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Cover image:
 Confocal image of a
 Madin-Darby bovine
 kidney (MDBK) cell
 infected with a
 genetically modified
 lumpy skin disease virus
 (LSDV) strain (green spots).
 © The Pirbright Institute

Inside front image:
 Liquid nitrogen store
 in the BBSRC National
 Vaccinology Centre:
 The Jenner Building.
 © James Brittain

FOREWORD BY THE CHAIR OF TRUSTEES



As the recently appointed Chair of the Trustee Board it is my pleasure to present the Trustees' Report incorporating the strategic report for the year 1 April 2021 to 31 March 2022.

The science strategy of The Pirbright Institute aims to provide UK and international community with the capability to predict, detect, understand and respond to the threat of serious viral diseases of livestock, and their spread from animals to humans.

As we emerge from the COVID-19 pandemic, Pirbright's position is a critical one for the UK and globally. The excellent facilities available at Pirbright, and the significant continuing investment made by the Biotechnology and Biological Sciences Research Council (BBSRC) part of UK Research and Innovation (UKRI) has further strengthened an Institute that has the scientific and support personnel, coupled with the high containment facilities, to deliver world class science to allow it to achieve its strategic aims.

The Pirbright Institute's strategy is underpinned by a series of national and international strategic partnerships including those with other UKRI funded institutes. The Institute is also committed to playing a key role in nurturing the next generation of researchers, technical specialists and innovators to further strengthen its own national capability and to contribute to the broader impact that UK science makes nationally and globally.

The past year has seen Pirbright make significant progress in delivering its new facilities to ensure it stays at the cutting-edge of research. These include completing The Biggs Building which will help improved global food security and poultry welfare through understanding disease pathogenesis and generating new and more effective poultry vaccines. The Brooksby Building has advanced significantly during the year and will be operational in 2023. It will be a self-contained experimental facility involving high containment pathogens such as foot-and-mouth disease virus and African swine fever virus as well as pathogens that can spread from livestock to humans, for example, avian influenza virus. Pirbright is committed to reducing its carbon footprint, for example, the new combined heat and power project will increase energy efficiency on campus from Summer 2022. Also, there is a strong commitment to equality, diversity and inclusion.

One particular milestone during the last year was the announcement at the G7 summit in Carbis Bay, Cornwall of the creation of a Veterinary Vaccine Manufacturing and Innovation Centre (Vet-VMIC) on the Pirbright site, supported in principle by the Foreign and Commonwealth Development Office (FCDO), BBSRC UKRI and the Bill and Melinda Gates Foundation (BMGF). The Vet-VMIC will contribute to the manufacturing capability of veterinary vaccines and take research projects into early-stage production and evaluation – an area where Pirbright is uniquely placed – and so contributes to the UK government's five-point plan for preventing future pandemics.

In the current year, Pirbright has also been preparing its submission for the Institute Assessment Exercise 2022 which will provide the next five years of strategic funding from BBSRC UKRI. This funding will provide the core support to enable the Institute to deliver its scientific strategy and will further enhance its place as a national centre of excellence producing innovative impactful science. This will help to protect the UK food supply and economic security, and ultimately improve the health and wellbeing of animals and people.

During the year, the Board has undertaken a review of its effectiveness and is considering its findings to continue to enhance its performance. On behalf of the Board, I am grateful for the commitment and contribution that the Director and all the staff at Pirbright have made in the last year to ensure the Institute's continued success and would like to acknowledge the major contribution that the previous Chair of the Trustee Board (the late Professor John Stephenson) made to Pirbright over many years of service as a Trustee Director.

Professor Vincent Emery
Chair of Trustee Board
The Pirbright Institute

REPORT OF THE DIRECTOR & CEO



The previous year has seen the world emerge from the coronavirus pandemic and although not fully resolved, we were all returning to normality until the conflict in Eastern Europe started. Despite these challenges we have started to refocus our attention on our established research programmes to control viral diseases of livestock that impact on people's lives around the world.

Climate change and global warming, quite rightly, remain a major concern. Greenhouse gas production by livestock production and agricultural practices have attracted significant attention, which must be balanced by the important role of livestock production for global food security. Pirbright's research has and will continue to provide new tools to improve animal health and increase the efficiency of livestock production and so reducing the overall carbon footprint. Our programmes to develop affordable vaccines, improved diagnostic tests and models of disease spread help governments, international disease control agencies and livestock keepers reduce the burden of disease.

The coronavirus pandemic has shown how rapidly effective vaccines can be developed and deployed in many parts of the world. However there are many more challenges to overcome to make vaccines for more complex viruses such as African swine fever virus and deploying vaccines when logistics are challenging. Therefore, Pirbright's role remains to understand high consequence diseases of livestock, to find affordable solutions to reduce losses, improve productivity and ensure food supplies are secure throughout the world.

Professor Bryan Charleston
Director and CEO
The Pirbright Institute

"PIRBRIGHT'S RESEARCH HAS AND WILL CONTINUE TO PROVIDE NEW TOOLS TO IMPROVE ANIMAL HEALTH AND INCREASE THE EFFICIENCY OF LIVESTOCK PRODUCTION AND SO REDUCING THE OVERALL CARBON FOOTPRINT."

¹ Johns Hopkins University

PIRBRIGHT'S PERFORMANCE FOR 2021/22

PIRBRIGHT'S PRINCIPAL OBJECTIVES

- To continue a world leading research programme by publishing ground-breaking scientific research, winning research funding, and recruiting and retaining the brightest and the best staff and students
- To develop further the Pirbright long term vision of scientific research, with particular impact in enhancing our collaborations with agencies to improve disease control in low and middle income countries
- To continue to implement the fully funded development programme to provide additional animal research facilities for the study of high consequence pathogens. These facilities will further enhance Pirbright as a unique National and International capability
- To develop strong strategic collaborations with other global centres of excellence to support the Institute Strategic Programme grants
- To diversify our funding through greater collaboration with international partners via various new funding opportunities
- To maintain high containment infrastructure, to manage the safety, security, environment and quality risks from our work with high consequence pathogens, and to provide training and expertise to external partners in these areas.

PIRBRIGHT'S KEY PERFORMANCE INDICATORS (KPIs)

- Publications in relevant scientific journals; with a benchmark of one paper per post doctoral scientist a year
- Success rates for research grant proposals over the next five years; 35 percent in terms of successful applications and 30 percent in terms of value of the awards
- Recruitment and the retention of high-quality staff and students; to achieve less than 15 percent annual staff turnover within five years
- Annual research income of at least £11 million externally won funding each year over the next five years
- Compliance with all statutory requirements as a Major Hazard site, close cooperation with regulators, and conformity to applicable standards such as ISO/IEC 17025.

OUR PERFORMANCE AGAINST OUR KPIs

- We published 149 papers in a range of high impact journals achieving an average of 1.01 publications per post-doctoral scientists in the year
- We achieved 50 percent successful grant applications and 46 percent in terms of value of the awards against significant UK and international competition
- At the end of March 2022, the rolling annual average voluntary staff turnover figure was 22.7 percent, significantly higher than the 15 percent target
- The annual grant income for 2021/22 was £16.1m, exceeding the £11m target by 46 percent
- Pirbright is subject to a HSE Major Hazard Intervention Plan comprising of a minimum of three scheduled HSE inspections each year to monitor compliance with its licence under the Specified Animals Pathogen Order (SAPO) 2008 and with regulations under the Health & Safety at Work etc Act 1974. No enforcement action notices were issued, or enforcement action taken by HSE against Pirbright in 2021/22, and we complied with all HSE recommendations. Pirbright reference laboratories are accredited to ISO/IEC 17025 and are subject to annual surveillance visits by UKAS. Accreditation was maintained in 2021/22 with no improvement actions raised during the surveillance visit. No other enforcement was applied for Pirbright in 2021/22 by any regulatory or audit body on any aspect of biorisk, animal scientific procedures regulation, health & safety, security, environment, quality or wider compliance.

PIRBRIGHT HIGHLIGHTS IN 2021/22

Pirbright has continued to advance its research and diagnostics in viral diseases of global importance including COVID-19, African swine fever, foot-and-mouth disease and avian influenza.



PIRBRIGHT MIDGES STAR AT LONDON ZOO

Scientists at Pirbright have worked with the Zoological Society of London (ZSL) London Zoo to showcase the importance of *Culicoides* biting midges within the Zoo's revamped 'Tiny Giants' exhibit.

The exhibit shines a spotlight on the planet's smallest animals, where visitors will find more than 160 species of marine, freshwater and terrestrial invertebrates, including a species called *Culicoides nubeculosus*, midges which are native to the UK and do not spread any known diseases. They are supplied from Pirbright's unique *Culicoides* midge colonies.

AWARD WINNING COVID-19 RESPONSE



Pirbright won the Higher Education Business Continuity Network (HEBCoN) COVID-19 Pandemic Response (CPR) award. This award recognises the hard work and quick response of the Institute to the coronavirus outbreak. Over the last two years the Institute continued to operate and deliver its critical research and Reference Laboratory services, providing testing and surveillance capabilities to UK government, World Organisation for Animal Health (WOAH) and the Food and Agriculture Organization of the United Nations (FAO). Pirbright also contributed to and supported the UK national diagnostic testing response through donating diagnostic equipment as well as providing staff volunteers and diagnostic training.

PIRBRIGHT AWARD FOR ANIMAL RESEARCH INTERNAL COMMUNICATION

The Institute has received an Openness Award for Internal Engagement activity at the eighth annual Understanding Animal Research (UAR) Openness Awards. The award recognises Pirbright's exemplary approach to internal engagement practices, and its joined-up approach to research to ensure clarity and transparency around our research with animals.

The Openness Awards mark the efforts of UK research facilities to be open and transparent about their use of animals in research. Receiving this award is recognition of Pirbright's culture of staff development and engagement as well its commitment to the Concordat on Openness on Animal Research.



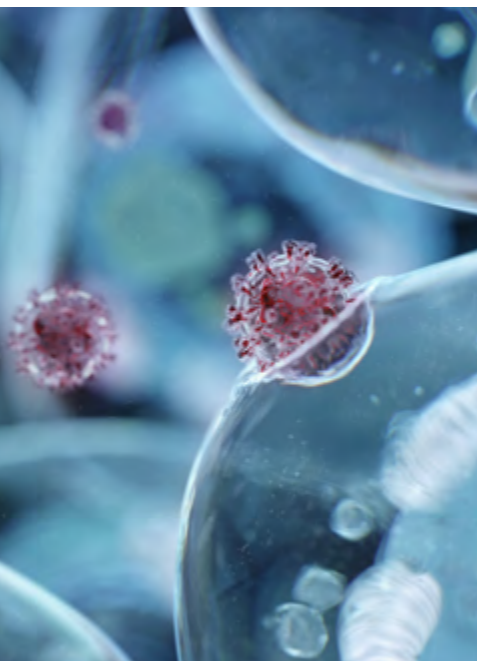
GREEN LIGHT FOR VACCINE CENTRE AT PIRBRIGHT

Controlling zoonotic diseases is a key element of the UK Government's 5-Point Plan for preventing future pandemics. Part of this plan is to establish a UK Veterinary Vaccine Manufacturing and Innovation Centre (Vet-VMIC) at Pirbright with the aim of stopping new animal-borne diseases before they put people at risk. The new centre will draw on our world leading expertise to accelerate the delivery of vaccines for livestock diseases.

NEW CORONAVIRUS NETWORK

The UK International Coronavirus Network (UK-ICN) is a new global network of researchers from both animal and human coronavirus communities.

The COVID-19 pandemic has shown what a huge impact a zoonotic disease can have globally. With the current death toll from the COVID-19 pandemic at over 4.7 million people, the UK-ICN will provide a much needed One Health approach to advancing knowledge and gaining a deeper understanding of coronaviruses that infect both animals and humans.



WHY FOOT-AND-MOUTH DISEASE VIRUS PERSISTS

A major new study, which featured on the cover of the journal Science, undertaken by scientists at Pirbright, Oregon State University, Onderstepoort Veterinary Institute and SANParks, Veterinary Wildlife Services, Kruger National Park explored the mechanisms at play that enable the persistence of highly infectious pathogens in their host populations, a major problem in endemic disease ecology.



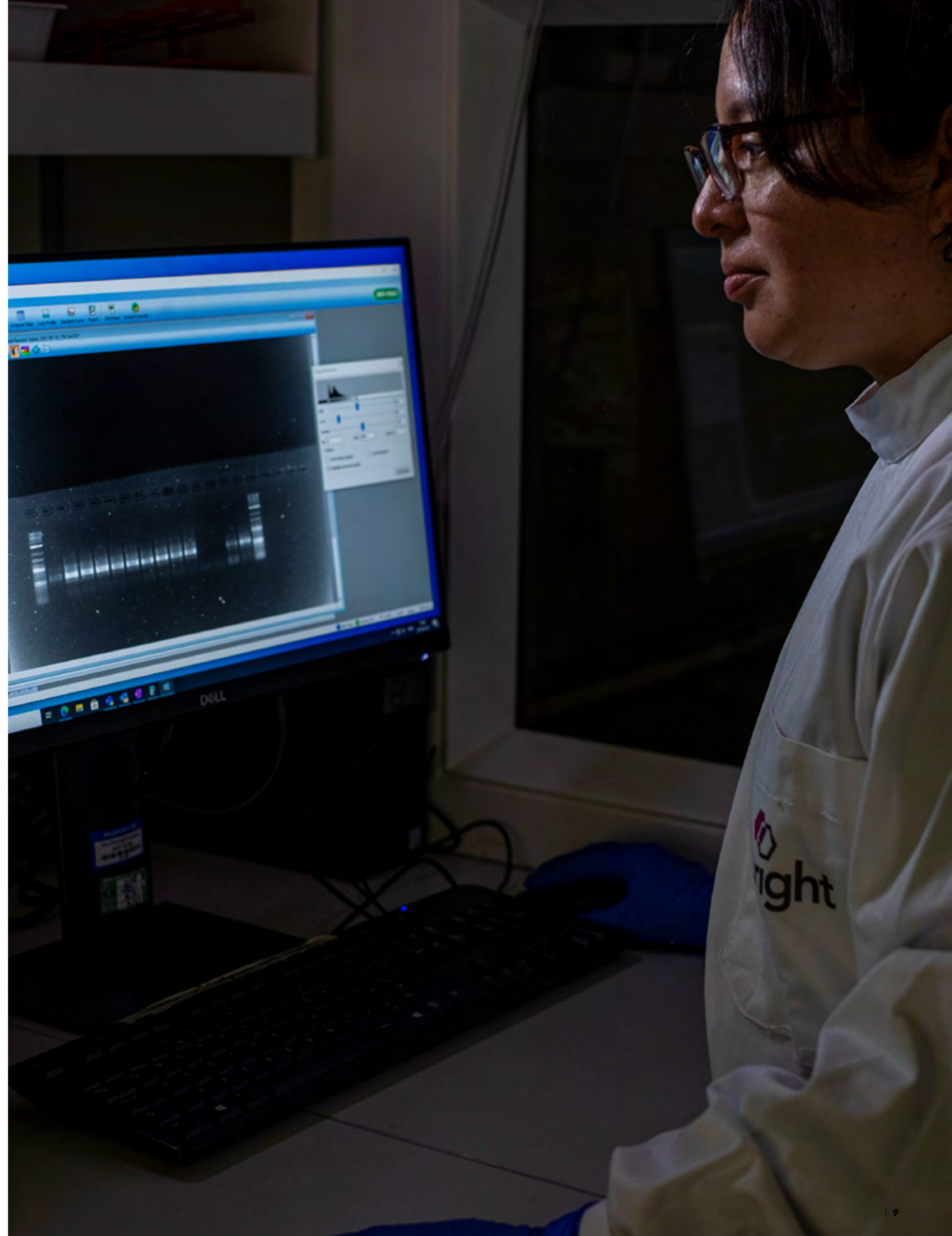
FUNDING FOR NIPAH VACCINE

Pirbright researchers have been awarded £389K to develop a Nipah virus vaccine that could protect pigs and prevent disease in humans.

This funding was provided by the UK government's UK Vaccine Network (UKVN) and will be delivered by Innovate UK. The Institute's award is part of £10 m of UK aid funding going to 22 projects advancing research into vaccines to tackle some of the world's deadliest diseases in low- and middle-income countries.

PARTNERSHIP BOOST FOR GLASGOW AND PIRBRIGHT

Pirbright and the MRC-University of Glasgow Centre for Virus Research (CVR) are the only facilities under UK Research and Innovation (UKRI) that focus entirely on viruses and the diseases they cause. Creating closer collaboration between the organisations will accelerate and expand research into zoonotic viruses which will increase the UK's capability in this area.



ABOUT PIRBRIGHT

OUR PURPOSE

Pirbright's mission is to prevent and control viral diseases of livestock and viruses that can spread from animals to people, known as zoonoses. 2021 has continued to highlight the importance of research into diseases of high consequence, with further global spread of African swine fever virus (ASFV) impacting on food security. As well as having scientific expertise in these viruses, the Institute studies over 33 livestock and zoonotic diseases.

OUR STAFF AND STUDENTS

The Institute employs more than 360 staff and its research is supported by over 50 students from a range of backgrounds and prides itself on its diversity. We are located on a campus in Pirbright, Surrey which over the past ten years has received, and continues to receive, considerable investment from Government through BBSRC UKRI in strategic site development. Scientists work in state-of-the-art laboratories including specialised high-containment laboratories and animal facilities.

OUR SCIENCE

Pirbright provides the UK and countries around the world with the capacity to predict, detect, understand and respond to emerging new viral diseases of livestock and endemic viruses that are circulating in and outside of the UK.

Our diagnostics and surveillance facilities and expertise enable us to act as a National Capability, protecting the UK from livestock viral diseases that threaten our borders, allowing us to act decisively and swiftly in the event of an outbreak in order to control it as rapidly as possible.

Our fundamental research falls under two science programmes which study either hosts or viruses and their interactions. Both programmes are funded by BBSRC UKRI over a five-year period. In addition to this the Institute receives funding for further research programmes from BBSRC UKRI and other organisations including Defra, the Wellcome Trust, Bill & Melinda Gates Foundation, and commercial partners.

There are 28 research groups which fall under the two programmes who work extremely closely together, particularly in virus host interaction research.

PROGRAMME ONE: UNDERSTANDING AND PREVENTING VIRAL DISEASES

Pirbright's research programme focusing on viruses is led by Dr Toby Tuthill and covers:

- How viruses evolve and their diversity
- Viral structure and interactions with host proteins
- Transmission and epidemiology which encompasses spread of infection between individuals, populations as well as predicting the scale of outbreaks
- Designing and evaluating appropriate interventions to control outbreaks.
- The programme aims to understand at a molecular and cellular level the

structure and systems used by viruses that allow them to infect, replicate and transmit. This knowledge will then be used to prevent and control viral diseases, especially highly infectious diseases that must be studied under high containment. Priority viruses we are studying include: African swine fever virus, avian and swine influenza viruses, bluetongue virus, respiratory syncytial virus, coronaviruses including SARS-CoV-2 and infectious bronchitis virus, foot-and-mouth disease virus, infectious bursal disease virus, Marek's disease virus, porcine reproductive and respiratory syndrome virus, pox viruses and mosquito-borne arboviruses.

