Visit of Bill Gates to GALVmed

Using RNA interference to control ectoparasites

Tackling Cryptosporidium in the Cairngorms: a whole catchment approach

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A very warm welcome to the Autumn/Winter edition of the Moredun Magazine. This issue highlights the progress of our research on several fronts, and showcases projects where cutting edge research has been applied in practical measures to safeguard livestock health.

Sheep scab, caused by the mite Psoroptes ovis is, arguably, the most important ectoparasitic disease of sheep in the UK and on page 2 we report on Moredun’s involvement in the sheep scab eradication scheme on the Isle of Mull and on some of our new research approaches (pages 8-9). At recent agricultural shows, our staff have been repeatedly approached for advice about mastitis in sheep and our work in this area is described on pages 6-7. A report on a project to safeguard Scottish water supplies from contamination by Cryptosporidium, includes information on the practical measures that are already being undertaken involving Moredun working together with relevant stakeholders to really make a difference.

As well as tackling the current challenges that affect our farming community, Moredun has always looked to the future of livestock health and food security through its contribution to the education of the next generation of research scientists. This Autumn we focus on some of the achievements of our recent PhD students (page 12).

We were also delighted to welcome Bill Gates to Moredun where he came to visit GALVmed to discuss progress in the development of livestock vaccines (page 1).

I would like to thank John Matts for all his work over the years with Pentlands Science Park as he stepped down at our AGM this year. I would also like to add my congratulations to John Jeffrey on receiving a Moredun Fellowship and thank him for his significant contribution to the organisation.

We hope that you will enjoy this issue of the magazine and thank you for your continued interest in and support of our work.

Julie Fitzpatrick
Scientific Director and Chief Executive
Visit of Bill Gates to discuss progress in development of livestock vaccines

Moredun and Pentlands Science Park were delighted to host a visit by Mr Bill Gates, co-chair of the Bill & Melinda Gates Foundation, who was visiting GALVmed, (the Global Alliance for Livestock Veterinary Medicines) to discuss progress in the development of livestock vaccines and medicines for some of the 900 million people who rely on livestock to pay for their daily needs.

The Gates Foundation is a principal funder of GALVmed, a charity which aims to create sustainable and affordable livestock health products.

Mr Gates was very encouraging about the breadth and quality of the work being undertaken in the livestock health arena and emphasised the importance of delivering with impact for the lives of poor people and in doing so as quickly as possible.

Moredun awards Honorary Fellowship to John Jeffrey

John Jeffrey, Scottish farmer, renowned rugby player and member of the International Rugby Board, who served as MRI chairman from 2004 to 2011, has been awarded an Honorary Fellowship of the Moredun Foundation at its recent AGM.

Professor Julie Fitzpatrick, Scientific Director of Moredun Research Institute said, “We are delighted to recognise the significant contribution John Jeffrey has made to Moredun over the last 25 years. His genuine interest in the science and his encouragement and loyal support through good and challenging times for the organisation have helped to shape the highly successful International Research Institute we have today. On behalf of all the staff at Moredun we would like to give our thanks and appreciation for all John has done for the organisation”.

John commented, “It is a great honour for me to receive this fellowship and it has been an enormous privilege to serve on the boards of the Moredun Research Institute and the Moredun Foundation.

I have particularly enjoyed getting to know the scientists and developing a better understanding of the very valuable work they do in developing vaccines and diagnostic tests to combat livestock disease. I am very interested in hearing about Moredun’s progress going forward”.

Bill Gates arrives at Moredun and meets Peter Wells, Chair of GALVmed and Chairman of Moredun Scientific, Julie Fitzpatrick, Scientific Director and Chief Executive of Moredun, and Peter Jeffries, Chief Executive of GALVmed

Ian Duncan Millar and John Jeffrey
News

Action campaign on Mull to raise awareness of sheep scab

Sheep scab is one of the most important diseases for Scottish sheep farmers and costs the UK industry in excess of £14M each year. The financial and welfare implications are all related to the intense irritation associated with the feeding of sheep scab mites on the skin surface.

