary results indicate that it may be more sensitive than the faecal egg count in cattle.”

As all the currently available diagnostic tests for fluke have their limitations, we are now evaluating alternative approaches using DNA-based methods for fluke detection. If successful, this would represent a significant step forward in our diagnostic capability.

For more information please visit our website at www.moredun.org.uk/liver-fluke or order your free copy of our new 12 page factsheet on liver fluke by contacting us on 0131 445 5111.