PROGRAMME TWO: ENHANCING HOST RESPONSES FOR DISEASE CONTROL

Pirbright's host programme is led by Professor John Hammond and it focuses on four broad areas of research around livestock hosts and insect vectors:

- Disease pathogenesis
- Recognition and control of virus infections

- Viral persistence
- Viral transmission by insect vectors
- The goal of the research is to develop innovative methods for the control of viral diseases through an enhanced understanding of host biology and host-virus interactions. Tools and disciplines that enable better understanding of the host-virus relationship include immunology, genetics, bioinformatics, entomology and vaccinology.

DIAGNOSTIC AND SURVEILLANCE EXPERTISE

Pirbright has a long history of protecting the UK from disease and has been home to the World Reference Laboratory for Foot-and-Mouth Disease (WRLFMD) for over 60 years. We also operate the Non-Vesicular Reference Laboratory for a number of high consequence diseases of growing importance including African swine fever virus, bluetongue, peste-de-petits ruminants, rinderpest, African horse sickness, lumpy skin disease, sheep pox and goat pox. These Reference Laboratories provide an essential diagnostic and advice service to the UK Government (Defra), United Nations Food and

Agriculture Organisation (FAO), and the World Organisation for Animal Health (WOAH).

These laboratories receive samples from all over the world and are instrumental in providing countries with sophisticated data on strains of viruses causing disease and helping to select vaccines to aid control. During 2021/22 the laboratories processed 16,923 samples.

The international reference laboratories are accredited to ISO/IEC 17025, an UKAS accredited laboratory number 4025. In 2022 this accreditation was renewed following a successful assessment by UKAS.

OUR VALUES

We take PRIDE in everything we do which is reflected in our values:

Passion – for the highest quality standards, delivery and performance.

Reliability – in everything we do; leadership, learning, biosafety, problem anticipation and containment of unexpected events.

Innovation – is the driving force behind our fundamental and applied science. Our work is positioned at the cutting-edge of science to deliver solutions for global good.

Dignity and respect – we respect and trust in our diverse community.

Excellence – we aim to deliver the best in all aspects of our work, including scientific research, health, safety, biosafety, stakeholder support and protecting the environment.

We take PRIDE in being a world-class centre of excellence in scientific research, attracting experts in their field from around the world. This combined with our drive for professional excellence and rigorous academic, biosafety and ethical standards allows the Institute to have a measurable impact on health and wellbeing and economic and food security globally.

SECTION 172 STATEMENT : STAKEHOLDER ENGAGEMENT

The Trustee Directors consider that the decisions they have made during the financial year have satisfied the requirements of S172(1) of the Companies Act 2006 and they have acted in good faith to promote the success of the Institute and, in doing so, have taken into account the stakeholders and matters outlined in S172(1).

The Trustee Board has the ultimate responsibility for the Institute and delivery of its charitable objectives.

The table below sets out Pirbright's significant stakeholders.

	HOW WE ENGAGE
FUNDERS	We engage with funders at all stages of the funding process and have regular dialogue and face-to-face meetings with our key investors. Please see page 20-21 for more information.
PUBLIC	We engage with the public through our Outreach and Public Engagement programmes. These were severely affected in 2021, due to the COVID-19 pandemic, but events have resumed in first quarter 2022. Please see page 18 for more information.
RESEARCH ORGANISATIONS AND PARTNERS	Pirbright undertakes numerous collaborations with universities, research institutes and disease control agencies around the world. More details are given on page 28.
PHARMA	Partnerships with pharmaceutical companies are essential for the development of vaccines, diagnostics and medicines. Find out more on page 25.
FARMERS	We engage with the farming community through specialist farming press, through farming organisations and bodies and media outlets including BBC World Service and BBC Radio 4 Farming Today as well as at agricultural events.
EMPLOYEES	Employee Engagement forms a central part of the Institute's strategy. We employ a variety of ways to communicate with our staff and students in a dialogue so we can also gain feedback. Communication channels include a monthly e-newsletter, intranet, forums, staff briefings, surveys, digital screens, internal seminars, blogs and workshops. Further information about our employees can be found from page 30.
SUPPLIERS	One of the ways we engage with our suppliers is through an Annual Supplier Day held at Pirbright. However, due to the pandemic this was not possible but digital engagement continued throughout the year.
LOCAL COMMUNITY	Our neighbours are extremely important to us and we engage by supporting the local community in a number of ways including sponsoring local events, volunteering in local conservation initiatives including Fox Corner Conservation and engaging with the Parish, Borough and County Councils over development on our campus. Our scientists also visit local schools and colleges – more information can be found on page 18.
REGULATORS AND GOVERNMENTS	As a Major Hazard site, Pirbright works closely with the Health & Safety Executive (HSE), counter-terrorism security authorities, Home Office and other regulators. As a National Capability for the prevention and control of exotic viral diseases of livestock, Pirbright works closely with Defra, BBSRC UKRI and others. As the World Reference Laboratory for certain pathogens and a regional Reference Laboratory for others, Pirbright works closely with the UN Food & Agriculture Organisation (FAO) and World Organisation for Animal Health (WOAH). As an ISO/IEC 17025 accredited testing laboratory, Pirbright works with the UK Accreditation Service (UKAS). See page 15 for more details.
STUDENTS	Pirbright has a vibrant student community, and we are committed to supporting, nurturing and offering additional learning and training opportunities to them. Find out more on page 33.

SCIENTIFIC PROGRESS

Our research into viruses of livestock and zoonotic viruses (animal viruses that can infect and cause disease in people) that affect people has a global impact on animal and human health and food and economic security. It is advances in research, vaccine development and new diagnostic tests that help to ensure the world is better prepared to combat outbreaks of viral disease through prevention and control as well as fundamental understanding of the mechanisms used by existing and emerging viruses to infect hosts and spread. More details on latest findings can be found on our website.



INSECT ROLE IN LUMPY SKIN DISEASE SPREAD REVEALED

Scientists at Pirbright have measured the risk of different insect species transmitting lumpy skin disease virus (LSDV) for the first time.

Pirbright's research shows that insects are unlikely to acquire the virus if they bite infected cattle that are not displaying clinical signs, meaning these animals pose a limited risk of transmitting disease. This information fills a critical knowledge gap and changed the design of control programmes aimed at managing LSD outbreaks.

PIRBRIGHT COLLABORATION REVEALS BUFFALO AND GAZELLE ARE UNLIKELY TO SUSTAIN SPREAD OF GOAT PLAGUE

A collaborative study has revealed that African buffalo and Grant's gazelle are unlikely to sustain circulation of peste des petits ruminant virus (PPRV), improving prospects for disease eradication.

To understand how frequently they had been infected researchers from Pirbright conducted the first large-scale randomised survey of its kind. Findings revealed sporadic spill over from infected sheep and goats is a more likely source of disease rather than circulation within wild populations.



STUDY SHOWS HOW PIGS FIGHT FLU

Pirbright scientists investigated the pig's immune response to flu and have identified specific cells which are important for fighting infection and for long term protection against influenza infection.

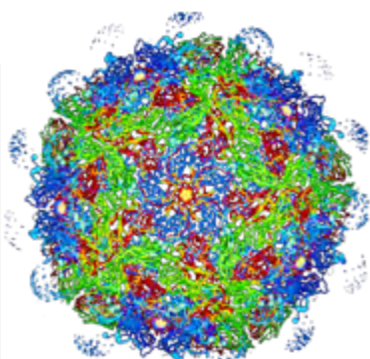
It is hoped the findings will shed more light on human response to flu and help the development of new vaccines.

Pigs are natural hosts for influenza and like humans, they can be infected by circulating strains and become unwell. Influenza viruses that infect pigs and humans are different, but some may have the potential to spread between both species, making them important zoonotic viruses.



KEY MUTATIONS IN ALPHA VARIANT ENABLE SARS-COV-2 MUTATIONS AID INFECTIVITY

Pirbright scientists worked with collaborators to unravel the role that a key mutation plays in SARS-CoV-2 infectivity. One of the key mutations seen in the 'Alpha variant' of SARS-CoV-2 – the deletion of two amino acids, H69/V70 – enables the virus to overcome chinks in its armour as it evolves. This was because virus particles carrying the deletion had a greater number of mature spike proteins on their surface. This allows the virus to then replicate efficiently even when it has other mutations that might otherwise hinder the virus.



MOLECULAR MAGNETS USED TO DISCOVER FMD VIRUS SEGMENTS THAT COULD IMPROVE VACCINE EFFECTIVENESS

Recent research has revealed new parts of the foot-and-mouth disease virus (FMDV) that stimulate an immune response, could be used to inform the design of improved vaccines. Pirbright researchers also discovered that specific immune cells were present in cattle samples four years after the animals had been vaccinated, indicating for the first time that they play a role in long term vaccine protection.



PIRBRIGHT'S NEW BIRD FLU VACCINE PROVIDES RAPID PROTECTION

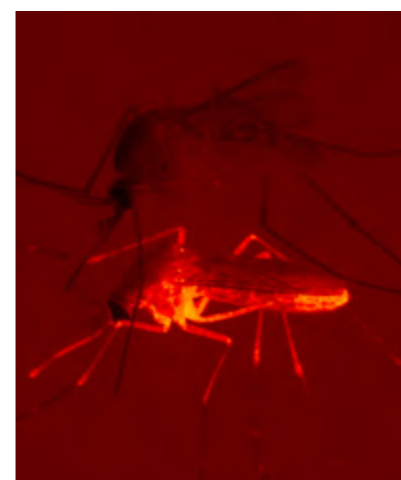
An improved poultry influenza vaccine has been developed by Pirbright researchers. The vaccine triggers a rapid immune response which protects chickens against signs of disease and reduces the level of virus that they could pass on, a key element to halting the spread of bird flu through flocks. The vaccine would also be easier and less costly to produce than the traditional flu vaccines made in chicken eggs.

See Working with Industry - page 24



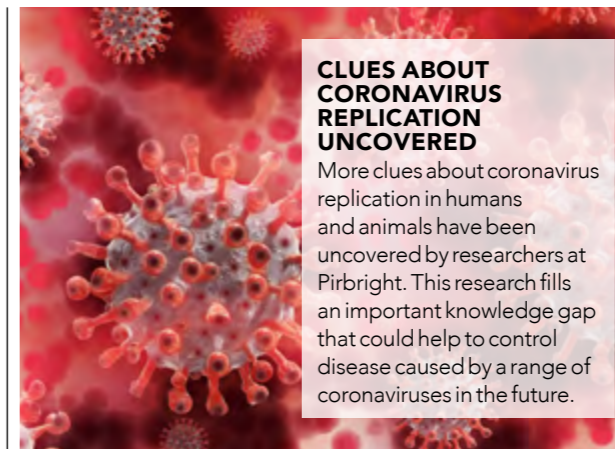
NEW BIRD FLU VIRUSES HAVE POTENTIAL TO INFECT PEOPLE

In collaboration with the Animal and Plant Health Agency (APHA), researchers at Pirbright discovered that the H9N9 strain of influenza was able to multiply significantly better in poultry cells, indicating the potential to cause more severe disease. They also discovered that it had a higher replication rate in human cells and could bind to these cells better than H9N2. The H9N9 strain can also infect and transmit between ferrets highlighting the potential to cause disease in humans.



GENE EDITING TOOL PREVENTS MOSQUITO SPREADING DISEASE

A new gene editing tool has been successfully applied to the southern house mosquito by researchers at the Institute. This paves the way for genetic control methods that could prevent the mosquito from spreading human and animal diseases.



CLUES ABOUT CORONAVIRUS REPLICATION UNCOVERED

More clues about coronavirus replication in humans and animals have been uncovered by researchers at Pirbright. This research fills an important knowledge gap that could help to control disease caused by a range of coronaviruses in the future.

NEW WAYS TO CREATE SAFE VACCINES TO PROTECT POULTRY FROM INFECTIOUS BRONCHITIS VIRUS

Researchers from Pirbright working to improve vaccines for infectious bronchitis virus (IBV) have identified targets in the virus's genetic code that could make vaccines safer.

Better vaccines would have a huge impact on improving health and welfare of poultry and protect food security.

IBV is a type of coronavirus that causes a highly contagious disease in poultry, it does not cause disease in humans. The virus causes respiratory symptoms and affects the reproductive tracts of birds which reduces meat and egg production.



RISK FACTORS THAT DRIVE FMD OUTBREAKS IN ASIA IDENTIFIED

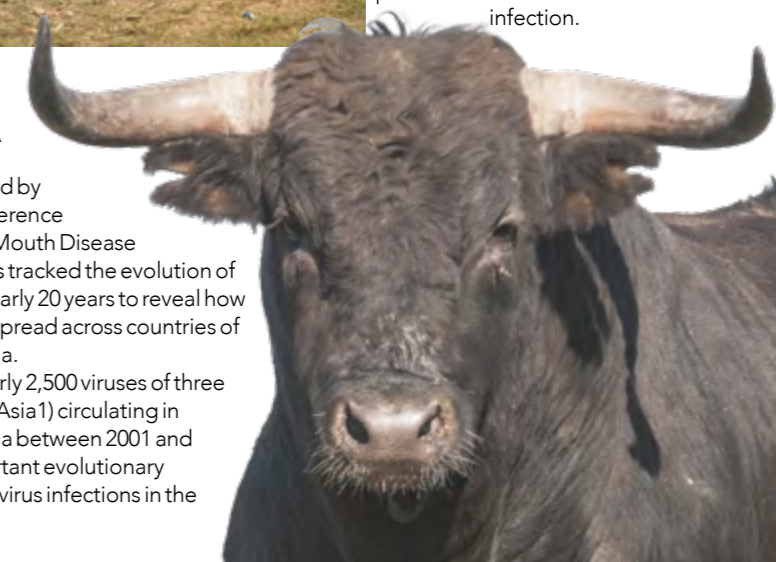
An international project led by scientists in the World Reference Laboratory for Foot-and-Mouth Disease (WRLFMD) at Pirbright has tracked the evolution of FMD virus (FMDV) over nearly 20 years to reveal how different factors affect its spread across countries of Western and Southern Asia. Researchers analysed nearly 2,500 viruses of three FMD serotypes (O, A and Asia1) circulating in Western and Southern Asia between 2001 and 2018, documenting important evolutionary events driving patterns of virus infections in the region.



USING PIGS AS A MODEL FOR ANALYSING CORONAVIRUSES

The SARS-CoV-2 pandemic and previous localised SARS and MERS outbreaks have indicated the importance of respiratory coronavirus diseases and several animal models have been developed to study SARS-CoV-2. Pigs have the advantage that they are natural hosts for porcine respiratory coronaviruses (PRCV). They have been shown to be an excellent model for studying influenza viruses, and more similar to humans in their immune responses than mice and ferrets.

Recent studies have shown that disease induced by four PRCV strains differs in severity and that the lung pathology shows similarities to human SARS-CoV-2. Research indicated that ex vivo organ cultures can be used to analyse factors determining virus entry and replication, as well as the nature of the humoral immune response. The porcine model will be a powerful tool for analysing coronavirus induced respiratory disease pathogenesis and identifying key mechanisms that determine the outcome of infection.



A SUSTAINABLE INSTITUTE

The Institute is committed to environmental sustainability and is undertaking a number of energy-saving projects that will make a positive contribution. These will be completed over the next couple of years and will reduce energy consumption, help reduce our carbon emissions and make us more efficient. The most significant of these projects is the installation of a Combined Heat and Power Plant (CHP) which will provide around 75% of Pirbright's power needs on campus. Construction on the CHP has begun, and it is anticipated the CHP will be fully operational in Summer 2022.

Pirbright's finances are also aligned to the green agenda and now operate with Barclays' Green Deposit Scheme. This allows deposits by the Institute to be earmarked against the banks' green bonds, which in turn are matched against a range of climate-related projects including energy efficiency, renewable energy, green transport, sustainable food, agriculture and forestry, waste management and greenhouse gas emission reduction. In June 2021 the GBP market value of Green Bonds held by Barclays totalled over £1.6 billion, with a total CO₂ impact of almost 1.4 million tonnes.

The Institute continues to base its environmental objectives around the UKRI Environmental Sustainability Strategy which drives towards a zero-carbon future by 2040. This ensures new building proposals will carefully consider the carbon impacts of facilities throughout their whole life, from the building materials used to the energy consumption and energy sources employed once operational.

The Institute's Environment and Energy Team promote the continual improvement of energy and environment performance on the Pirbright site, monitor and review the Energy and Environment policy, report on and action results of inspections and audits and provide a forum for personnel to raise queries related to energy and environmental sustainability.

The following figures reflect the Institute's best estimates of its environmental impact during the 2021-2022 financial year.

The amount of energy consumed by the Institute is directly related to the amount of science activity on the site. As grant income is also a measure of science activity, the Institute considers that the appropriate intensity measure for energy consumption is emissions per £ of grant income received.



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GREENHOUSE GAS EMISSIONS	2021/22	2020/21
EMISSIONS TONNES CO₂e		
Scope 1: Gas	4,606,500	913,500
Scope 2: Electricity	2,663,940	2,792,600
Scope 3: Official business travel	3,860	1,700
Total emissions	7,274,300	3,707,800
Emissions per £ of grant received	0.21	0.11
ENERGY CONSUMPTION - kWh		
Scope 1: Gas	22,238,808	3,937,196
Scope 2: Electricity	12,546,226	11,978,211
Scope 3: Official business travel	11,175	6,998
Total energy consumption	34,796,209	15,922,405
Consumption per £ of grant received	1.02	0.48
FINANCIAL INDICATORS		
Total Energy cost - £'000	2,033	2,232
Energy cost per £ of grant received	5.94p	6.68p
Cost of official business travel - £'000	8	8
Cost of official business travel per £ of grant received	0.0002p	0.0003p

During the 2020/21 financial year COVID-19 restrictions required our staff to work from home, wherever possible, which significantly reduced Pirbright's energy consumption. Numbers have risen in 2021/22 as the Pirbright site has returned to full operation as pandemic restrictions have been removed.

RISK MANAGEMENT AT PIRBRIGHT: AS A MAJOR HAZARD SITE

Risk management is critical to the safe and reliable operation of Pirbright. This requires specialist expertise and ownership by all staff, students and stakeholders of Pirbright's development as a High Reliability Organisation and its continuation as a centre of excellence.

Risk management at Pirbright has three broad objectives:

- to facilitate science excellence and capability, both in research and in diagnostic surveillance
- to reinforce financial sustainability and high reliability
- to ensure the work of the Institute cannot jeopardise the UK livestock population and agricultural economy, the health and safety of people, or the environment.