The Sheep Scab (Scotland) Order 2010 made it a notifiable disease once again and consequent notifications have enabled the Scottish Government in conjunction with Moredun scientists and NFU Scotland, to identify areas where sheep scab is either absent or present at very low levels. The data collected so far suggest that sheep scab is either absent from Mull or present at very low levels. If it’s absent, we’d like to keep it that way. If it’s present at low levels, we have the opportunity to eradicate it and keep it out, but we need to know where it is first. To do this, Mull Vets used a new diagnostic blood test developed by Moredun scientists on an island-wide basis (Isles of Mull & Iona). NFU Scotland and Scottish Government are funding the work and the results for sheep keepers on the island could save them money by targeting treatments and avoiding losses from clinical/subclinical disease.

The testing was recently completed with a total of 715 sheep tested over 57 premises across Mull & Iona. No sheep scab mites or obvious lesions were identified in any of the animals tested. At this mid-way point in the study it appears that Mull & Iona are effectively free from sheep scab. To keep it this way the second phase of the study will follow up a subsample of the original flocks whilst also testing animals coming on to and off the islands. The study has demonstrated the use of the sheep scab diagnostic test as a means of assessing disease status as part of a local eradication campaign and the next year will assess its use as an effective screening tool to prevent the re-introduction of sheep scab.

Congratulations to Julie Fitzpatrick, OBE

Professor Julie Fitzpatrick, Scientific Director of the Moredun Research Institute and Chief Executive of the Moredun Foundation, was awarded an OBE in this year’s Queen’s birthday honours for services to animal health and science.

Ian Duncan Millar, Chairman of the Moredun Foundation, commented, “Warmest congratulations to Professor Fitzpatrick on receiving this honour in recognition of her outstanding contribution to improving and promoting livestock health and welfare. The award of the OBE is richly deserved”.

Professor Fitzpatrick commented, “This is an extraordinary honour, which I am delighted to receive to highlight the importance of the work many of us are involved in to improve livestock health and welfare across the world through science and education”.

Reproduced with the kind permission of Prof. Neil Sargison, R(D)SVS.
Despite the good weather, don’t forget about fluke this autumn

As autumn approaches, beef and dairy cattle farmers are being advised not to forget about fluke as part of their herd health management around housing time.

The fluke parasites spend much of their life cycle on pasture and require a mud snail to help them develop. As mud snails prefer wet boggy ground, the prevalence and risk of fluke on farms does depend on prevailing weather conditions, particularly temperature and rainfall. Fortunately this summer we experienced dry warm weather which should lower the risk of snails becoming infected and going on to shed infective fluke cysts onto pasture.

However, advice from the COWS (Control of Worms Sustainably) group is that fluke still remains an issue and farmers should consider the risk posed by fluke prior to housing. Appropriate management now will help get on top of fluke when the perceived risk is lower than it has been in recent years.

Risk factors on farms are:

- Previous history of fluke infection
- Wet and boggy grazing areas: watch out for poached ground near gateways and troughs

Other helpful information to assess fluke risk on farm:

- Abattoir feedback on livers
- Blood tests and bulk milk samples will provide evidence of exposure to fluke
- Dung/faecal samples may show egg counts if cattle are infected with adult fluke

It is very important that farmers discuss with their vet or suitably qualified person (SQP) the appropriate fluke treatment to administer at this time of year as not all products are fully active against the immature stages of the parasite.

For further information and advice please visit the COWS website www.cattleparasites.org.uk

Professor Gary Entrican - new Chair of International Veterinary Immunology Committee

Professor Gary Entrican, has recently been appointed Chair of the International Union of Immunological Societies (IUIS) Veterinary Immunology Committee (VIC), a committee that unites the global veterinary immunology community and creates a network of expertise.

A notable feature of veterinary immunology is its diversity – it encompasses a wide range of domesticated and wildlife animal hosts which are affected by disparate pathogens and immunological conditions.

As a scientific discipline, veterinary immunology traverses topics ranging from fundamental studies on how the immune system functions to more applied areas such as production of vaccines and clinical applications of immunology. VIC promotes and coordinates the interests of the international veterinary immunology community through meetings and aims to facilitate the coordination of databases and resources of value to veterinary immunologists. This includes a virtual toolkit of immunological reagents suitable for use in livestock and other animals of veterinary interest.

2014 Christmas Card and Gift range

Christmas is now just around the corner, and we are delighted that The Moredun Foundation have a selection of Christmas gifts and merchandise for sale to members and supporters this year.

Further information about our Christmas gifts and merchandise we have available can be found on our website www.moredun.org.uk/shop

Professor Gary Entrican

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The study was set up with valuable support from the land owners, The Crown Estate, and the farmers who have been extremely helpful throughout the study. Sampling was carried out 3 times between March and June this year and the results, although still a work in progress, are very interesting so far. The prevalence of Cryptosporidium in all farm livestock and deer, detected by PCR, was extremely high (62.6% positive from 183 samples) and was predominantly C. parvum (92.1% of all positive samples).