Risk management at Pirbright includes a Risk & Opportunities Register, Key and Safety Performance Indicators (KPIs and SPIs), and operational planning linked to risks and opportunities and to strategic objectives. Risks and opportunities are regularly updated and reviewed for action by Senior Leadership Board (SLB) and Trustee Directors. The Register covers operational risks (biorisk, security, cyber/IT, health and safety, environment, quality), continuity risks, and strategic risks (reputational, enterprise, financial, political). There is an internal audit programme covering critical risks and areas. Pirbright actively maintains excellent, open and cooperative relationships with stakeholders, regulators and accreditation bodies. A comprehensive portfolio of insurance protects Pirbright and its stakeholders. Policies in place include: Property damage & business interruption; employers, public, product and management liabilities; professional indemnity; and security and cyber incident response.

BIORISK

Many of the animal viruses studied at Pirbright are high consequence pathogens, ie, they are not circulating in the UK and so could cause a disease outbreak if released. The authority to work with such pathogens is via a SAPO (Specified Animals Pathogens Order) licence issued and enforced by the Health & Safety Executive (HSE). Pirbright's



Plumbing facilities providing clear view of blockages in high containment laboratories in the BBSRC National Virology Centre: The Plowright Building. © David Schwalm

SAPO licence is at Containment Level 4 (the highest level) and the Institute is classified as a Major Hazard Site. Each year there is a HSE intervention plan, and in 2021/22 this comprised four visits by specialist HSE inspectors scrutinising functional safety assessment of the design and commissioning of the new Brooksby High Containment Large Animal Facility, waste management, containment and control in ISO11 (the currently operating High Containment Large Animal Facility), and an annual performance review. There were also security inspections by specialist counter-terrorism police officers.

Biorisk management at Pirbright comprises containment engineering and operational controls. The engineering infrastructure includes sealed facilities, constant negative air pressure cascades, high efficiency HEPA air filtration, effluent treatment plants, incinerators, autoclaves, fumigation chambers and automation and control systems. The operational arrangements include risk assessments, defined controls and operating procedures, training and competency, waste management, transport procedures, emergency plans and exercises, audit programmes, and planned preventative maintenance, validation and testing. Pirbright has all these measures in place, and each element is examined by HSE every few years as part of their intervention plans. All high containment facilities at Pirbright are less than 15 years old.

QUALITY AND ORGANISATION

Diagnostic surveillance and disinfectant testing at Pirbright are a UKAS accredited testing laboratories (No. 4025) to ISO/IEC 17025 quality standard, which is integral to its role as a UK National Capability and its global role as an WOA Reference Laboratory and FAO/WOAH World Reference Laboratory for specific viruses. Pirbright's Management System ensures conformity with 17025 and increasingly underpins wider risk management across the Institute. The annual 17025 surveillance audit of the Reference Laboratories in 2021/22 by the UK Accreditation Service gave an extremely positive outcome with no improvement actions.

In addition to its risk management system, and the assurance arrangements and regulatory oversight, Pirbright actively works to improve its risk control and resilience. In 2021/22, this included BBSRC-funded capital projects for upgrades of the IT infrastructure of the high containment automation and control systems, for replacement of controllers and dampers in high containment air handling systems and security access controllers, and for a new Laboratory Information Management System (LIMS) to support diagnostic services. In 2021/22, there were also operational projects to develop a functional safety management system, to establish a human factors task analysis programme, to improve prevention of musculoskeletal injuries, to further enhance technical and organisation cyber security, to develop a competency framework, and to improve asset lifecycle and obsolescence management.

Pirbright strives to adopt best practice in risk management, this includes coordinating the cross-sector UK BioSafety Strategic Leadership Group, its active roles in the BSL4ZNet international consortium of high containment facilities and the EuFMD consortium of European FMDV facilities, and its publication of peer-reviewed papers and symposia presentations on biorisk management.

RISK MANAGEMENT

Key risks are summarised in the table:

RISK	CONTEXT	CONTROL / MITIGATION
BIOSAFETY (UNINTENTIONAL RELEASE OF, OR EXPOSURE TO, HIGH CONSEQUENCE PATHOGEN)	Pirbright is classified by the Health & Safety Executive (HSE) as a Major Hazard Site, because release of the high consequence viral pathogens of livestock animals that the Institute works with (such as foot-and-mouth disease virus) could cause a serious disease outbreak, leading to destruction of many animals, extensive national disruption and severe economic loss. Some of the pathogens are also zoonotic, which means they can infect humans and cause serious illness.	Physical, engineering, operational and management measures for biological containment in compliance with relevant UK legislation (Specified Animal Pathogens Order 2008, Control of Substances Hazardous to Health Regulations 2002, Genetically Modified Organisms (Contained Use) Regulations 2014) and associated Approved Codes of Practice and guidance, in alignment with ISO 9001, ISO 14001, ISO 35001 and ISO 45001. Also, an annual HSE Major Hazard Intervention Plan, and staff cohort of competent Biorisk Advisers.
BIOSECURITY (DELIBERATE RELEASE OF, OR EXPOSURE TO, HIGH CONSEQUENCE PATHOGEN)		Physical, operational and management measures for security in conformity with requirements of the UK National Counter Terrorism Security Office, with oversight by regional Counter Terrorism Security Advisers, a 24/7/365 guard force, background screening of new starters, and multiple layers of physical security.
QUALITY	As well as being a leading research institute, Pirbright provides diagnostic and surveillance Reference Laboratories for a range of pathogens for the UN Food & Agriculture Organisation (FAO) and the World Organisation for Animal Health (WOAH) and is funded by BBSRC UKRI and Defra as a UK National Capability to provide diagnostic capacity to support the control of national disease outbreaks. Pirbright's scientific output quality is therefore critical, and FAO, WOAH and the UK Government require the Reference Laboratories to be accredited to the ISO/IEC 17025 international quality standard.	Accreditation of the Reference Laboratories to ISO/IEC 17025 by the UK Accreditation Service (Pirbright is UKAS Accredited Testing Laboratory No 4025), development and implementation of a quality management system across the Institute, an internal audit programme, and alignment to ISO 9001 and other relevant ISO management standards in key operational areas for better support of the Reference Laboratories.
ANIMAL WELFARE	Research with animals is an integral part of the research programmes at Pirbright and is carried out to extremely high UK standards of ethics and animal welfare, which are the most stringent in the world, addressing this critical reputational risk.	Physical, operational and management measures for animal welfare in compliance with relevant UK legislation (Animal Scientific Procedures Act 1986) and associated Approved Codes of Practice and guidance, oversight by UK Home Office, application of 3Rs (Replace, Refine, Reduce) and ARRIVE guidance (Animal Research: Reporting <i>In Vivo</i> Experiments).
CYBERSECURITY		Comprehensive portfolio of technical countermeasures and management systems for cybersecurity in conformity with requirements of the UK National Cyber Security Centre and HSE OG86 cybersecurity requirements for safety critical control systems, with also segregation of critical resources from networks, training, drills & exercises, and alignment with Cyber Essentials Plus.
CONTINUITY	Pirbright also faces the cybersecurity, continuity, people and financial risks that all organisations must manage. The potential consequences of these are amplified because of possible effects on biological and quality risk, e.g. <ul style="list-style-type: none"> a power failure could cause biological containment engineering controls to stop operating, 	Incident and crisis management plans, business continuity planning in alignment with ISO 22301, backups and contingencies for critical services and supplies, and contingency plans for the Reference Laboratories for disease outbreaks, with all plans regularly tested by drills & exercises.
PEOPLE	<ul style="list-style-type: none"> difficulty with recruitment & retention could lead to shortage of the essential specialist skills for safe and reliable operation of facilities, insufficient budget for planned preventative maintenance could lead to reduced reliability of biological containment engineering systems or scientific equipment. 	Recruitment & retention and responsibility allowances, training & development programmes, career pathways with in-band merit awards and a personal promotion scheme, annual performance and personal development reviews, generous pension provision and life cover, and employee benefits platform and assistance programme.
FINANCIAL		Rigorous systems for financial planning, control and monitoring, ongoing risk management, processes and support to facilitate preparation, submission and management of competitive funding grants and capital funding bids, commercial business development programme, Pirbright Innovations Ltd as a private vehicle for commercial work, comprehensive portfolio of insurance policies, anti-fraud and anti-bribery policies, annual audit, and reportage to BBSRC as core funder, landlord and strategic partner.
ECONOMIC	Adverse effects on the UK and global economy from global events are a substantial threat to the funding landscape and to the operational cost base, particularly from the rising level of inflation.	Inflation is factored into business planning, including planned increases in income from competitive funding sources and appropriate commercial activities, and savings from improved procurement and BBSRC-funded 'spend-to-save' capital works.



Foot-and-mouth disease virus environmental sampling in a household in northern Nigeria. © Georgina Limon-Vega

ENGAGING WITH THE PUBLIC

Researchers at Pirbright are committed to engaging with the public on all aspects of their research, generating valuable face-to-face interactions with a wide range of audiences, including schools, students, farmers, and the public.

The COVID-19 pandemic severely restricted the Institute's annual programme of live events. Despite this, during 2021/22 we have taken part in 27 online and face-to-face public engagement activities, from hosting classroom talks via Zoom to inspiring next generations of scientists at school and college career events throughout Surrey and engaging with the public at a local village fairs and a science festival.

FESTIVAL OF TOMORROW

In February 2022 in partnership with UK Research and Innovation (UKRI), the Communications Team and volunteers from across the Institute showcased Pirbright's world leading research at the Festival of Tomorrow in Swindon.

The two-day event celebrated the wonders of science and technology and aimed to share knowledge and research that could shape our future.

Over 1,000 visitors to the Pirbright stand were able to explore the different ways scientists can detect, understand, prevent, and respond to disease and how this all links to the Institute's research using our interactives such as Bug Busters LEGO challenge and Viral Survival containment puzzle.

SAILING THE SCIENCE SEAS AT THE VILLAGE FAIR

In September 2021, Institute volunteers entertained and educated at Pirbright's first in-person public engagement event since the start of the pandemic.

Volunteers from the Institute spent a fun-filled day engaging with the local community at the All at Sea Pirbright Village Fair. For the Institute, this annual event is an ideal opportunity for us to be visible in the local community, letting people know what we do and connecting with them in a positive way.

Having been cancelled in 2020, record numbers of the general public attended, with



Inspiring the next generation of scientists
 Top left: Young detectives cracking genetic codes at the Festival of Tomorrow, Swindon.
 Bottom left: Engaging with local residents at the Pirbright Village Fair. Above: Farnborough College TEA Fair, promoting apprentice and training opportunities at the Institute.

over 250 people visiting our prominent stand to investigate our interactive activities.

INSPIRING FUTURE SCIENTISTS

Throughout this challenging year Pirbright volunteers have continued to attend virtual careers events through online talks and mentoring, videos, blogs and virtual fairs, helping us to inspire more students from a wider range of backgrounds to consider scientific careers than was previously possible via face-to-face interactions. Towards the end of 2021 in-person careers events were happening with volunteers attending 11 fairs, lectures and workshops.

SUPPORTING OLD AND NEW VOLUNTEERS

Pirbright's engagement programme could not exist without our superb volunteers,

training is essential for supporting both experienced staff and students as well as encouraging prospective volunteers. We actively encourage participation in the Science, Technology, Engineering and Maths (STEM) Learning network which connects schools with STEM Ambassadors - experts from a range of disciplines that volunteer their time to help with talks and events. Ambassador training is now available online for Pirbright staff and students and this year we have new volunteers who will add valuable knowledge and skills to our pool of over 70 STEM Ambassadors. We also provided specialised training for both PhD and placement students to help them understand the importance of engagement and equip them with confidence and tools to effectively communicate with the public.



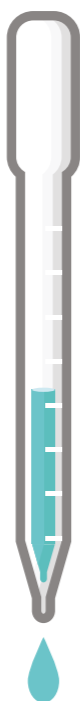
Viral Survival code breaking case at The Festival of Tomorrow, Swindon.

FUNDING FOR PIRBRIGHT RESEARCH

Pirbright can only progress its research to prevent and control viral diseases of livestock with financial support from BBSRC UKRI for its two strategic science programmes and additional grant income from UKRI and a variety of other funders. The Institute Strategic Programme Grants were extended by BBSRC UKRI to 2023. In 2021/22 we were awarded an additional £7,520,000 from UKRI (including BBSRC, MRC, and Innovate UK) and other funding bodies including Defra and the Bill & Melinda Gates Foundation.

BIG DATA APPROACHES

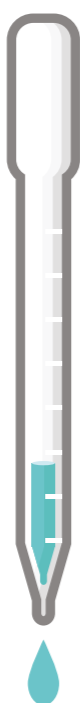
The BBSRC UKRI data intensive bioscience review recognised that big data is now both pervasive and essential to deepen our understanding of biological systems. The Institute recognises that it needs to build on and strengthen its approach to big data science and in particular Artificial Intelligence (AI) approaches to analysis. We are developing data management and integration pipelines that will allow us to build in silico biological systems and develop hypotheses as part of the iterative cycle of experimentation and modelling to understand complex biological systems. By linking with established external collaborators with big data and AI expertise, we can significantly expand our capability to analyse the biological systems we study. We have been working with the University of Surrey, and the newly established Surrey Institute for People-Centred Artificial Intelligence to develop this area and support the Institute's science strategy. This strategic partnership will be highly synergistic and specific projects to initially take forward have been identified, with work commencing in earnest. These activities will be underpinned at Pirbright by support from the Institute Development Grant (IDG).



Scientists: Dr Graham Freimanis, Dr Erica Bickerton, Prof Pippa Hawes
Project: Investigating Host and Viral Factors for Improved Design of Future Live Attenuated Vaccines for infectious bronchitis virus (IBV)
Value: £554,798 (£668,367)*
Funder: BBSRC UKRI (Response mode funding)
 This collaborative project between Pirbright and the University of Glasgow, focuses on development of better control strategies for infectious bronchitis virus (IBV), one of the most economically important infectious diseases affecting poultry globally. The project aims to gain major insights into virus biology and host responses aiding the development of better vaccines and control strategies for IBV.



Scientists: Prof Munir Iqbal, Dr Erica Bickerton
Project: Protecting poultry from avian influenza, Newcastle disease, infectious bronchitis, and Gumboro disease with a single dose of a multivalent vaccine
Value: £448,938
Funder: BBSRC UKRI (Super follow-on fund)
 Global poultry production incurs heavy losses due to infection of animals with a multitude of viral pathogens. This project aims to develop a single-dose multivalent vaccine offering faster, stronger and more durable immunity against six major viral pathogens. The availability of such effective, inexpensive, easy to produce, and safe vaccines to farmers will bring a significant change in poultry disease management systems.



Scientist: Dr Elma Tchilian
Project: Mucosal and cell targeting of mRNA for protein expression
Value: £344,491
Funder: Subaward from Emory University, USA. The Bill & Melinda Gates Foundation primary award to Emory (value unknown)
 Pigs are immunologically, physiologically and anatomically more similar to humans than small animals and provide an excellent model to study immunity to influenza. The pig provides a powerful model for understanding how best to apply monoclonal antibodies (mAbs) as therapeutics. This project will provide an in-depth understanding of whether mRNA delivered mAbs to the respiratory tract can protect against infection and severe disease caused by influenza virus.



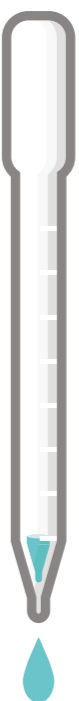
Scientists: Dr Dalan Bailey, Dr Antonello Di Nardo
Project: Viral entry at the human-animal interface; dissecting the pan-tropic nature of zoonotic viruses
Value: £345,076 (£393,707)*
Funder: BBSRC UKRI (Response mode funding)
 This project will be used to improve pandemic preparedness, helping to identify and understand the factors that drive zoonosis. Focusing on host-range and viral entry, this information could ultimately be used to rationally design new drugs and vaccines, to prevent future disease in humans and animals.



Scientist: Dr Trevor Sweeney, Sir Henry Dale Fellow
Project: Probing the molecular basis of translation-replication switching in pathogenic RNA viruses
Value: £626,065
Funders: Wellcome Trust and the Royal Society (Sir Henry Dale Fellowship)
 Dr Trevor Sweeney has recently joined the Institute and has been successful in renewing his Sir Henry Dale Fellowship (Wellcome Trust/Royal Society). Using multidisciplinary approaches including molecular and cellular biology techniques, Dr Sweeney will study how viral genome usage is regulated during infection. Understanding how viruses replicate in the cell will identify processes that can be rapidly targeted to help contain new outbreaks.



Scientists: Prof Simon Graham, Dr Dalan Bailey, Dr Rebecca McLean
Project: A live attenuated pseudorabies virus vectored Nipah vaccine for enhanced protection in pigs
Value: £389,089
Funder: Innovate UK (through DHSC UK Vaccines Network)
 This award builds on previous work and aims to develop a Nipah virus vaccine for enhanced protection in pigs, reducing the risk of viral transmission to humans. A highly successful pseudorabies virus vaccine, that is routinely used to vaccinate pigs in Southeast Asia, will be genetically engineered to express protective Nipah virus antigens. This dual-purpose vaccine could offer an economically viable approach to mass immunisation of pigs against Nipah virus.



Scientists: Dr Simon Gubbins, Dr Andrew Shaw, Dr Georgina Limon-Vega, Dr Claire Colenutt, Dr Anna Ludi
Project: Optimising environmental surveillance for FAST diseases
Value: £33,645
Funder: FAO
 This study aims to further inform the use of environmental surveillance for foot-and-mouth disease (FMD) and other transboundary animal diseases. (FAST = foot and mouth and similar transboundary animal diseases). The project will address a number of knowledge gaps and will be used to advise on appropriate sampling strategies, use of diagnostics platforms for testing samples, and will determine the feasibility of using environmental sampling for the detection of a range of transboundary diseases.



Scientists: Prof Simon Graham, Prof John Hammond
Project: REPRODIVAC – next generation vaccines and diagnostics to prevent livestock reproductive diseases of worldwide importance
Value: €1,178,161 (€6,036,598)*
Funder: EU Horizon Europe
 REPRODIVAC will develop new and improved vaccines and diagnostic tools required to better control endemic and zoonotic reproductive pathogens of livestock: porcine reproductive and respiratory syndrome, Q fever, ovine enzootic abortion, and porcine brucellosis. The consortium spans academia and industry with a wide range of complementary expertise allowing these important reproductive disorders to be addressed with an interdisciplinary approach.

INSTITUTE DEVELOPMENT GRANT
 To smooth the transition to the new cycle of core funding, due to commence in April 2023 (following the outcome of the Institute Assessment Exercise, [IAE]), the Institute has received an Institute Development Grant (IDG) from BBSRC, which will be used to support scientific development towards the next IAE. The IDG will be used to develop strategies and approaches to implement recommendations from BBSRC's Institute Strategy.



Scientist: Dr Georgina Limon-Vega
Project: Cost-benefit analysis for establishing a foot-and-mouth disease free zone in Mongolia
Value: £24,131
Funder: FAO
 Dr Georgina Limon-Vega, holds a joint appointment with the Royal Veterinary College, has received funding to perform a cost-benefit analysis of establishing a foot-and-mouth (FMD) free zone in Western Mongolia and subsequently formulate recommendations for policy makers based on the outcomes. The project also includes a training component building on previous FAO and WOAHP veterinary epidemiology training programmes in Mongolia. This grant follows on from an Impact Accelerator Award support.



Scientist: Prof Bryan Charleston
Project: UKRI cross-council synergy in understanding vector-borne and zoonotic viral disease
Value: £250,000 (£500,000)*
Funder: BBSRC UKRI
 The long-term strategic partnership with the MRC-University of Glasgow Centre for Virus Research (CVR), has been strengthened with dedicated joint funding from BBSRC. This partnership of veterinary and medical viral disease research will initially concentrate on vector-borne viral disease, zoonoses and virus cross-species jumping. This creates excellent opportunities for greater collaboration in One Health studies.



Scientist: Prof Bryan Charleston
Project: Veterinary Vaccine Manufacturing and Innovation Centre: establishment phase
Value: £1,075,919
Funder: Bill & Melinda Gates Foundation
 In order to accelerate the development and production of vaccines for neglected and emerging diseases of livestock, including zoonotic diseases that represent a threat to public health, a partnership between BBSRC UKRI, the Foreign Commonwealth and Development Office (FCDO), and the Bill & Melinda Gates Foundation has been formed to support the establishment of a Veterinary Vaccine Manufacturing and Innovation Centre (Vet-VMIC). Significant initial investment has been provided by the Bill & Melinda Gates Foundation. This first phase will establish a pilot manufacturing facility at Pirbright with a core team of specialised staff and project support to build the product pipeline and secure long-term funding for Vet-VMIC.

* Numbers in brackets represent total funding for project to all collaborators.

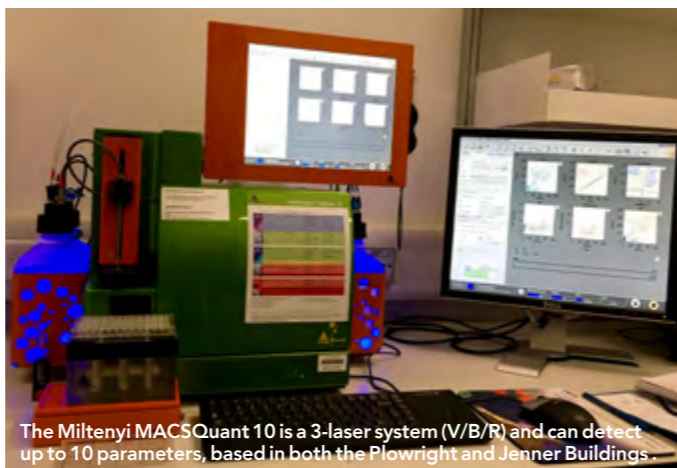
NATIONAL CAPABILITY

Pirbright facilities provide a 'National Capability' and are unique within the UK with a complement of scientific expertise and physical resources that are not replicated elsewhere within the higher education or commercial animal health sectors. Under the National Capability scheme we are able to offer research and development, facilities and services, and materials and reagents.

FLOW CYTOMETRY

The flow cytometry and cell sorting facility is one example of the unique elements comprising our National Capability at Pirbright. The facility specialises in sample preparation, acquisition, sorting and analysis of blood samples or cells from farm animals, providing researchers with state-of-the-art instrumentation and cell sorting capability mirrored between low and high containment.

Two full-time core staff with extensive technical experience in managing and maintaining large, multi-user equipment provide access to this facility. They offer expert advice on panel and experiment design, sample preparation, training for independent use of the flow cytometers and data analysis to support both the Institute's science, and a large number of collaborative research programmes. This removes barriers and promotes broad access to this integral part of our National Capability.



The Miltenyi MACSQuant 10 is a 3-laser system (V/B/R) and can detect up to 10 parameters, based in both the Plowright and Jenner Buildings.

CONTAINMENT FACILITIES

Pirbright has a unique capability for vector-borne and zoonotic virus research comprising facilities for *in vitro* and *in vivo* work at low and high (SAPO4 and CL3) containment. Virus-host interactions, immune responses and pathogenesis can be studied in avian, mammalian and arthropod hosts, providing new understanding of arboviruses that threaten livestock and humans, and viruses that can spread from animals to humans.

This combination of state-of-the-art national capabilities facilitates and enhances the strategic partnership with the MRC-University of Glasgow Centre for Virus Research.

The provision of low containment experimental animal facilities is key to Pirbright's scientific success. This capability has recently been enhanced by the provisions of facilities at the University of Reading. This includes the University of Reading now housing our unique line of genetically characterised in-bred Babraham pigs. All of the necessary compliance requirements are now in place to allow studies with GM vaccines at the Reading site, enabling a greater range of Pirbright science to be undertaken there.



Above: Laboratory facilities in The BBSRC National Vaccinology Centre: The Jenner Building.



Left: Installation of new animal facilities at the University of Reading specifically to house our unique line of genetically characterised Babraham pigs.

INVESTING INTO THE FUTURE

Investment from BBSRC Capital funding is imperative to advancing research at Pirbright. Recent bids have led to the Institute installing a full spectrum spectral flow cytometer, one of only ten in the UK. It has also allowed us to increase the number and speed of our connections to the academic network JANET so we can use cloud-based solutions as appropriate and share data more efficiently with collaborators.

SCIENTIST: PROF JOHN HAMMOND
PROJECT: REPLACEMENT HIGH PERFORMANCE COMPUTING CLUSTER TO INCREASE CAPABILITY AND DATA SHARING

VALUE: £945,120
FUNDER: BBSRC – INVESTMENT GATEWAY PANEL (CAPITAL FUNDING)

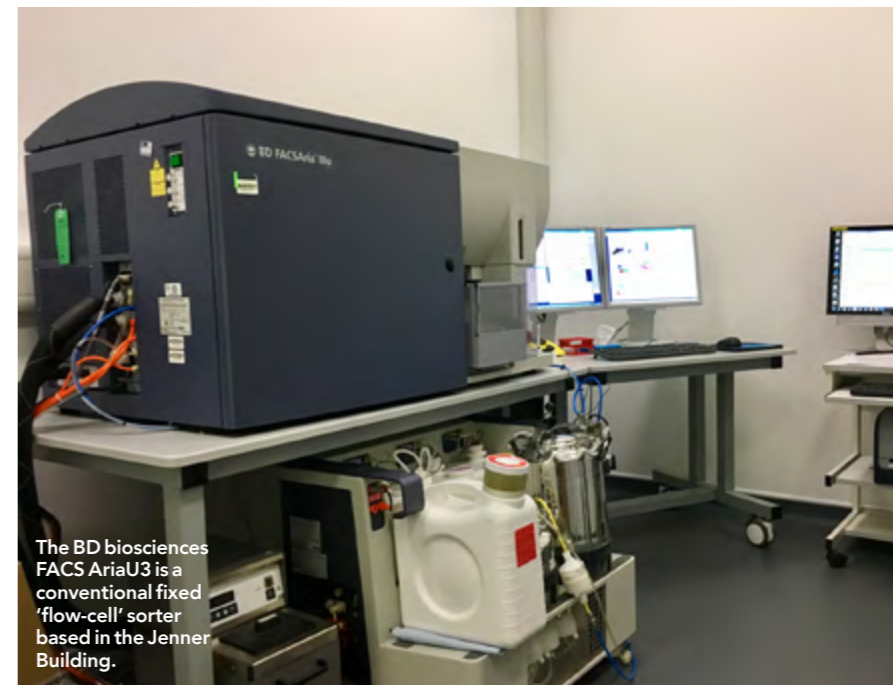
The capability to process, analyse and provide access to big data is now a fundamental part of world class bioscience research. At Pirbright, a high-performance computing cluster (HPC) underpins all our big data generation, analysis and sharing. We have secured funding for a new HPC, which will be more powerful than our current capability, with a tailored design to specifically address the current and future needs of Pirbright science, bringing an enormous range of benefits.

This capability will help to enhance current and drive future strategic partnerships with other world leading organisations. It also supports our high-throughput sequencing within containment, a key element of our National Capability.

SCIENTIST: DR KATY MOFFAT
PROJECT: FULL SPECTRUM SPECTRAL FLOW CYTOMETER WITH HIGH-THROUGHPUT SAMPLE ACQUISITION CAPABILITIES FOR THE CL2 LABORATORIES (BBSRC NATIONAL VACCINOLOGY CENTRE: THE JENNER BUILDING)

VALUE: £631,200
FUNDER: BBSRC – INVESTMENT GATEWAY PANEL (CAPITAL FUNDING)

This funding supported the purchase of a spectral flow cytometer and a dedicated data storage system, for the BBSRC National Vaccinology Centre. Flow cytometry is a powerful multiparameter technology that is used by many groups at the Institute to underpin a vast array of research programmes and projects. This means we are able to enhance our ability to analyse immune cell subsets in response to infection



The BD biosciences FACS AriaU3 is a conventional fixed 'flow-cell' sorter based in the Jenner Building.

and vaccination. This ensures that Pirbright remains at the cutting-edge of technology to maximise the benefit of animal experiments with high-resolution techniques.

SCIENTISTS: PROF SIMON GRAHAM AND DR KATY MOFFAT
PROJECT: REPLACEMENT FLUORESCENCE ACTIVATED CELL SORTER FOR THE JENNER LABORATORY (BBSRC NATIONAL VACCINOLOGY CENTRE: THE JENNER BUILDING)

VALUE: £434,436
FUNDER: BBSRC – ALERT

Fluorescence-activated cell sorting (FACS) is a powerful technology that enables the measurement of characteristics of single cells and then separates these cells based on their characteristics. This technology is critical for us to better understand how animals respond to virus infections, and therefore to design and develop viral vaccines to prevent disease. This project ensures continuity of the FACS capability in the BBSRC National Vaccinology Centre: the Jenner Building for the next 10-12 years.

SCIENTIST: PROFESSOR MUNIR IQBAL
PROJECT: CAPABILITY FOR IN VITRO MOLECULAR INTERACTION ANALYSIS FOR THE BBSRC NATIONAL VACCINOLOGY CENTRE: THE JENNER BUILDING

VALUE: £286,337
FUNDER: BBSRC – INVESTMENT GATEWAY PANEL (CAPITAL FUNDING)
 This funding allowed the Institute to replace

and upgrade its capability for bio-layer interferometry (BLI), a powerful technology to investigate virus-host interactions at the molecular level. Understanding biomolecular interactions is essential to underpin the scientific objectives of strategically funded science and other research programmes.

SCIENTIST: PROF PIPPA HAWES
PROJECT: REPLACEMENT ULTRAMICROTOME FOR BBSRC NATIONAL VIROLOGY CENTRE: THE PLOWRIGHT BUILDING
VALUE: £101,985
FUNDER: BBSRC – INVESTMENT GATEWAY PANEL (CAPITAL FUNDING)

Bioimaging is a core funded facility providing advanced microscopy capability for the Institute. This investment will ensure continuity of electron microscopy sample preparation capability in the BBSRC National Virology Centre: The Plowright Building. An ultramicrotome is essential to prepare the thin sections of biological tissue needed for imaging in the transmission electron microscopes (TEM), in our high containment laboratories. This combination of equipment will also lead to further investigation and more advanced analysis through our strategic partnership with the electron Bio-Imaging Centre (eBIC) at Diamond Light Source.

PIRBRIGHT INNOVATIONS

Commercial activity is an important element of the Institute's strategy to diversify funding streams and ensure a sustainable organisation for the future. Pirbright has recently established a commercial arm, Pirbright Innovations, to capture and manage operations that attract income on business activities and services, led by a new Head of Business Development.



SPiRE Sharing Pirbright's Expertise

SHARING PIRBRIGHT'S EXPERTISE

The SPiRE team has continued to develop new training courses related to disease control, biosafety and containment engineering. This project was launched early in 2020 and has

been unable to provide face-to-face training due to COVID-19 related travel restrictions. It is anticipated that in-person training in Pirbright's facilities will commence again in 2022. In the meantime, the team has been hard at work developing courses to deliver via eLearning. These courses can be purchased directly from Pirbright, and some courses have been offered via external partners' online platforms, like the European Commission for the Control of Foot-and-Mouth Disease (EuFMD).

DEVELOPING A KNOWLEDGE EXCHANGE CULTURE

We continue to develop the skills of our employees. Following the successful offering of a six-week course in developing innovation and entrepreneurial skills in early 2021, 30 students, postdoctoral researchers and group leaders have completed a six week training course aimed at equipping researchers with the skills required to engage effectively with industry.

We also hosted an online seminar on engaging with policy makers. The session was attended by BBSRC representatives, and researchers from Pirbright and other BBSRC Institutes. It included presentations from experts currently working at the Food Standard Agency, Defra, the European Commission, UK Parliamentary Office for Science and Technology (POST) and Pan-American Health Organisation (PAHO), followed by an active Q&A session.

Josh Sealy was accepted to the iCURE Lean Launch Programme, a collaboration between BBSRC and Innovate UK. The programme aims to help participants use lean start-up methodology to perform online market discovery as it applies to a business idea. Josh is supported in this programme by a member of the Institute's technology transfer team (Lizelle Gouverneur), a senior scientific advisor (Professor Simon Graham) and a business advisor (Professor Jeff Almond, Chair of Pirbright's Science Advisory Board).



WORKING WITH INDUSTRY

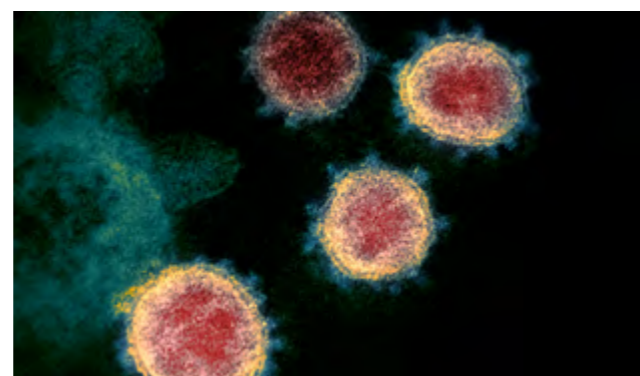
Pirbright's Viral Oncogenesis group is working with several companies from different parts of the world to develop currently used vaccine strains of avian herpesviruses (such as CVI988, SB-1 and herpes virus of turkeys). These recombinant viral vaccine vectors can be used to express protective antigens from other avian pathogens using different techniques including CRISPR-Cas-9-based gene editing tools. These vaccines, in different stages of development or efficacy trials with the commercial partners, can be targeted to protect against globally widespread or locally circulating strains of avian viruses, and have the potential to induce simultaneous protection against more than one disease with a single dose (multivalent).

Pirbright researchers have been collaborating with The Vaccine Group (TVG), a spin out company from the University of Plymouth, to show that a strong T-cell response is stimulated by TVG's candidate SARS-CoV-2 vaccine.

We're engaged with a project aimed at improving the growth of viruses in cell lines which could improve vaccine manufacturing efficiency. This work is funded by the International Development Research Centre (IDRC). We are collaborating with vaccine manufacturers in South Africa, Egypt and Vietnam to evaluate our modified cell lines.

We have continued involvement with the development of the virus-like particles vaccine for foot-and-mouth disease virus (FMDV) in collaboration with MSD Animal Health.

Pirbright continues to work with two multinational animal pharmaceutical companies to develop new African swine fever (ASF) vaccines. The technologies being developed are live attenuated and subunit vaccines.



COLLABORATIONS AND NETWORKS



ANIMAL HEALTH NETWORK

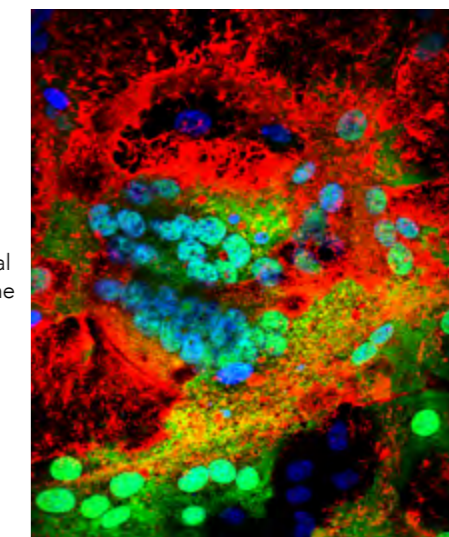
Pirbright has joined forces with the University of Surrey, APHA, the Veterinary Medicines Directorate and Sparsholt College to form the Animal Health Network with the aim of bringing together academia and industry to drive innovation in animal health. Surrey and Hampshire has also been named a High Potential Opportunity by the Department for International Trade, in a bid to drive inward investment.

PARTNERSHIP WITH BABRAHAM

Over the past decade we have developed tools, reagents, and novel techniques to interrogate the immune response to virus infections in the Babraham in-bred line of pigs. The pig is physiologically closely related to humans and provides major advantages over small animal models when studying immune responses to viral disease, or vaccination. We have numerous examples to show that the responses in pigs correlate with immune responses in humans to the same pathogen or vaccines. Collaboration with the immunologists at Babraham Institute will further advance our analyses of immune responses in pigs to improve animal health and human health. Over the past year there have been increasing collaborations between the two institutes, and these will be further enhanced by underpinning support provided through the Institute Development Grant.

PIRBRIGHT'S PATENTS

During 2021/22, the Institute had 15 patents granted in various countries. These patents covered two inventions related to potential coronavirus vaccine technologies, a technology that could be useful in increasing production of vaccines against viruses, and a multivalent avian vaccine.



Pirbright scientists contributed to the development of a new invention, related to a potential vaccine candidate for porcine reproductive and respiratory syndrome (PRRS). This work was done in collaboration with a UK-based spinout company, who has filed a priority patent application.

Three of Pirbright's patent families entered national applications; a significant milestone in the life of a patent. These patents involved potential vaccine candidates for African swine fever virus, and a vaccine for peste-de-petit ruminant virus (PPRV).

PIRBRIGHT'S LICENCES

Pirbright granted two licences to companies in the Middle East and South Asia to evaluate two peste de petits ruminants (PPR) vaccines. Unlike existing PPR vaccines, the Pirbright candidates can differentiate infected from vaccinated animals (DIVA), which will make these vaccines invaluable in the eventual eradication of the disease. A third company has expressed an interest in obtaining a similar licence.

A company based in the Middle East has been granted a licence to evaluate herpesvirus vectored vaccine candidates against the avian influenza H5 and H9 strains. The company is studying the efficacy of these candidates in poultry. This work was initially supported by a BBSRC Zoonoses and Emerging Livestock Systems (ZELS) grant.