The initial genotyping using the GP60 marker has shown that the genotypes of C. parvum detected were of a common type predominantly and were consistent through the livestock, deer and water samples, indicating that the parasite is being transmitted between these species in the catchment and into the water. Two further less common isolates were also identified and...
the transmission route from one had to be from red deer to the water course at that point and the other from either red deer or sheep. We are therefore beginning to build a picture of *Cryptosporidium* transmission using these molecular tools and clarifying the role of wildlife, as well as livestock, to water contamination. Microsatellite marker analysis is currently underway which will hopefully provide further transmission information.

In terms of management solutions, the catchment above the public water supply intake is to be fenced and water troughs provided for livestock. This will have the result of reducing the *Cryptosporidium* loading into the water supply as well as reducing the turbidity in the water. This may also have benefits in reducing other potential waterborne pathogens in the water supply, such as *E. coli* and Salmonella, and could also improve animal health by the reduction of risk of liver fluke as it removes livestock from wet and boggy areas.

A farmers meeting, sponsored by the Crown Estate, has been organised later this year, where management solutions to help reduce *Cryptosporidium* levels on farm will be made available to all the farmers in the area, thereby improving animal health and production, as well as water quality and public health.

This study was funded by EU (Aquavalens), Scottish Government, Scottish Water and the Crown Estate.

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The Glenlivit project was conceived together with Scottish Water because of a problem of *Cryptosporidium* contamination of water supplies. The study also involved the land owners, The Crown Estate and local farmers and is an excellent example of what can be achieved through collaborative working.
Mastitis in Sheep

In dairy cattle, it’s all about the udder. In meat sheep, which form the majority of sheep in the UK, we tend to overlook the udder. Without an udder, however, there is no milk and without milk, there is no lamb growth. Inflammation of the udder, also known as mastitis, reduces milk production and threatens lamb survival. Mastitis also threatens the health and survival of ewes.

In this article, Ruth Zadoks discusses research into this increasingly important disease. Unlike cattle, where mastitis is almost invariably caused by bacteria, sheep may get mastitis through infection with bacteria or with viruses. This distinction is important, because prevention and treatment strategies differ between the two. There is no point in treating viral infections with antimicrobials and farmers and veterinarians should refrain from doing this, just like doctors try to stay away from antibiotics for things like the flu. Testing, culling and certification programmes are the best way to deal with viral mastitis, which is mostly caused by the Maedi-Visna virus.

In the case of bacterial mastitis, the worst offender is *Mannheimia haemolytica*, formerly known as *Pasteurella haemolytica*. *Mannheimia* generally causes acute mastitis, resulting in blue and cold udders, often leading to the immediate death of the animal or to sloughing.
The best tools for mastitis control continue to be prevention through good nutrition and hygiene, checking of udders at lambing, weaning and before mating, and treatment of cases in consultation with your veterinarian.

available for mastitis control in dairy cattle cannot be recommended for use in sheep yet. The PCR-based diagnostic assay that was developed for cattle does not cover *Mannheimia*. Therefore, culture of bacteria from aseptically collected milk samples is still the preferred way to identify mastitis causing organisms in sheep, e.g. for screening of purchased animals and to choose appropriate antibiotic treatment regimens. Another new product on the cattle market, a mastitis vaccine, has not been evaluated in sheep. Its effect in cattle is, in large part, due to prevention of damage from coliform mastitis, a type of mastitis that is relatively rare in sheep so it is not immediately obvious whether this product could be of benefit in sheep. Sadly, the vaccines that protect sheep against pneumonia due to *Mannheimia* do not provide protection against mastitis either.

off of the udder, with secondary infection and delayed death as a consequence. For those animals, treatment usually comes too late and euthanasia may be the most humane way to deal with cases. However, not every animal with *Mannheimia* is a “dead sheep walking”. In recent work at Moredun, we discovered that some of our own healthy looking animals shed *Mannheimia* in their milk. In fact, it is quite common for healthy animals to carry *Mannheimia*, although usually it is the lambs carrying it in their mouths.