EARLY CAREER RESEARCHER AWARDS

IMPACT ACCELERATOR AWARD

The Impact Accelerator Awards (IAA) are awards aimed at supporting knowledge exchange and the acceleration of the Institute's BBSRC funded research. The Institute uses IAA funding to support small research projects to: increase our connections with external partners, transfer knowledge to stakeholders, establish proof-of-concept innovative ideas, and support business engagement. The Institute has been awarded £400k from BBSRC IAA funding between 2018 and 2022.



Projects funded through the IAA have gone on to leverage in-kind support and funding from other sources and provided data to enable the successful application for larger grant funding. This relatively modest seed funding has also led to the development of new collaborative relationships, influenced policies that positively affected communities, and developed new reagents, diagnostic assays, and experimental models. Early career researchers are encouraged to apply for funding, thus developing their careers, and providing the Institute the benefit of innovative ideas from the next generation.

POULTRY DIAGNOSTIC TESTS

Using IAA funding we supported a visit from a Chinese collaborator to develop and provide proof-of-concept data for a technology useful in disease diagnosis. This collaboration led to two patent applications for diagnostic assays to detect avian leukosis virus and reticuloendotheliosis, and if successfully validated will be commercialised. We also aim to further use the technology for other avian diseases, potentially developing a sensitive rapid multiplexed diagnostic assay.

HIGH PRECISION PIG GENOME

IAA funding allowed us to generate a genome assembly and transcriptome atlas of the male Babraham pig, which is a highly inbred pig line used for research and managed by Pirbright and housed at the University of Reading. The genome is one of the most contiguous

mammalian genomes assembled to date. We are in early discussions to have the Babraham genome (and transcriptome) hosted on and annotated within Ensembl as an alternative to the established pig reference genome.

PIG DISEASE MODELS

A project funded by the current IAA led to the establishment of a powerful model to study the effect of influenza virus pre-exposure on vaccine efficacy and has allowed us to successfully apply for follow on funding from MRC and VetBioNet.

FLEXIBLE TALENT MOBILITY ACCOUNT (FTMA)

The FTMA, part of the National Productivity Investment Fund, was awarded to Pirbright by BBSRC to support the career development of students and early career researchers by allowing individuals to spend time at other organisations and in other sectors, such as in industry. These placements allow for the exchange of knowledge and perspective between sectors.

Pirbright was awarded a total of £255k between November 2018 and March 2022 which was allocated to 17 projects through internal competitive calls. These projects ranged from placements in intellectual property consultancy firms, to academic researchers spending time working and learning in industrial laboratories to international researchers coming to Pirbright to work with and learn from our own scientists.

This funding supported the career development of our students and employees; researchers gained knowledge about the issues that concern industry and sectors surrounding academic research, and in some cases the placements contributed to career changes for individuals.

INTELLECTUAL PROPERTY OPPORTUNITIES

Andreas Alber, a postdoctoral researcher at Pirbright secured the opportunity to undertake training and to spend time at IP Pragmatics, an intellectual property and technology

management consultancy firm, where he gained an understanding of intellectual property and the tools used to manage these outputs of research. Andreas is currently working in the KEC team, at the interface between academia and industry. Rupert Osborn, CEO of IP Pragmatics commented "the FTMA programme has been very valuable in helping us access talented people to support our business and at the same time we are pleased to be able to help provide additional training to individuals who can then apply this to support knowledge exchange alongside their academic research."

DEVELOPING SKILLS

Dagmara Bialy was immersed in a placement at a UK poultry producer. She developed skills in quality accreditation and project management. Since the placement she has taken on a new senior postdoctoral position at Pirbright, managing the Institute's CL3 facilities. A representative from the company has stated: "This project was enormously beneficial for both the industrial partner and the Innovation Fellow undertaking the project. Skills were successfully transferred from the researcher that provided new techniques and methods for the commercial partner. Equally, Dagmara acquired experience of R&D and additional commercial experience. The FTMA demonstrates the added value of a close interaction between industrial R&D and academia."

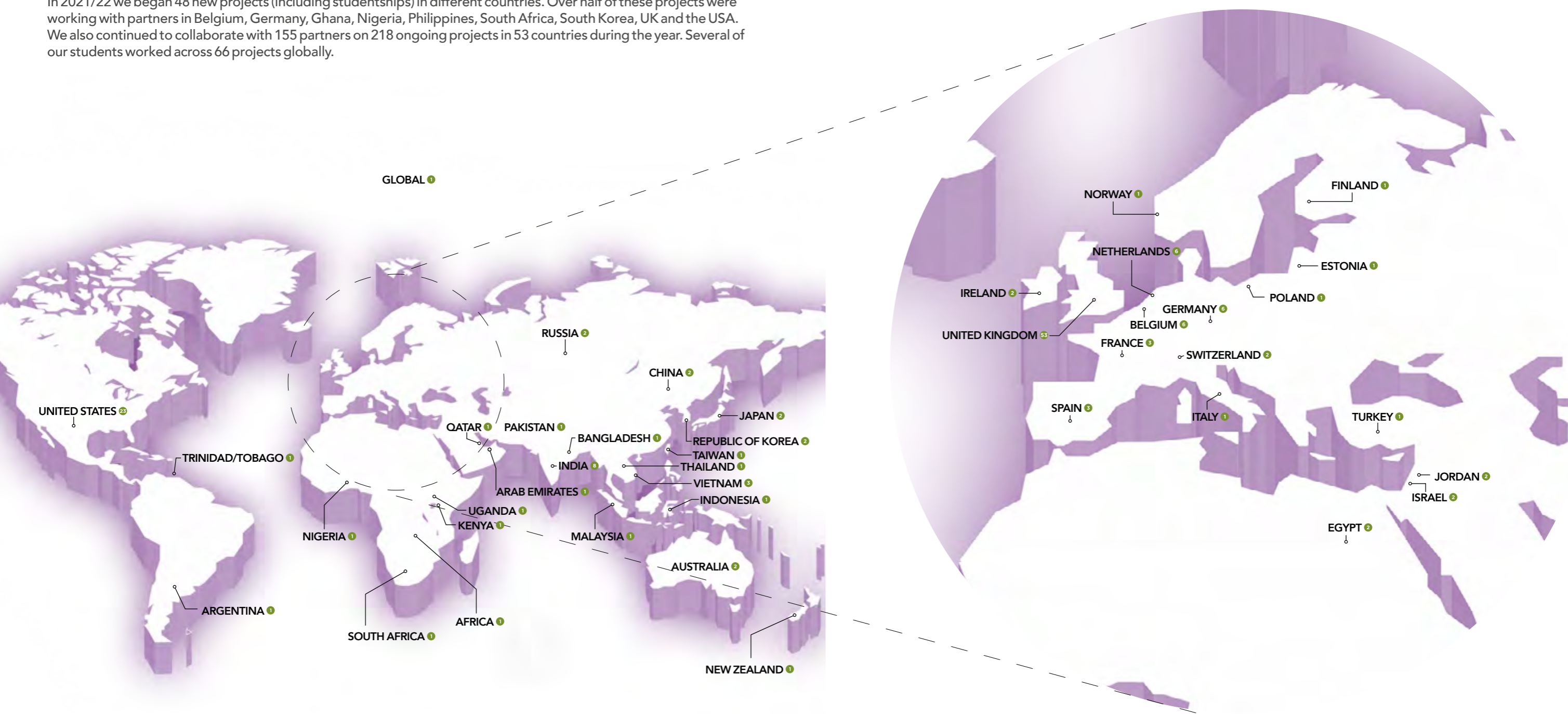


Pirbright scientist working in containment level 3 laboratories in sealed cabinets.

© Edward Brydon

GLOBAL IMPACT

Pirbright's reputation for scientific excellence continues to extend across the globe enabling us to have positive outcomes in animal health and food and economic security for millions of people who rely on their livestock to survive. In 2021/22 we began 48 new projects (including studentships) in different countries. Over half of these projects were working with partners in Belgium, Germany, Ghana, Nigeria, Philippines, South Africa, South Korea, UK and the USA. We also continued to collaborate with 155 partners on 218 ongoing projects in 53 countries during the year. Several of our students worked across 66 projects globally.



INVESTING IN OUR PEOPLE

Pirbright is a vibrant and diverse community of talented individuals who are united in their aim to eliminate viral diseases of livestock through fundamental science research, vaccine development and diagnostics and surveillance. Our aim is to attract and support a world-class, diverse workforce.

The Institute has a wide research portfolio and dedicated researchers, who are responding to the changing global need for increased research into zoonotic viruses and diseases. Our scientists are supported by on-site specialists in health, safety, biosecurity, engineering and research services, as well as our corporate functions, and have access to world-leading research facilities on-site.

We are passionate about ensuring that the Institute is a top performing organisation, and we continue to attract top talent from around the world, with staff and students in 2021 representing 35 different nationalities, enriching our cultural diversity.

RECRUITING, DEVELOPING AND REWARDING OUR STAFF

Mirroring the UK picture, we have experienced high levels of staff turnover during the last year, and combined with new grant successes, and restructures, we managed 178 vacancies during the year, some of which provided new opportunities for career progression for our staff.

The impact of BREXIT and new immigration rules, as well as ongoing interruption from COVID-19 on international movement, has been an additional challenge to recruitment. We are providing financial support to overseas candidates to help manage the cost of coming to the UK and some of our staff have successfully applied for the Global Talent Mobility scheme.

We ran another successful Personal Promotion scheme in 2021 resulting in 12 promotions – seven male and six female, which included seven postdoctoral scientists.

Four apprentices successfully completed their engineering Level 3 schemes and all secured

new roles and promotions into core engineering positions, demonstrating the real value of our apprenticeship scheme as part of succession planning.

Exceptionally the organisation awarded two pay awards in 2021, one in July and one in November. This was in recognition of the unprecedented challenges during the year, the outstanding performance of staff and acknowledgement of the rising cost of living.

We introduced a new reward scheme for merit progression, within current grade, with all grades eligible to apply for a percentage increase in salary.

PROMOTING A CULTURE OF INCLUSIVITY AND WELLBEING

We are committed to creating a culture where everyone can bring their whole self to work and their uniqueness is truly valued. Our Equality, Diversity & Inclusivity (ED&I) Committee delivered a range of initiatives during the year, raising awareness of topics such as hidden disabilities and racial tolerance and celebrating PRIDE month in June 2021, as well as working on the following projects:

- Work is progressing on our Athena SWAN silver application – submission November 2022
- New LGBTQ+ network set up
- New Carers' support group set up
- Contributing to the consultation on the UKRI draft Equality & Diversity draft strategy

The Institute is aware of its statutory duty to support the employment of disabled persons, where possible, both in the recruitment and retention of employees who become disabled whilst in its employment, as well as generally through training and career development.

GENDER PAY GAP 2021

The gender pay gap is defined as the difference between the mean or median earnings of male and female employees, expressed relative to male earnings. The mean pay gap is the difference between the average hourly earnings of men and women. The median pay gap is the difference between the midpoints of hourly earnings of men and women.

We are pleased to report that the Institute mean pay gap has reduced from 16.6 percent in April 2020 to 10.6 percent in 2021 and the median gap from 6.7 percent to 5.8 percent. These figures are provided based on the hourly rate of pay as of 5 April 2021.

The full report can be found on the Institute's website.

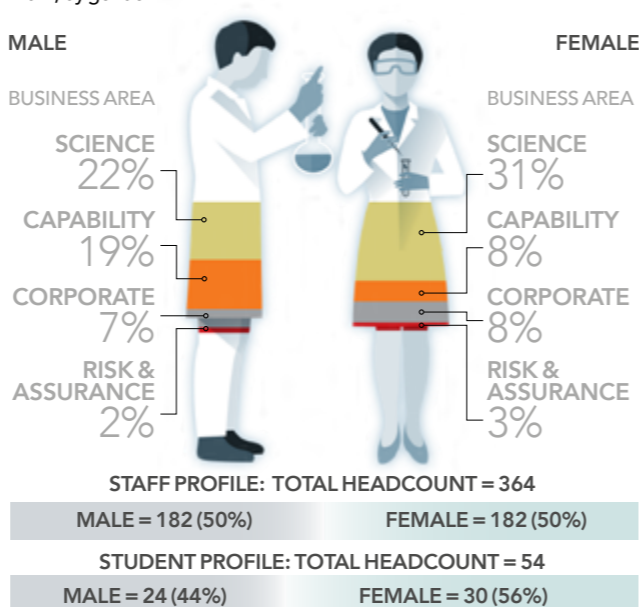
MEAN AND MEDIAN HOURLY PAY COMPARISON (£)

The Institute has maintained more or less an equal gender balance in terms of staff numbers for the last four years. We offer a range of flexible working arrangements which helps attract and retain high numbers of female applicants and are pleased that both males and females have benefitted from enhanced family friendly policies, including shared parental leave. Whilst we are confident that men and women are paid equally for carrying out equivalent roles across the Institute, the main reason for the overall mean gender pay gap is the unequal distribution of men and women across seniority levels at the Institute.

However, with regards to the proportion of men and women within each pay quartile, we are pleased to report that the percentages of females in the upper quartile have increased since last year from 32.58 percent to 39.78 percent and the gender imbalance in the lower quartile where there are more females than males has also improved with an increase in the number of males from 37.78 percent to 42.39 percent.

OUR STAFF AND STUDENT PROFILE

There is an equal split of males and female employees in the organisation. The table below shows in which areas of the organisation our employees work, by gender.



TOP TALENT

Recruitment of top talent and investment in our staff and students is a priority at Pirbright. World-class researchers and specialist support staff enable the Institute to deliver its cutting-edge research, diagnostics and surveillance.



DR TREVOR SWEENEY, SIR HENRY DALE FELLOW GROUP LEADER: VIRAL GENE EXPRESSION

Dr Trevor Sweeney, a Wellcome Trust Sir Henry Dale Fellow, joined the Institute as a Group

Leader in October 2021 and will lead the new Flavivirus Viral Gene Expression group. Trevor set up his group in the Division of Virology at the University of Cambridge in 2014. His research focuses on the role of RNA structure in controlling different stages of viral replication and virus-host interactions with most recent work demonstrating new details of flavivirus replication.



DR TAMARA JABBAR HEAD OF EDUCATION

As the Head of Education, Tamara will be responsible for the strategic development and management of the Institute's undergraduate and postgraduate student programmes.

Having attained her own PhD from Pirbright and worked at the Institute as both a researcher and a member of the Training team developing external courses for researchers, Tamara is perfectly placed to take on the role of Head of Education.



LIZELLE GOUVERNEUR HEAD OF BUSINESS DEVELOPMENT

Lizelle joined the Institute in 2013 in the Knowledge Exchange and Commercialisation (KEC)

team. The KEC team works closely with research groups, reference laboratories and other operational teams to manage the Institute's intellectual property portfolio and support engagement with external partners, especially industry. Lizelle will take on the SPiRE (Sharing Pirbright's Expertise) programme and is looking forward to supporting the establishment of Pirbright Innovations, the Institute's wholly-owned trading subsidiary, and enabling the full exploitation of our research for social and economic benefit.



CALLUM THOMAS INSECTARY MANAGER

In 2019 Callum completed his MSc in Evolution, Ecology and Systematics at Ludwig-Maximilian University of Munich, submitting his thesis

on the phylogenetics of *Wolbachia* present in Chorthippus grasshoppers under the supervision of Dr Ricardo Pereira. In November 2019 he began working as part of the Arthropod Genetics Group at Pirbright focusing on the control of mosquito vectors of arboviruses using genetic modification.

Since December 2021 Callum has been acting as Insectary Manager responsible for coordination of works undertaken in the two insectary facilities at Pirbright: The Philip Mellor Insectary (PMI) and the insectary facility IS4L.



DR LYNDA MOORE RETIRES FROM PIRBRIGHT

After ten years with the Institute, Dr Lynda Moore took early retirement and left Pirbright at the end of March 2022. As the

Head of Academic Affairs and Training Lynda was responsible for the student community at Pirbright, she also managed learning and development and developed the external training programme known as SPiRE (Sharing Pirbright's Expertise). We wish Lynda a happy and healthy early retirement.

PERSONAL PROMOTIONS

Pirbright's Personal Promotion scheme provides our staff with an opportunity to move to a higher grade based on consistently excellent performance and personal contribution to the Institute. Our Personal Promotion Scheme had a high number of applications this year and 12 people were successfully promoted through this process – with a 50/50 split in gender. We continue to support the apprenticeship scheme at Pirbright and were pleased that several completed their training and were successful in securing positions at the Institute, for example, in Engineering and HR roles.



AN APPRECIATION OF THE FORMER CHAIR OF THE TRUSTEE BOARD

Professor John Stephenson who died in March 2022, served as a Pirbright Trustee for five years before becoming the Chair of the Trustee Board in April 2019. As Chair, John oversaw the most recent developments at the Institute including the construction of the new Brooksby building whilst maintain a proactive and collegial approach to everything he did as Chair. John had a distinguished research career, with a long-standing interest in the interaction between virus infection and the immune system. In 1999 he joined the Department of Health as Chief Research Officer responsible for managing programmes on Creutzfeldt-Jakob disease (CJD), vaccines, pandemic influenza and counter terrorism. In 2007 he was appointed Director of Research and Development for the Health Protection Agency. Professor Stephenson held honorary professorships at the London School of Hygiene and Tropical Medicine and at the University of Liverpool. John's commitment and enthusiasm about everything the Pirbright Institute does to stay at the forefront of research into viral diseases of livestock characterised his period as Chair. John will be remembered fondly by the Board and members of the Institute alike.

CELEBRATING SUCCESS AT PIRBRIGHT

PROMOTING WOMEN SCIENTISTS IN THE FIGHT AGAINST COVID-19

To highlight the essential role women are playing in progressing crucial COVID-19 research, the Permanent Mission of Greece to the UN, the Permanent Mission of Lebanon, with the support of the Permanent Mission of the UK and UN Women, staged an online event called 'The Hypatia Debate: Women Scientists in the fight against COVID-19'.

Three prominent scientists were invited as panellists to explore the unique role of women researchers in tackling the pandemic. Dr Eleni Vatzia, a postdoctoral scientist in Pirbright's Mucosal Immunology group, was selected to join Professor Dame Sally Davies (UK Special Envoy on Antimicrobial Resistance) and Dr Hana El Sahly (Associate Professor of molecular virology, Baylor College of Medicine in Houston) on the panel.

Dr Vatzia's research includes the immune responses to influenza infection and vaccination using the same ChAdOx1 viral vector platform used in the Oxford AstraZeneca COVID-19 vaccine in collaboration with Professor Dame Sarah Gilbert's team.

TWO PIRBRIGHT SCIENTISTS WIN MICROBIOLOGY SOCIETY PRIZES

Dr Kerry Newbrook and Nazia Thakur were awarded the Journal of General Virology - Most Promising Science prize for their poster presentations at the 2021 Microbiology Society Annual Conference. Their achievements are testament to the incredibly important research that our scientists conduct to reduce the impact of diseases that affect animals and humans.

Dr Kerry Newbrook Poster title: Virus damage or host response? Elucidating mechanisms of pathogenesis in bluetongue virus-infected sheep.

Nazia Thakur Poster title: SARS-CoV-2 Spike has broad tropism for mammalian ACE2 proteins yet exhibits a distinct pattern of receptor usage when

The Institute, its scientists and staff received a variety of prestigious awards last year, recognising Pirbright's scientific and operational commitment to excellence.

compared to other beta-coronavirus spike proteins.



MULTIPLE AWARDS GIVEN TO STUDENT FOR COVID-19 WORK IN ROMANIA AND UK

Stefan Dascalu's (DPhil Candidate

at the University of Oxford and a member of Pirbright's Avian Influenza Virus group) doctoral research project is focused on the immune response to avian influenza infections in poultry, however, over the past 18 months he has devoted much of his spare time to public health activities in the effort to combat the COVID-19 pandemic, particularly in his home country of Romania. It is this work which has seen him honoured with an Interdisciplinary Bioscience Doctoral Training Programme (DTP) Impact Award.

In November 2021 Stefan was awarded a Social Impact Award for his incredible efforts, which was closely followed in March 2022 with the Romanian Patriarchate's Order of the Holy Brâncoveanu Martyrs for his collaborative work between state authorities and religious institutions during the COVID-19 public health crisis.

DR KEVIN MARINGER TO CHAIR MICROBIOLOGY SOCIETY'S MEMBERS PANEL PROMOTING DIVERSITY AND INCLUSION IN SCIENCE

Pirbright's Dr Kevin Maringer, group leader of the Flavivirus Transmission and Pathogenesis group, will co-chair a new Members Panel formed by The Microbiology Society to promote equality and diversity in the microbiology community.

The panel is made up of members from across the globe, and includes Black, Asian, and other ethnic minorities, members who identify as LGBTQ+, and members who have disabilities or

long-term conditions. It also includes members from lower socioeconomic backgrounds or who are the first of their family to attend university, and other underrepresented groups whose personal experiences have impacted their careers in microbiology. The Panel will ensure that equality, diversity, and inclusion matters are considered at the highest level of the Society's governance.

PLACEMENT STUDENTS END YEAR ON A HIGH!

During 2020, eleven undergraduate students from universities across the UK (Surrey, Birmingham, Manchester, Cardiff, Nottingham, Bath and York) joined Pirbright to undertake a 12 month placement with us as part of their degree.

In July 2021, these placement students gathered in the Centre for Collaborative Learning (CCL) to present their work and achievements during their year with us. Despite a difficult year due to COVID-19 restrictions, their achievements shone through in their virtual presentations and in their response to questions from the audience.

Congratulations to Alice Jones, Paige Lewington, Asha Khunti, Matthew Edwards, Alice Harvey, Aimee Fisher, Joseph Bowman, Daisy Grainger, Chris Kent, Vito Margaritondo, and Tara Davis.



DEVELOPING THE NEXT GENERATION OF SCIENTISTS

STUDENTSHIPS

Pirbright has a diverse and energetic student community, which is comprised of more than 60 PhD students, MSc research project students, BSc year-in-industry students and undergraduate veterinary students. We offer our students so much more than basic benchwork research skills – our transferable skills training courses are combined with a Careers Day and the opportunities to attend placements off-site with other universities and organisations, providing them a wealth of possible choices following graduation.

Student training courses continued to run throughout the year, with both trainers and students having to adapt to a virtual learning environment. Courses included presentation skills, developing professional researcher networks, imposter syndrome, secrets of successful CVs and interview skills, writing a paper with impact and viva workshops.

STUDENT PLACEMENTS

The placement student scheme at Pirbright has been enhanced in recent years – originally this was a scheme for just two students per year from the University of Surrey, but it has now grown to 13 students from August 2021 to July 2022, with 11 students remaining for an extension to their placement from April 2021 (started August 2020) to August 2021 period. A further 15 students will be joining us in August 2022.

We advertise our placements to around 20 universities directly (where we know they have suitable degree courses with a placement / year-in industry option) and on our website. Placements represent a valuable work experience for the students, and they are often involved in writing papers on the research work conducted. Placements are also valued by our Group Leaders as a hard-working, valuable academic resource.

RECRUITMENT

Brexit has had an impact on PhD studentships this year (from January 2021, so affecting the October 2021 cohort intake). Before Brexit, only UK and some European students were eligible for PhD studentship funding, but the changes now mean that international students can also apply, provided they can pay the difference between home and international university tuition fees. As such it is likely that we will receive a higher number of applications per studentship, opening up opportunities to a wider pool of international candidates.

APPRENTICESHIPS

Pirbright runs an extremely successful apprenticeship scheme covering a wide range of career areas within the Institute including engineering, Finance, HR, Learning and Development, IT and health & safety and biosafety. Our apprenticeship scheme in 2021/22 included:

- One HR apprentice completed and passed their HR Support Level 3 qualification, whilst in post

- One Laboratory Technician apprentice completed and passed their Laboratory Technician Level 3 qualification.
- Two new apprentices started in March 2022, one in HR and the second working as a science technician.
- Four EMS apprentices completed their Level 3 Installation / Maintenance Electrician and Electrical Maintenance qualifications.
- Apprenticeship Week campaign 'Build the Future' in February 2022 supported by the Communications Team, with a career fair at Farnborough College, Ask Me Anything sessions on Twitter with current apprentices.

SHARING INDUSTRY EXPERTISE

Secondments and training between Pirbright and commercial partners provide an excellent opportunity for early career post-doctoral scientists to develop industry skills and explore different job roles. Pirbright researchers were paired with a variety of companies in different industries, such as an intellectual property and technology management, the poultry industry and biotechnology.



GOVERNANCE AND MANAGEMENT

The Pirbright Institute is an independent company, limited by guarantee and a registered charity. It is governed by a Board of non-executive Trustee Directors who provide strategic input to the Senior Leadership Board at Pirbright. Science at the Institute is reviewed by an independent group of leading researchers who comprise the Science Advisory Board and whose role is to provide advice and guidance on science strategy and direction.

ORGANISATION AND GOVERNANCE

The Annual Report provides information for legal purposes of the charity, its business activities and its main achievements. The financial statements have been prepared in accordance with the Charities Act 2011, the Companies Act 2006, the Memorandum and Articles of Association and Accounting and Reporting by Charities: Statement of the Recommended Practice applicable to charities preparing their accounts in accordance with Financial Reporting Standards applicable to the UK and Republic of Ireland (FRS102), effective 1 January 2015.

THE BOARD OF TRUSTEES AND ITS INTERESTS

The Directors of the Trustee Board during the year were:

- Professor John Stephenson (died - February 2022)
- Professor Vince Emery – Chair
- Roger Louth (resigned - December 31, 2021)
- Ian Bateman
- Ian Black
- Rona Chester
- Jon Coles
- Emma Griffin (appointed April 1, 2021)
- Alison Hardy
- Dr Paul Logan
- Jane Tirard

Trustee Directors are appointed by the existing Trustee Directors for a period of up to three years, when they are eligible for re-appointment for a second term.

The purpose of the Trustee Board is to ensure that the Institute carries out its purpose for the public benefit in accordance with its memorandum, articles of association and governing law. The main focus of the Trustee Directors is on leadership, strategy, performance, and assurance with focus on maintaining Pirbright’s reputation, staff and infrastructure whilst protecting the Institute’s sustainability.

Furthermore, the Trustee Directors must act in the Institute’s best interests; they must ensure that the Institute’s resources are managed responsibly; they must act with reasonable care and skill; they must ensure that the Institute complies with all statutory

accounting and reporting requirements; and they must meet the oversight requirements expected of a major hazard site.

The Trustee Board has established three committees to support it in its work: the Finance and Audit Committee, the Risk and Assurance Committee and the Nomination and Governance Committee and work closely with the Institute Director and senior management of the Institute to achieve its aims.

Trustee Directors and co-opted members are required to declare any conflicts or potential conflicts of interests at Trustee Board and committee meetings, and these are recorded in the minutes. During the year, no Trustee Director declared a conflict of interest. Depending on the conflict, the Chair may require a Trustee Director or co-opted member to either leave the meeting, or not take part in a discussion or decision on a particular issue.

The Trustee Board has also established a Scientific Advisory Board, comprised of independent leading scientists, to provide advice, guidance, and recommendations regarding the scientific strategy and direction of the Institute. In addition, the Science Advisory Board provides assurance to the Trustee Board on the quality of science and research, the relevance and importance of the strategy, and advise on the Institute’s positioning within the international scientific landscape.

TRUSTEES’ INDEMNITY INSURANCE

The Institute maintains liability insurance for its Trustee Board, with an annual aggregate cover limit for all claims against them in that capacity. The Trustees have also been granted a qualifying third-party provision under section 233 of Companies Act 2006. Neither the Institute’s indemnity nor insurance provides cover in the event that a Trustee Director is proved to have acted fraudulently or dishonestly. The premium and related costs in respect of this policy were £20,432 (2021: £20,432). The Trustees are satisfied they have complied with their duty in section 4 of the Charities Act 2011 to have due regard to public benefit guidance published by the Charities

Commission. Based on this guidance, and as described in the Trustees’ Report, the Trustees believe the activities of The Pirbright Institute to be charitable in nature.

TRAINING OF TRUSTEES

The Institute continually reviews its practices for induction and ongoing Trustee training. Trustees are encouraged to attend appropriate external training events where these will facilitate the undertaking of their role.

SENIOR LEADERSHIP BOARD

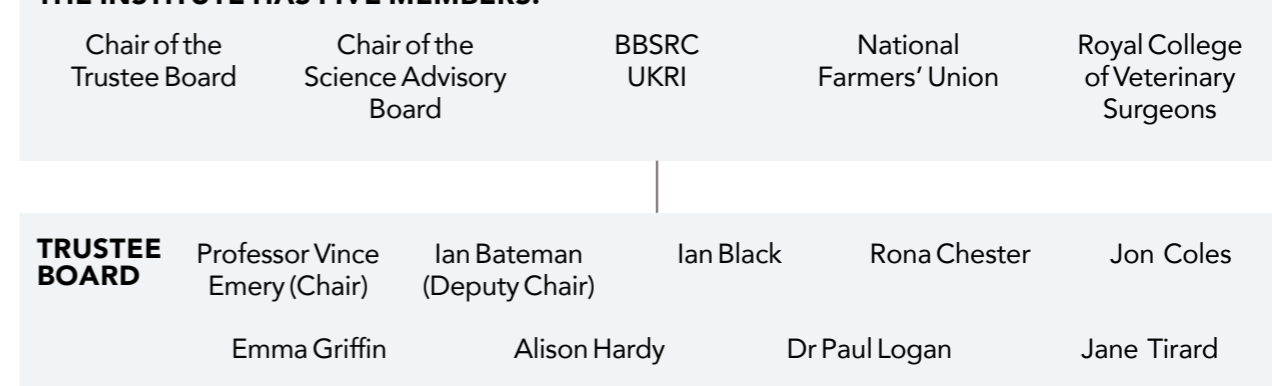
The Trustee Board consider that the Senior Leadership Board (SLB) is accountable for Institute strategy, risk mitigation and governance of day-to-day operational delivery. The SLB comprising the Institute Director and the Directorate heads; namely Director of Risk and Assurance, Director of Finance and Company Secretary and an interim member with responsibility for science and operations interface.

The remuneration and benefits of the SLB is based on the agreed and recognised salary banding for the Institute and reviewed annually.

RELATED PARTIES

The Institute’s subsidiary undertaking, Pirbright Innovations Limited, last traded in 2003 and is currently dormant. Genomia Management Limited was formed on 16 April 2004 and is also a company limited by guarantee. The company was established by way of grants from the Department of Innovation, Universities and Skills and the European Regional Development Fund. The company manages the Genomia Fund the objective of which is to assist in the development of research output from the members into commercially realisable opportunities. The Institute has equal membership in this company with The Roslin Foundation, Moredun Research Institute, Rowett Institute of Nutrition and Health and Scotland’s Rural College (SRUC).

THE INSTITUTE HAS FIVE MEMBERS:



SENIOR LEADERSHIP BOARD (SLB)

Professor Bryan Charleston – Director and CEO

Professor John Hammond – Interim member to SLB with responsibility for Science and Operations interface

Helen Watts – Director of Finance and Company Secretary

Dr Andrew White – Director of Risk and Assurance

SCIENCE ADVISORY BOARD (SAB)

- Professor Jeffrey Almond – Chair
- Professor Dr Martin Beer
- Professor Persephone Borrow
- Professor Mary Cameron
- Professor Gary Entrican
- Professor Deirdre Hollingsworth
- Professor Stephen Inglis CBE
- Professor Paul Kellam
- Dr Paul Logan
- Professor Thomas Mettenleiter
- Professor John Pickett
- Professor David Rowlands
- Professor Eleanor M. Riley
- Professor Helen Sang
- Professor Geoffrey L. Smith
- Dr Samuel Thevasagayam

FINANCE AND AUDIT COMMITTEE

- Rona Chester - Chair
- Jon Coles
- Jane Tirard

NOMINATIONS AND GOVERNANCE COMMITTEE

- Ian Black - Chair
- Jon Coles
- Alison Hardy

RISK AND ASSURANCE COMMITTEE

- Ian Bateman - Chair
- Emma Griffin
- Dr Paul Logan

SENIOR LEADERSHIP BOARD

The Trustee Board consider that the Senior Leadership Board (SLB) is accountable for Institute strategy, risk mitigation and governance of day-to-day operational delivery. The SLB comprises of the Institute Director and the Directorate heads; namely Director of Risk and Assurance, Interim member for Science and Operations interface and Director of Finance and Company Secretary. The remuneration and benefits of the SLB is based on the agreed and recognised salary banding for the Institute and is reviewed annually.

PROFESSOR BRYAN CHARLESTON – DIRECTOR AND CEO

Professor Charleston joined The Pirbright Institute (formally known as the Institute for Animal Health) in 1994 and focused on studies of the immune response to viral infections in cattle. His research group's efforts are focused on understanding the immune response to foot-and-mouth disease virus in cattle to develop novel vaccines.

PROFESSOR JOHN HAMMOND – INTERIM MEMBER TO SLB WITH RESPONSIBILITY FOR SCIENCE AND OPERATIONS INTERFACE

John leads the Immunogenetics Group at the Institute studying the mechanisms and consequences of genetic variation on the mammalian immune system. He is also Head of Programme: Enhanced host responses for disease control.

HELEN WATTS – DIRECTOR OF FINANCE AND COMPANY SECRETARY

As the Institute's Director of Finance and Company Secretary Helen's remit includes all aspects of the Institute's finances as well as managing the IT and procurement functions. She is also a member of the Development Programme Board, as well as being a member of a number of working groups overseeing many aspects of the Institute's operations.

DR ANDREW WHITE – DIRECTOR OF RISK & ASSURANCE

Andrew leads on all aspects of risk management including biosafety, Health & Safety, quality assurance, environment, crisis management & business continuity, biosecurity, and wider enterprise risks such as financial, informational, operational, reputational and strategic. Andy is a biochemist by training and holds a PhD in protein structure and chemistry.

TRUSTEE BOARD

CHAIR OF THE TRUSTEE BOARD - PROFESSOR VINCE EMERY

Professor Emery is President of the University of Hertfordshire's branch campus hosted by Global Academic Foundation in Egypt and is also Emeritus Professor of Translational Virology at the University of Surrey and a Visiting Professor at the University of Hertfordshire, UK. His research in virology, spanning some 34 years, aims to provide an interdisciplinary approach to understanding viral infections in immunocompromised hosts.

DEPUTY CHAIR OF THE TRUSTEE BOARD - IAN BATEMAN

Ian is an Executive Director and Board Member with significant strategic leadership experience in healthcare organisations in both public and private sectors. He has a strong background in corporate leadership of quality, regulatory affairs, corporate governance, assurance, risk and health and safety.

IAN BLACK

Ian worked as a senior executive in a range of global organisations with a business sector focus on Engineering, Technology and Fast-Moving Consumer Goods. This included various roles covering Strategy, HR, IT, Quality and Marketing Services worldwide.

RONA CHESTER

Rona is a fellow of the Institute of Chartered Accountants with over 30 years' experience in leading financial teams in both the public and private sector. More recently Rona was the Chief Operating Officer at Sport England, the lottery distributor, where additional responsibilities included grants management, Commercial and IT, as well as contributing to the development of the organisation's strategy.

JON COLES

Jon was a senior Partner at Brunswick Group LLP, a leading international communications consultancy, where he advised the Boards of Directors of global groups on strategic communications and corporate reputation. His particular focus was on clients in the pharmaceutical, biotechnology and agriculture industries.

EMMA GRIFFIN

Emma has over 25 years professional experience across a multitude of sectors in cyber security, technology, and regulatory compliance. She participates on several advisory boards to influence and drive cyber security development and solution innovation and regularly participates in industry and regulatory forums as an advisor and speaker. Emma is actively involved in promoting diversity and inclusion and seeks to encourage careers in science and technology to minority groups.

ALISON HARDY

Alison is a solicitor and partner with City law firm Ashurst LLP where she leads the real estate dispute resolution practice. Alison is experienced in all aspects of commercial real estate. She is actively involved in diversity and inclusion and is the partner sponsor of Ashurst's Social Mobility and Inclusion network, which is working to remove barriers to entry into and progression within the legal profession.

DR PAUL LOGAN

Prior to his retirement in 2020, Paul was a Senior Civil Servant in the Health and Safety Executive (HSE) which he had joined as a regulatory scientist. During his time in HSE he chaired a number of industry/government committees, He was Director of the division in HSE with responsibility for regulation of major hazards industries, including chemical manufacturing, oil refineries, explosives manufacture and storage, and high containment laboratories.

JANE TIRARD

Jane has over 30 years of experience of all aspects of strategic financial planning, financial management, financial accounting, systems and processes. As a result of her roles, she has a working knowledge of government departments, funding councils, academia and the pharmaceutical industry. Her last position was as the Director of Finance and Corporate Services at the Diamond Light Source, the UK's national synchrotron science facility.

SCIENCE ADVISORY BOARD

The Institute's Science Advisory Board (SAB) provides valuable strategic oversight, input and advice on the Institute's science strategy and scientific directions.

Professor Jeffrey Almond – Chair

Professor Jeffrey Almond is an Oxford Martin Visiting Fellow with the Oxford Martin Programme on Vaccines and was former Vice-President and Head of Discovery Research and External R&D at Sanofi Pasteur and Visiting Fellow at the William School of Pathology, University of Oxford.

Professor Dr Martin Beer

is head of the Institute of Diagnostic Virology at the FLI, working with transboundary animal diseases, zoonosis and emerging diseases like avian influenza virus, Schmallenberg virus and pestiviruses.

Professor Persephone Borrow

is a viral immunologist whose research interests centre on understanding virus-immune system interactions and their roles in determining the balance between virus clearance versus viral persistence and associated pathogenesis.