Not every blue udder is due to *Mannheimia*. In rare cases, the culprit may be *Staphylococcus aureus*. *Staphylococcus aureus* may also cause chronic mastitis, leading to localised abscesses or lumps in the udder, or shrinkage and hardening of an udder half. Like *Mannheimia*, *Staphylococcus aureus* can be carried by healthy animals, e.g. in their nose and on their skin. Both bacteria, and some others, mostly cause disease after teat damage. Damage can be the result of severe weather conditions or lack of milk production, resulting in excessive sucking by hungry lambs. Thus, the prevention of mastitis may need to happen not via the animals’ udders, but via their stomachs. Adequate nutrition, particularly adequate protein supply in the last 10 weeks before lambing, helps to ensure adequate milk production, providing protection for lambs and ewes alike.

Some novel tools that have become...
Using RNA interference to control ectoparasites

An exciting technique called RNA interference (RNAi) has the potential to play an important role in developing novel control methods to combat ectoparasites.

The RNAi mechanism evolved over hundreds of millions of years as a defence mechanism to protect against viruses and it works in an elegant way. Messenger RNA (mRNA) in every cell of an organism contains the sequence instructions to make proteins, and if we add extra RNA of the same sequence to the target organism’s mRNA, it sets off a chain of events leading to the breakdown of the original mRNA. The result of this is reduced production of the specific protein the mRNA encoded, which in turn means that the cellular processes relying on that specific protein are therefore affected. By performing such experiments over a range of genes, we can begin to analyse the resulting effects on the recipient organism — therefore informing us if there is therapeutic potential in targeting those genes. By establishing the RNAi experimental system in the sheep scab mite, *Psoroptes ovis*, and applying it to selected targets, we can begin to identify molecules that are critical for mite survival. This information can then be used to inform future...
Promising vaccine candidates and novel drug targets have been identified using RNAi for other ectoparasites such as ticks, lice and mosquitoes.

Control strategies in a more time and cost effective manner than traditional approaches. Using RNAi as a tool for this purpose, we seek to complement and streamline the existing research at Moredun, focussed on the development of a sheep scab vaccine. RNAi has been used in this manner to great effect in other notable ectoparasites, such as ticks, lice and mosquitoes, and we are hopeful that it will help us in our drive for a more sustainable future. In those other ectoparasites, promising vaccine candidates or novel drug targets have been identified using RNAi and in studying the scientific literature, it appears that this technique is increasingly being assessed in new parasite systems for this purpose. Following on from initial, encouraging experiments at Moredun in which the proof of principle and methodology has now been established in *P. ovis*, the next steps are to apply more rigorous testing to this technique to assess its performance in our sheep scab system.

**How can we apply RNAi?**

Protein is synthesised following the uninterrupted processes of transcription and translation. Put simply, transcription is the cellular process that makes RNA from DNA and translation is the cellular process that makes protein from RNA. Using RNAi to reduce or knock-out transcription leads to a reduction in the specific protein targeted and in doing so allows us to assess the therapeutic potential of specific genes and identify those that are critical for mite survival. In the comparative analysis where we compare mites treated with RNAi and untreated mites, the genes targeted by RNAi that result in increased mortality, reduced mobility, reduced fecundity etc are likely to be promising candidates for further development.

For readers wishing a more detailed look into how this technique might benefit our research, please see our most recent publication ‘RNA interference for the identification of ectoparasite vaccine candidates’, which is available upon request [DOI: 10.1111/pim.12132].
Out and About

Show report

The summer months each year see a team of Moredun scientists travel around the UK attending specialist sheep and cattle events to discuss the latest advances in livestock health research.

Moredun had an extremely successful summer show season this year. We started off with Beef Expo in Hexham and in June we attended both Scotsheep in Duns and the Royal Highland Show. We went to Malvern in July for the NSA National Sheep event.

All the shows were very well attended and our scientists were kept busy answering questions on a variety of disease subjects. At the Royal Highland Show we also displayed photographic images and audio clips from our Livestock Keepers engagement project which proved to be very popular with members of the public.

Our PhD students took our education stall to Scotsheep, the Royal Highland Show and Peebles Show where they discussed how to help prevent disease in sheep with school groups.

For further information about the shows and events Moredun will be attending please visit www.moredun.org.uk/events

Welcome to the Hebrides

The welcome addition of a new regional advisor to the Moredun Foundation North of Scotland Regional Board, Kevin Kennedy, a crofter and SQP at Lewis Crofters, Stornoway, instigated a visit to the Hebrides by Lee Innes and Beth Wells.