Professor Mary Cameron

is a Professor of Medical Entomology in the Faculty of Infectious and Tropical Diseases, London School of Hygiene & Tropical Medicine (LSHTM). Mary has over 30 years' experience in delivering international level field and laboratory research focusing on the surveillance and control of a wide range of vector-borne diseases, particularly leishmaniasis.

Professor Gary Entrican

is an immunologist who has specialised in the development of vaccines and diagnostic tests for the control of infectious diseases of ruminant livestock. He has developed many immunological tools and technologies, including kits for in vitro differentiation of ruminant dendritic cells and cytokine ELISAs.

Professor Deirdre Hollingsworth

is an infectious disease epidemiologist who uses mathematical models and statistical analyses to study the evolution and transmission dynamics of infectious diseases with the aim of informing the design of more effective control interventions. She leads the

NTD Modelling Consortium, an international network of neglected tropical disease modellers.

Professor Paul Kellam

is a Professor of Virus Genomics at Imperial College London and Vice President of infectious diseases & vaccines at Kymab Ltd, UK. His research has identified how HIV develops resistance to antiviral drugs and has identified the first influenza disease severity gene in people hospitalised with influenza virus. His laboratory contributed to the international Ebola virus genome analysis.

Dr Paul Logan

Prior to his retirement in 2020, Paul was a Senior Civil Servant in the Health and Safety Executive (HSE) which he had joined as a regulatory scientist. He subsequently trained as a specialist inspector with responsibility for inspection of high containment laboratories.

Professor David Rowlands

is an emeritus Professor of Molecular Virology at the University of Leeds. He worked at the Animal Virus Research Institute (now The Pirbright Institute), before transferring to industry, holding positions at Wellcome Biotech and the Wellcome Foundation and finally moved into academia at the University of Leeds. He has a lifetime of experience studying both human and animal viruses.

Eleanor M. Riley, BSc, BVSc, PhD, FRSB, FMedSci

Eleanor's research focusses on mechanisms of immunity to malaria in humans and in animal models, how the immune response can contribute to disease, how immunity affects the distribution and transmission of the parasite and how malaria infection affects resistance to other infections. In addition, Eleanor has a longstanding interest in the biology of natural killer (NK) cells and their role in resistance to infection.

Professor Helen Sang

is the main research focus at The Roslin Institute has been the development of technologies for genetic modification of the chicken, which are applied in basic biomedical research, biotechnology and investigating the potential for developing disease resistance in production chickens.

Professor Geoffrey L. Smith

is Professor of Pathology at the University of Cambridge. His research studies the interactions of poxviruses with the host cell and immune system. Together with Michael Mackett, he developed vaccinia virus (the smallpox vaccine) as an expression vector and established the principal of using genetically engineered viruses as live vaccines.

Dr Samuel Thevasagayam

leads the Livestock initiative within the Agriculture Development Program at the Bill & Melinda Gates Foundation where he oversees the implementation of foundation's strategy in animal health, animal production and livestock systems. Sam joined the Gates Foundation in 2012.

FINANCE AND AUDIT COMMITTEE

FAC provide assurance and advice to the Board in relation to the Institute's finances and other assets; business planning and corporate reporting; the Institute's strategic risks; and the statutory external audit and the programme of internal audits covering the corporate functions.

- Rona Chester - Chair**
- Jon Coles**
- Jane Tirard**

NOMINATIONS AND GOVERNANCE COMMITTEE

To provide assurance to the Board in relation to all governance matters, with the aim of obtaining the highest possible standard of governance and compliance. The Institute has adopted the Charity Governance Code with this committee responsible for its implementation.

- Ian Black - Chair**
- Jon Coles**
- Alison Hardy**

RISK AND ASSURANCE COMMITTEE

To provide assurance to the Board on the arrangements to meet legal duties and to manage risk within the Institute, working in consort with the Risk and Assurance Strategy and Plan, to oversee all risk management systems, controls and processes that may have an impact on the Institute's ability to meet its objective.

- Ian Bateman - Chair**
- Emma Griffin**
- Dr Paul Logan**

INCOME

Total income amounted to £59.1m (2021:£80.7m), this reduction arising from a lower level of funding for the capital development of the site as the current phase reaches completion. Investment in tangible fixed assets in the year totalled £32.7m (2021:£36.7m). This was substantially funded by grants from the Institute's principal sponsor, Biotechnology and Biological Sciences Research Council, part of UK Research and Innovation (BBSRC UKRI), Defra and other grant awarding bodies.

EXPENDITURE

Recurrent expenditure for the year amounted to £46.5m (2021: £48.0m). Staff costs accounted for £17.9m (39%) (2021: £18.1m: 37% of expenditure). The slight reduction in staff costs from 2021 relates to high levels of vacancies during the year, net of the pay award.

CASH AND TERM DEPOSITS

Cash and terms deposits at 31 March 2022 were £34.5m (2021: £42.4m), a fall of £7.9m in the year as funds are used to support the capital development on site. Pirbright deposits its cash with UK registered financial institutions in accordance with the Institute's investment policy. Investment income from cash deposits in the year was less than £0.1m (2021: £0.1m).

GRANT PROPOSALS

During the year, Pirbright researchers submitted grant proposals with a sponsor value of £20.8m (2021: £20.1m) and were awarded grants with a value of £7.5m (2021: £9.5m).

GOING CONCERN

The Trustees have reviewed whether it is appropriate for the financial statements to be prepared on a going concern basis. The Institute has in principle received its five-year strategic grant funding from BBSRC UKRI, £15m per annum; this award runs from 5 April 2017 to 31 March 2022. The Institute was advised by BBSRC UKRI that the grant period will be extended for a sixth year to 31 March 2023. This source of confirmed funding, the consistent performance of attracting income from other funding bodies and the development of a business plan that is built on an income stream that is very likely to be achievable, provides a high degree of confidence of future financial security. Having considered the risks in respect of future funding, financial forecasts for the period to November 2023 and the level of reserves, the Trustees have not identified

any material uncertainties relating to going concern and therefore have concluded that it remains appropriate to prepare the financial statements on a going concern basis.

NET MOVEMENT IN RESERVES

The Pirbright Institute recorded a net decrease in unrestricted reserves of £0.2m. (2021: £1.9m increase) There was a £0.1m decrease in the designated reserve with the general reserve decreasing by £0.1m. Due to the phasing of the Pirbright Development Programme, the restricted reserves increased by £15.0m. (2021: £30.8m). Capital expenditure in the year was £32.7m (2020: £36.7m). There has been an ongoing major development of the Pirbright site which will result in a new SAPO4 facility and additional state of the art science equipment.

RESERVES POLICY

Unrestricted funds

It is the policy of the Trustees to ensure the General Fund in the Unrestricted Reserves reaches £4.5m by the end of the current business plan cycle being 2022/23 to enable the Institute to manage fluctuations in income and unforeseen cost pressures. At 31 March 2022 unrestricted general funds were £7.4m (2021:£7.5m) ahead of the target as set by the Trustees. It is anticipated that over the coming years it will be possible for the Institute to undertake further development of science activity to enhance the overall sustainability and improvement of activity. The redevelopment of the site will also provide the world class facilities required to ensure the Institute is best placed to succeed in future grant submissions.

Designated funds

The use of the unrestricted designated fund as set out in note 15 comprises sums set aside for specific purposes as decided by the Trustees to support ongoing non-operational activity and the continued development of the Pirbright site in support of the construction programme.

Restricted funds

The Institute has been undertaking a significant building programme within the Pirbright site for which funding has been received from BBSRC UKRI. The funding of this programme is via grants which are held within the restricted funds and comes to a total of £317.2m. This funding is solely and specifically granted for the purpose of the building programme hence the inclusion within the restricted fund and mostly this represents the value of the buildings which have been constructed.

FUNDRAISING ACTIVITIES

Section 162a of the Charities Act 2011 requires charities to make a statement regarding fundraising activities. Although we do not undertake direct fundraising from the general public, with the legislation defining fundraising as "soliciting or otherwise procuring money or other property for charitable purposes", we have to disclose the value of such income in the year. We have received no such income during the current or previous financial year and have therefore received no complaints in respect of our fundraising activities.

STATEMENT OF TRUSTEES' RESPONSIBILITIES

The Trustees, who are also Directors of the charitable company for the purposes of company law, are responsible for preparing the Trustees' Report incorporating the Strategic Report in accordance with applicable law and regulations.

Company law requires the Trustee Board to prepare financial statements for each financial year. Under that law the Trustee Board has elected to prepare the financial statements in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards and applicable laws), including FRS102 (the Financial Reporting Standard applicable in the UK and Republic of Ireland). Under company law the Trustee Board must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the charitable company and the incoming resources and application of resources, including the income and expenditure, of the charitable company for that period.

In preparing these financial statements, the Trustee Board is required to:

- select suitable accounting policies and then apply them consistently;
- observe the methods and principles in the Charities SORP (FRS102);
- make judgments and accounting estimates that are reasonable and prudent;
- state whether applicable UK Accounting Standards have been followed, subject to any material departures disclosed and explained in the financial statements;
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the charitable company will continue in business.

The Trustee Board is responsible for keeping adequate accounting records that are sufficient to show and explain the charitable company's transactions and disclose with reasonable accuracy at any time the financial position of the company and enable them to ensure that the financial statements comply with the Companies Act 2006. It is also responsible for safeguarding the assets of the charitable company and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The Institute maintains liability insurance for its Trustees for all claims against them in that capacity. The insurance does not provide cover in the event that a Trustee Director is proved to have acted fraudulently or dishonestly.

The Trustees are satisfied that they have complied with their duty in section 4 of the Charities Act 2011 to have due regard to public benefit guidance published by the Charity Commission. Based on this guidance the Trustees believe the activities of the Institute to be charitable in nature.

The Trustee Board confirms that:

- so far as each Trustee Director is aware, there is no relevant audit information of which the charitable company's auditor is unaware;
- and the Trustees have taken all steps that they ought to have taken to make themselves aware of any relevant audit information and to establish that the auditor is aware of that information.

The Report of the Trustees incorporating the Directors' Report and the Strategic Report was approved and signed on behalf of the Trustee Board.



Professor Vince Emery
Chair of the Trustee Board
Date: 16 November 2022

INDEPENDENT AUDITOR'S REPORT TO THE MEMBERS OF THE PIRBRIGHT INSTITUTE

(LIMITED BY GUARANTEE)

In our opinion, the financial statements:

- give a true and fair view of the state of the Charitable Company's affairs as at 31 March 2022 and of its incoming resources and application of resources for the year then ended;
- have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice; and
- have been prepared in accordance with the requirements of the Companies Act 2006.

We have audited the financial statements of The Pirbright Institute ("the Charitable Company") for the year ended 31 March 2022 which comprise the principle accounting policies, the statement of financial activities, the balance sheet, the cash flow statement and notes to the financial statements, including a summary of significant accounting policies. The financial reporting framework that has been applied in their preparation is applicable law and United Kingdom Accounting Standards, including Financial Reporting Standard 102 The Financial Reporting Standard applicable in the UK and Republic of Ireland (United Kingdom Generally Accepted Accounting Practice).

BASIS FOR OPINION

We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs (UK)) and applicable law. Our responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the financial statements section of our report. We are independent of the Charitable Company in accordance with the ethical requirements relevant to our audit of the financial statements in the UK, including the FRC's Ethical Standard, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

CONCLUSIONS RELATED TO GOING CONCERN

In auditing the financial statements, we have concluded that the Trustees' use of the going concern basis of accounting in the preparation of the financial statements is appropriate.

Based on the work we have performed, we have not identified any material uncertainties relating to events or conditions that, individually or collectively, may cast significant doubt on the Charitable Company's ability to continue as a going concern for a period of at least twelve months from when the financial statements are authorised for issue.

Our responsibilities and the responsibilities of the Trustees with respect to going concern are described in the relevant sections of this report.

OTHER INFORMATION

The Trustees are responsible for the other information. The other information comprises the information included in the Annual Report and Accounts, other than the financial statements and our auditor's report thereon. The other information comprises the Trustees Report. Our opinion on the financial statements does not cover the other information and, except to the extent otherwise explicitly stated in our report, we do not express any form of assurance conclusion thereon. Our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the course of the audit, or otherwise appears to be materially misstated. If we identify such material inconsistencies or apparent material misstatements, we are required to determine whether this gives rise to a material misstatement in the financial statements themselves. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact.

We have nothing to report in this regard.

OTHER COMPANIES ACT 2006 REPORTING

In our opinion, based on the work undertaken in the course of the audit:

- the information given in the Trustees' Report, which includes the Directors' Report and the Strategic report prepared for the purposes of Company Law, for the financial year for which the financial statements are prepared is consistent with the financial statements; and
- the Strategic report and the Directors' Report, which are included in the Trustees' report, have been prepared in accordance with applicable legal requirements.

In the light of the knowledge and understanding of the Charitable Company and its environment obtained in the course of the audit, we have not identified material misstatement in the Strategic report or the Trustee's report.

We have nothing to report in respect of the following matters in relation to which the Companies Act 2006 requires us to report to you if, in our opinion:

- adequate accounting records have not been kept, or returns adequate for our audit have not been received from branches not visited by us; or
- the financial statements are not in agreement with the accounting records and returns; or
- certain disclosures of Directors' remuneration specified by law are not made; or
- we have not received all the information and explanations we require for our audit.

RESPONSIBILITIES OF TRUSTEES

As explained more fully in the Trustees' responsibilities statement, the Trustees (who are also the directors of the charitable company for the purposes of company law) are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the Trustees determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Trustees are responsible for assessing the Charitable Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Trustees either intend to liquidate the Charitable Company or to cease operations, or have no realistic alternative but to do so.

AUDITOR'S RESPONSIBILITIES FOR THE AUDIT OF THE FINANCIAL STATEMENTS

We have been appointed as auditor under the Companies Act 2006 and report in accordance with the Act and relevant regulations made or having effect thereunder.

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

Extent to which the audit was capable of detecting irregularities, including fraud.

Irregularities, including fraud, are instances of non-compliance with laws and regulations. We design procedures in line with our responsibilities, outlined above, to detect material misstatements in respect of irregularities, including fraud. The extent to which our procedures are capable of detecting irregularities, including fraud is detailed below:

Based on our understanding of the Charitable Company and the sector in which it operates, we identified that the principal risks of non-compliance with laws and regulations related to its registration with the Charity Commission for England and Wales and the Animals (Scientific Procedures) Act 1986 (ASPA) – under licence from the Home Office. We considered the extent to which non-compliance might have a material effect on the Financial Statements or the charity's continued operation. We also considered those laws and regulations that have a direct impact on the financial statements such as relevant companies acts and charities acts in the UK.

We evaluated management's incentives and opportunities for fraudulent manipulation of the financial statements (including the risk of override of controls), and determined that the principal risks were related to posting inappropriate journal entries to manipulate financial results and management bias in accounting estimates.

The audit procedures to address the risks identified included:

- Challenging assumptions made by management in their significant accounting estimates in particular in relation to the assumptions related to the estimated useful economic life of tangible fixed assets and assessment of the risks and rewards of ownership of the leasehold land and buildings owned by third parties;
- Testing journals including those which potentially impact remuneration and other performance targets and evaluating whether there was evidence of bias by management or Those Charged with Governance that represented a risk of material misstatement due to fraud;
- Reading minutes of meetings of those charged with governance, reviewing internal audit reports and reviewing correspondence with the Home Office, HMRC and the Charities Commission for England and Wales.

Our audit procedures were designed to respond to risks of material misstatement in the financial statements, recognising that the risk of not detecting a material misstatement due to fraud is higher than the risk of not detecting one resulting from error, as fraud may involve deliberate concealment by, for example, forgery, misrepresentations or through collusion. There are inherent limitations in the audit procedures performed and the further removed non-compliance

with laws and regulations is from the events and transactions reflected in the financial statements, the less likely we are to become aware of it.

A further description of our responsibilities for the audit of the financial statements is located at the Financial Reporting Council's ("FRC's") website at: <https://www.frc.org.uk/auditorsresponsibilities>. This description forms part of our auditor's report.

USE OF OUR REPORT

This report is made solely to the Charitable Company's members, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006. Our audit work has been undertaken so that we might state to the Charitable Company's members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Charitable Company and the Charitable Company's members as a body, for our audit work, for this report, or for the opinions we have formed.

DocuSigned by:

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Fiona Condron (Senior Statutory Auditor)
 For and on behalf of BDO LLP,
 Statutory Auditor
 Date: 21 November 2022

BDO LLP is a limited liability partnership registered in England and Wales (with registered number OC305127).

STATEMENT OF FINANCIAL ACTIVITIES

For the year ended 31 March 2022

	Note	Unrestricted Funds £'000	Restricted Funds £'000	2022 Total Funds £'000	2021 Total Funds £'000
Income from					
Core strategic grant	1	-	15,513	15,513	18,928
<i>Charitable activities</i>					
Grants and contracts		16,281	24,904	41,185	58,190
Other charitable income		1,453	-	1,452	2,609
Investment income	3	959	-	959	956
Total income		18,693	40,417	59,110	80,683
<i>Expenditure on</i>					
<i>Raising funds</i>					
Rental properties and tenant services		309	315	624	636
Investment management costs		19	-	19	18
<i>Charitable activities</i>					
Scientific research		32,701	11,187	43,888	44,850
Rental properties and tenant services		984	602	1,586	2,025
Other charitable activities		400	-	400	471
Total expenditure	4	34,413	12,105	46,518	48,000
Net (gains) on Investments		-	2,000	2,000	-
Net (expenditure)/income before transfers		(15,720)	30,312	14,592	32,683
Transfers between funds	15	15,513	(15,513)	-	-
Net movement in funds		(207)	14,799	14,592	32,683
Balances brought forward		9,997	320,649	330,646	297,683
Balances carried forward	16	9,790	335,448	345,238	330,646

All income and expenditure derive from continuing activities. The accompanying notes on pages 48 to 61 form an integral part of these financial statements.

BALANCE SHEET

At 31 March 2022. Company Number 00559784

	Note	£'000	2022 £'000	£'000	2021 £'000
<i>Fixed assets</i>					
Tangible fixed assets	9	318,228		295,172	
Investment property	10	2,000		-	
			320,228		295,172
<i>Current assets</i>					
Stocks	11	359		264	
Debtors	12	10,703		13,397	
Term deposits over three months		5,016		23,194	
Cash at bank and in hand		29,495		19,237	
		45,573		56,092	
Creditors: amounts falling due within one year	13	(20,563)		(20,618)	
			25,010		35,474
Net current assets			345,238		330,646
Total assets less current liabilities			345,238		330,646
Net assets			345,238		330,646
Financed by					
Unrestricted funds	16		9,790		9,997
Restricted funds					
Fixed asset fund	15		330,243		317,191
Investment revaluation reserve			2,000		-
Other restricted reserves	16		3,205		3,458
Total funds			345,238		330,646

Approved by the Board of Trustee Directors on 16 November 2022 and signed on their behalf on 16 November 2022.

The accompanying notes on pages 48 to 61 form an integral part of these financial statements.