In August they attended the biggest annual lamb sale held at Stornoway Mart, which attracts crofters from all over the Hebrides and has over 5,000 lambs up for auction. Here they had an opportunity to introduce Moredun to crofters and discuss the animal health issues that arise in this unique way of farming livestock. A Livestock Health Roadshow meeting (the first on Hebridean soil) was held over one evening where there was lively discussion about the animal health issues facing small scale livestock production involving a large number of livestock keepers. Lee and Beth also took the opportunity to explore the economic importance of the wool and Harris Tweed industry to the economy of the Hebrides, as part of the Talking Science Livestock Keepers project and met with mill owners, weavers and crofters who supported organising of the trip, making us so welcome and providing a valuable insight into Hebridean life. We learned a great deal during our trip and an appreciation of their particular livestock health issues.
**Moredun Regional Advisor hosts World Sheepdog Trial**

Moredun Regional Advisor, John Scott, of Fearn Farm, by Tain, Ross Shire, played host in early September to the World Sheepdog Trial Championship.

The four day event, a first for Scotland, was organised by the International Sheep Dog Society and its Scottish members, with competitors from 24 countries and around 9,000 visitors.

HRH The Princess Royal visited the event and greatly enjoyed watching the dogs and their handlers in action and meeting some of the competitors.

Congratulations to Michael Shearer of Westfield in Thurso in Caithness and his nine-year-old sheepdog, Bob who are the 2014 World Champions.

John commented: “As a family we are honoured that the world trial has chosen to come to Fearn Farm, we enjoy farming in the highlands of Scotland and relish the opportunity to share our farm with people from all over the world.”

**International Egg Commission Global Leadership Conference**

Professor Julie Fitzpatrick was one of the speakers at the IEC Global Leadership conference where she gave the delegates an update on the exciting progress being made by scientists at Moredun to develop a vaccine against poultry red mite, a devastating cause of disease in laying hens.

Red mites cost the poultry industry about £102 million every year and it is estimated that 83% of flocks across Europe are affected.

Moredun scientists have developed a vaccine to protect hens from the mites and the vaccine is due to enter commercial trials in 2015.

Vaccination is a sustainable control option as there are reports of increasing resistance to common insecticides.

Funding for the project has come from several sources including global industries, research councils and government and Professor Fitzpatrick paid specific tribute to John Campbell of Glenrath Farms for his role in successfully driving the research bid forward.
Focus On...

Postgraduate Students

PhD students at Moredun are an important part of the research institute’s investment in the training and mentoring of future scientists interested in improving livestock health and welfare.

Moredun trains students in collaboration with several universities in the UK, Europe and worldwide, providing first-class research facilities at Pentlands Science Park and the potential of farming industry contacts through the Moredun Foundation. Students based at Moredun also benefit from a wide range of training offered through their university and additional courses via Moredun. Funding for Moredun PhD students comes from the Scottish Government, from industry levy boards (AHDB, HBLB), from charities (Pilkington Trust, Perry Foundation, Royal Zoological Society of Scotland), from industry and from the Moredun Group.

At any one time about 20 students pursue their PhD studies at Moredun, with most submitting a successful PhD thesis within 4 years. Students at Moredun have projects directly relevant to animal health issues and the following examples show that the benefits go beyond scientific training and the outputs that make up a PhD thesis.

Johanna Baily (PhD St Andrews University, 2014) studied “The prevalence of pathogens in Scottish Grey seals”. This project involved obtaining samples from both wild and rescued seals for analysis of bacterial and viral pathogens. This work, highlighted in Moredun Magazine Issue 6, detected infection in the seals with types of bacteria commonly found in humans and livestock, suggesting a possible link with marine pollution.

Alison Burrells (PhD Edinburgh University, 2014), studied “Toxoplasma gondii in animal and human hosts”. This showed that Toxoplasma infection was widespread in sheep flocks and that it was possible to vaccinate food animals to reduce the numbers of infective cysts in their meat.

Hannah Lester is currently finishing her Liverpool University PhD “Multidrug resistance in horse parasites and the development of a system for sustainable parasite control”. This work has helped develop practical guidance for worm control in horses (www.moredun.org.uk/equine-parasites).

Cesar Bassetto is returning to Sao Paulo State University after spending a year at Moredun working with Dr David Smith and colleagues on developing vaccines against different species of Haemonchus parasites. Cesar’s family are farmers in Brazil and he was inspired to get involved in livestock research due to the severe losses he saw in cattle and sheep due to Haemonchus parasites. There are over 200 million cattle and 16 million sheep reared in Brazil and infections with these parasites are responsible for significant economic losses. In addition, anthelmintic resistance in worm populations is a serious problem in Brazil and there is a real need to get alternative prevention and control strategies. Cesar started his research interest in vaccine development for Haemonchus parasites initially during his masters degree and continued his studies during his PhD. He met David Smith in Brazil while collaborating on a vaccination trial and Cesar was delighted to get the opportunity to travel to Scotland and continue his research at Moredun as part of his PhD programme. Whilst at Moredun, Cesar was conducting a comparison of the proteins in the extracts of H. contortus, H. placei and H. similis to extend the vaccination approach that David and colleagues have done so successfully with H. contortus in Australia. Cesar has greatly enjoyed his time at Moredun and being in Scotland where he has travelled widely and even enjoyed sampling some haggis and whisky. He is returning to Sao Paulo to write up his PhD thesis and plans to apply for further research funding to continue his work in vaccine development against Haemonchus parasites.

Together these students have published over 15 research papers with several more in preparation and, perhaps more importantly, have made significant practical contributions to improving the health and welfare of livestock, humans and horses.
Celebration year for Pentlands Science Park

Pentlands Science Park has been celebrating its 20th anniversary this year.

In June, an informal dinner was held in the Atrium to mark the occasion attended by our Directors, current and former staff, tenants and key stakeholders who have played a part in developing and supporting the park over this period. After a delicious meal, Scott Johnstone, CEO of the Scottish Life Sciences Association, gave an interesting and amusing talk, recalling memories of his previous roles as both a Moredun employee and a tenant at the Park.

In August, Moredun and tenant staff celebrated by competing in the Anniversary It’s a Knock-out Event. Everyone entered into the spirit in their fancy dress costumes as they competed in a number of hilarious games including Welly Throwing and the Pond Boat Relay. Victors on the day were the team representing LTS International – the Axes of Awesome.

Veterinary Field Trials

Moredun Scientific has been conducting efficacy and safety studies for livestock veterinary medicinal products using our validated experimental models of infection for over 25 years. We have now extended our services offered to our animal health clients to include field trials to veterinary good clinical practice standards (VICH-GCP).

Field trials are required for veterinary product registration to verify that results under field conditions reflect those observed in experimental trials with the target animals. We offer this service to animal health companies requiring UK field trial data from cattle or sheep studies.

Our close connection with the members of the Moredun Foundation ensures we are well placed to rapidly select and enrol trial sites. A large number of Foundation members are farmers and vets with an active interest in animal health and welfare. In addition we have established links with veterinary groups across the UK.

Moredun has particular expertise in parasitology, respiratory disease and mastitis which are the focus areas for our field trial work. Our quality assurance department is experienced in VICH-GCP ensuring the essential provision of independent quality assurance at all phases of field trials.

Our offering ranges from complete management and delivery of studies to provision of specific elements to meet client requirements including:
- Study design and set up
- Protocol development
- Site selection
- Study monitoring
- Study close out

Contact us to learn more: info@moredun-scientific.com

John Matts retires from the PSP board

The September Board meetings saw the end of an era as John Matts stood down as Chairman of Pentlands Science Park and Vice-Chairman of The Moredun Foundation. A farmer and businessman from Northampton, John first became involved with the South of England Regional Board in 1990, and has been Vice Chair of the Moredun Foundation since 1994, the same year as he joined the PSP Board. He became Chairman of PSP in 1998.

John has made a significant contribution to Moredun, being a key figure in planning and implementing Moredun’s move from the old Gilmerton Road site to Pentlands Science Park. John was also a strong figure in dealing with some challenging times following the move to PSP and helping to lead the organisation to the strong position that it is in today. John was a very supportive and challenging Chairman of PSP and struck up an excellent working relationship with Group Finance Director, Colin Burnett, and Park Manager, George Walker, in making Pentlands Science Park a successful, attractive and effective location for Moredun and the Park’s tenants.

John leaves the organisation with our sincere thanks and best wishes for the future and is succeeded, as PSP Chairman, by Gareth Baird. Gareth, a Kelso farmer, joined the PSP Board in December 2013 and holds a number of directorships including Scottish Commissioner for the Crown Estate. Gareth has also joined the Foundation Board and we look forward very much to working with him.