Professor Vince Emery
Trustee Director



Rona Chester
Trustee Director



STATEMENT OF CASH FLOWS

For the year ended 31 March 2022

	£'000	2022 £'000	£'000	2021 £'000
<i>Net cash provided by operating activities</i>				
Net movement in funds	14,592		32,683	
Interest and rent receivable	(959)		(956)	
Depreciation charged	9,684		9,469	
Increase in valuation of Investment Property	(2,000)		-	
(Increase)/decrease in stocks	(95)		42	
Decrease/(increase) in debtors	2,694		(6,693)	
Increase in creditors	1,255		1,288	
Net cash provided by operating activities		25,171		35,833
<i>Cash flows from investing activities:</i>				
Interest and rents received	959		956	
Decrease/(Increase) in cash deposits > 3 months	18,178		(2,025)	
Purchase of property, plant and equipment	(34,050)		(35,056)	
Net cash used in investment activities		(14,913)		(36,125)
Change in cash and cash equivalents in the reporting period		10,258		(292)
Cash and cash equivalents at the beginning of the reporting period		19,237		19,529
Cash and cash equivalents at the end of the reporting period		29,495		19,237
Cash and cash equivalents as above		29,495		19,237
Cash placed on term deposits longer than 3 months		5,016		23,194
Cash at bank and in hand		34,511		42,431
		As at 1 April 2021 £'000	Cashflow £'000	As at 31 March 2022 £'000
Net cash at Bank		19,237	10,258	29,495
Cash at Bank		19,237	10,258	29,495
Total		19,237	10,258	29,495

The accompanying notes on pages 48 to 61 form an integral part of these financial statements.

PRINCIPAL ACCOUNTING POLICIES

The following accounting policies have been applied consistently in dealing with items which are considered material in relation to the Institute's financial statements.

BASIS OF ACCOUNTING

The financial statements have been prepared in accordance with Accounting and Reporting by Charities:

- Statement of Recommended Practice applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102) (effective 1 January 2019)-(Charities SORP (FRS 102), the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102) and the Companies Act 2006.
- The Institute meets the definition of a public benefit entity under FRS 102. Assets and liabilities are initially recognised at historical cost or transaction value unless otherwise stated in the relevant accounting policy note(s).

GOING CONCERN

The Trustee Directors have reviewed whether it is appropriate for the financial statements to be prepared on a going concern basis. The Institute has in principle received its five-year strategic grant funding from BBSRC UKRI, £15m per annum. This award originally ran from 5 April 2017 to March 2022. The Institute was then advised by BBSRC UKRI that the grant period will be extended for a sixth year to March 2023.

This source of confirmed funding, the consistent performance of attracting income from other funding bodies and the development of a business plan that is built on an income stream that is very likely to be achievable, provides a high degree of confidence of future financial security. Having considered the risks in respect of future funding, financial forecasts for the period to November 2023 and the level of reserves, the Trustee Directors have concluded that it remains appropriate to prepare the financial statements on a going concern basis and there are no material uncertainties which the Trustee Directors have identified.

GROUP FINANCIAL STATEMENTS

The Institute is exempt from the requirement to prepare consolidated financial statements by virtue of section 405(2) of the Companies Act 2006 as the result of its dormant subsidiary undertaking, Pirbright Innovations Limited, is not material for the purposes of providing a true and fair view.

Accordingly, these financial statements present information about the Institute as an individual entity and not its group.

INCOME

Income comprises unencumbered grants received from research councils; grant income from collaborative, commissioned and competitively awarded research projects; income from miscellaneous charitable activities; commercial and residential rents from the letting of Institute controlled property; and interest earned on the temporary investment of surplus funds. Income is recognised when the Institute becomes legally entitled to the income and the amount can be quantified with reasonable accuracy.

For the grants related to collaborative, commissioned and competitively awarded research projects, income is recognised as the associated expenditure is incurred.

All core BBSRC UKRI grants are recognised as revenue in the year they are received. Grant income including research grants received in advance of conditions being met is deferred until those conditions are fully satisfied. Rental and interest income is recognised based on the period to which it relates.

Capital grants are recognised in the statement of financial activities when entitlement passes, and once the criteria of certainty and measurement are met.

EXPENDITURE

Costs of charitable activities comprises costs incurred directly or in support of scientific research whether carried out in the Institute's own facilities or in other laboratories. Raising funds represents the costs associated with trading and raising income including the Institute's rental activities and tenant services and investments.

All costs are allocated between the expenditure categories of the Statement of Financial Activities on a basis designed to reflect the use of the resource. Costs relating to a particular activity are allocated directly. Support costs, representing the staffing and associated costs of finance, personnel and general administration in supporting the operations of the Institute, are apportioned on an appropriate basis (see note 5).

RESTRICTED FUNDS

Income received by way of grants, sponsorship, donation or legacy which is directed by the provider as to be applied for specific purposes is accounted for within restricted income.

Awards applied within the terms dictated by the awarding authority on the acquisition or improvement of tangible fixed assets are also accounted for within restricted non endowment funds in full. The balance of the restricted fixed asset fund is reduced by the depreciation charges over the expected useful life of the asset. This treatment has been applied to reflect the assets being on land owned by a third party, therefore at the end of the lease they will revert to that third party (see further explanation below regarding the ownership of land and buildings). In addition, as detailed in note 19, there is a contingent liability to account to BBSRC UKRI for the net proceeds of disposal of fixed assets acquired with grant assistance and for recurrent grant in excess of the financing requirements.

DESIGNATED FUNDS

Unrestricted designated funds comprise sums set aside by the Trustee Directors for specific purposes including the acquisition and improvement of tangible fixed assets, the presentation of scientific conferences, and contributions towards capital to be replaced using the fully economic costing policy adopted by the Institute.

UNRESTRICTED FUNDS

Income received which is not directed by the provider to be applied for specific purposes to an extent which exceeds the constraints of the Institute's constitution is accounted for within unrestricted general funds.

FIXED ASSETS

Fixed assets with a cost of £10,000 or more are capitalised and depreciated to their estimated residual values set out below. Plant and machinery and fixtures and fittings with a cost of less than £10,000 are expensed in the year of purchase.

- Land – 99 years being the length of the lease from BBSRC UKRI
- Buildings – on a component basis, between 15 and 50 years
- Plant and machinery – 5 years on a straight line basis
- Fixtures, fittings, tools and equipment – 5 years on a straight line basis
- No depreciation is provided on assets in the course of construction
- Depreciation is charged from the date on which the asset becomes operational

The Institute includes in its financial statements leasehold land and buildings owned by third parties, that it occupies and enjoys through peppercorn leases, at their full value. Both leases have recently been renewed. The North side lease was renewed in December 2020 for 25 years and the South site lease for a term of 99 years. The Trustee Directors consider that in substance the risks and rewards of ownership of the assets have passed to the Institute, and as such follow a policy of recognising the assets on the balance sheet to reflect the continuing occupancy of these assets for the foreseeable future. The only circumstance under which the

Institute could be asked to vacate the site is due to a failure to deliver the required programme, which in the Trustee Directors view is highly unlikely.

Individual freehold and leasehold properties at the Pirbright site were revalued to fair value upon transition to FRS 102 (1 April 2014) with the surplus on book value being transferred to the revaluation reserve, except that a deficit which is in excess of any previously recognised surplus over depreciated cost relating to the same property, or the reversal of such a deficit, is charged (or credited) to the Statement of Financial Activities. The fair value at the transition date was recognised as the deemed cost of the assets.

INVESTMENT PROPERTY

Investment property is included in the balance sheet at fair market value in accordance with FRS 102 and, as such, no depreciation is charged in the year. Gains or losses arising from the revaluation are credited or charged respectively to the Statement of Financial Activities under net gains/(losses) on investments.

LEASED ASSETS

Rentals payable under operating leases are charged to the Statement of Financial Activities on a straight line basis over the lease term.

Assets acquired under finance leases are capitalised as tangible fixed assets and depreciated over their useful lives. Finance charges and interest are taken to the income and expenditure account in proportion to the remaining balance of capital repayments or net obligations outstanding.

Lease obligations on investment properties are treated as finance leases. The lease obligation is quantified at the point of the lease inception or the property becoming an investment property, whichever occurs late, based on the present value of the minimum lease payments, and is included in creditors.

Any adjustments to the rent payable under such leases due to periodic rent reviews is considered to be contingent rent. Contingent rent is treated as expenditure as it becomes payable.

STOCK

Laboratory consumables are valued at the lower of cost and net realisable value.

DEBTORS

Trade and other debtors are recognised at the settlement amount due after any trade discount offered. Prepayments are valued at the amount prepaid.

CREDITORS AND PROVISIONS

Creditors and provisions are recognised where the Institute has a present obligation resulting from a past event that will probably result in the transfer of funds to a third party and the amount due to settle the obligation can be measured or estimated reliably.

Creditors and provisions are normally recognised at their settlement amount.

FINANCIAL INSTRUMENTS

The Institute only has financial assets and financial liabilities of a kind that qualify as basic financial instruments. Basic financial instruments are initially recognised at transaction value and subsequently measured at their settlement value.

FOREIGN CURRENCY TRANSLATION

Monetary assets and liabilities denominated in foreign currencies are translated into sterling at the rates of exchange ruling at the balance sheet date. Transactions in foreign currencies are recorded at the rate ruling at the date of the transaction.

STAFF AND PENSION COSTS

Staff engaged at the Institute prior to April 2015 were previously employed by BBSRC UKRI and deployed back to the Institute.

Following the Transfer of Undertakings (Protection of Employment) exercise as of 1 January 2017, all BBSRC UKRI employees are now covered under the Institute's position as a separate legal entity. The Institute therefore retains responsibility for paying employment costs in relation to all employees, including basic pay and allowances, contractual payments, tax, national insurance and pension contributions. Employees engaged prior to April 2015 remain members of the Research Councils' Pension Scheme (RCPS), a defined benefit scheme for multiple employers. The BBSRC Employment Code remains applicable and frozen at the date of TUPE transfer.

The Institute does not have any liability for pensions other than for monthly employer contributions, the rate of which is determined by the Government Actuary's Department on a periodic basis. The cost of providing pension and related benefits is charged to the statement of financial activities. Some payments are to a defined benefit scheme as explained above and in Note 8 but there are no separately identifiable assets and the actuarial cost to the Institute is not known.

Consequently, it is not possible to supply the information referred to in Financial Reporting Standard 102, Section 28 and the Institute has accounted for the scheme as though it were a defined contribution scheme.

TAXATION

The Pirbright Institute is a registered charity within the meaning of the UK Taxes Acts and is, therefore, eligible to claim exemptions to income tax and capital gains tax.

JUDGEMENTS IN APPLYING ACCOUNTING POLICIES AND KEY SOURCES OF ESTIMATION UNCERTAINTY

Preparation of the financial statements requires management to make significant judgements and estimates. The items in the financial statements where these judgements and estimates have been made include:

- Depreciation, which has been charged in line with the accounting policy above.
- The amount of depreciation charged and net book value of the assets is included in Note 9.
- The Institute includes in its financial statements leasehold land and buildings owned by third parties because the Trustees consider that in substance the risks and rewards of ownership of the assets have passed to the Institute, and as such follow a policy of recognising the assets on the balance sheet to reflect the continuing occupancy of these assets for the foreseeable future. These assets are held at their deemed cost, being their fair value at the transition date of FRS 102.
- The judgements applied and the revaluation adjustments and net book value of the assets is included in Note 9.

NOTES TO THE TRUSTEES' REPORT AND FINANCIAL STATEMENTS

For the year ended 31 March 2022

1 INCOME FROM DONATIONS

	2022 £'000	2021 £'000
BBSRC UKRI – core strategic grant	15,513	15,449
Resource contribution grants	–	3,479
	15,513	18,928

All income from donations in the current and prior year was restricted.

2 INCOME FROM CHARITABLE ACTIVITIES

	2022 £'000	2021 £'000
<i>Grant income</i>		
BBSRC UKRI – research grants	3,522	2,960
BBSRC UKRI – other grants	25,375	43,885
Other research grants	12,288	11,345
	41,185	58,190
Other charitable activities	1,453	2,609
	42,638	60,799

Income from charitable activities includes restricted income from grants of £24,904K (2021: £43,687K)

All other income from charitable activities in the current and prior year was unrestricted.

The analysis by region of funder is set out below:

	2022 £'000	2021 £'000
United Kingdom	37,909	55,636
Europe	569	1,106
North America	2,944	2,573
Others	1,216	1,484
	42,638	60,799

INCOME FROM CHARITABLE ACTIVITIES (CONT)

	Unrestricted £'000	Restricted £'000	2022 Total £'000
Current year			
<i>Analysis of grant income</i>			
BBSRC UKRI			
Competitive Project Grant – research grants	3,522	–	3,522
Other grants	471	24,904	25,375
Total BBSRC UKRI	3,993	24,904	28,897
Defra “Umbrella” commission projects	2,395	–	2,395
Defra Surveillance	3,043	–	3,043
Other government departments, public sector	665	–	665
European Union	569	–	569
Industry, levy boards	1,572	–	1,572
Trusts, foundations, charities	906	–	906
Other research grant income	3,138	–	3,138
Total income – grants including research	16,281	24,904	41,185

	Unrestricted £'000	Restricted £'000	2021 Total £'000
Prior year			
<i>Analysis of grant income</i>			
BBSRC UKRI			
Competitive Project Grant – research grants	2,960	–	2,960
Other grants	198	43,687	43,885
Total BBSRC UKRI	3,158	43,687	46,845
Defra “Umbrella” commission projects	2,250	–	2,250
Defra Surveillance	2,697	–	2,697
Other government departments, public sector	540	–	540
European Union	1,106	–	1,106
Industry, levy boards	1,176	–	1,176
Trusts, foundations, charities	1,003	–	1,003
Other research grant income	2,573	–	2,573
Total income – grants including research	14,503	43,687	58,190

INCOME FROM CHARITABLE ACTIVITIES (CONT)

Ancillary trades and activities

Other charitable income consists of trades and activities which are ancillary to the charitable activities of the Institute:

	Unrestricted £'000	Restricted £'000	2022 Total £'000	2021 Total £'000
Royalties	373	-	373	388
Diagnostic testing	317	-	317	183
Supply of reagents	247	-	247	277
Other	516	-	516	1,761
	1,453	-	1,453	2,609

All Ancillary trades and activities income in 2021 was unrestricted

3 INVESTMENT INCOME

	2022 £'000	2021 £'000
Rental income and tenant services	930	849
Bank interest	29	107
	959	956

All investment income in the current and prior year was unrestricted.

4 ANALYSIS OF EXPENDITURE

	Staff costs £'000	Other direct costs £'000	Allocated support costs £'000	2022 Total £'000
Current year				
Unrestricted funds				
<i>Costs of raising funds</i>				
Rental income and tenant services	-	-	309	309
Investment management costs	-	10	9	19
<i>Charitable expenditure</i>				
Grants for scientific research	13,131	7,521	12,045	32,697
Rental income and tenant services	-	-	988	988
Other charitable activities	-	188	212	400
Total unrestricted expenditure	13,131	7,719	13,563	34,413
Restricted funds				
Cost of raising funds	-	-	316	316
Charitable expenditure	-	-	11,789	11,789
Total restricted expenditure	-	-	12,105	12,105
Total expenditure	13,131	7,719	25,668	46,518
Total expenditure – 2021	13,620	6,251	28,129	48,000

Included in allocated support costs are staff costs of £4,978K (2021: £5,034K)

	Staff costs £'000	Other direct costs £'000	Allocated support costs £'000	2021 Total £'000
Prior year				
Unrestricted funds				
<i>Costs of raising funds</i>				
Rental income and tenant services	-	-	312	312
Investment management costs	-	9	9	18
<i>Charitable expenditure</i>				
Grants for scientific research	13,620	6,043	11,976	31,639
Rental income and tenant services	-	(7)	970	963
Other charitable activities	-	206	216	422
Total unrestricted expenditure	13,620	6,251	13,483	33,354
Restricted funds				
Cost of raising funds	-	-	324	324
Charitable expenditure	-	-	14,322	14,322
Total unrestricted expenditure	-	-	14,646	14,646
Total expenditure	13,620	6,251	28,129	48,000

5 ANALYSIS OF SUPPORT COSTS

	Rental income and tenant services £'000	Investment management costs £'000	Grants and contracts for scientific research £'000	Science rental income and tenant services £'000	Staff restaurant £'000	Other charitable activities £'000	Total 2022 £'000	Basis of allocation
Current year								
Unrestricted								
Premises	178	-	7,650	888	67	-	8,763	% of floor area
Financial costs	25	9	567	44	25	25	695	time spent
Management	32	-	773	13	15	8	841	time spent
Human resources	54	-	398	-	16	-	468	time spent
Information technology	10	-	2,097	23	12	23	2,165	time spent
Procurement	6	-	473	18	12	6	515	time spent
Governance	4	-	87	2	2	1	96	time spent
	309	9	12,045	988	149	63	13,563	
Restricted								
Depreciation	303	-	8,526	807	50	-	9,686	
Repairs / compliance	13	-	2,278	128	-	-	2,419	
	316	-	10,804	935	50	-	12,105	
Total support costs	625	9	22,849	1,923	199	63	25,668	

	Rental income and tenant services £'000	Investment management costs £'000	Grants and contracts for scientific research £'000	Science rental income and tenant services £'000	Staff restaurant £'000	Other charitable activities £'000	Total 2021 £'000	Basis of allocation
Prior year								
Unrestricted								
Premises	174	-	7,473	867	65	-	8,579	% of floor area
Financial costs	27	9	593	46	27	26	728	time spent
Management	39	-	953	17	19	10	1,038	time spent
Human resources	54	-	391	-	16	-	461	time spent
Information technology	10	-	2,059	23	11	23	2,126	time spent
Purchasing and procurement	5	-	424	16	11	5	461	time spent
Governance	3	-	83	1	2	1	90	time spent
	312	9	11,976	970	151	65	13,483	
Restricted								
Depreciation	296	-	8,335	789	49	-	9,469	
Repairs / compliance	28	-	4,876	273	-	-	5,177	
	324	-	13,211	1,062	49	-	14,646	
	636	9	25,187	2,032	200	65	28,129	

6 NET (EXPENDITURE)/INCOME

	2022 £'000	2021 £'000
Net (expenditure)/Income is stated after charging:		
Auditor's remuneration		
- audit services	56	48
- non-audit services (taxation advice)	21	12
Depreciation	9,684	9,469
Loss on foreign exchange translations	27	189
Hire of plant and machinery	22	17
Rental of land and buildings	55	52

7 REMUNERATION OF THE MEMBERS OF THE TRUSTEE BOARD

None (2021: none) of the members of the Trustee Board received any remuneration from the Institute during the year. Eleven members (2021: eleven members) of the Trustee Board had travel expenses of £1,744 (2021:£907) reimbursed during the year.

8 STAFF NUMBERS AND COSTS

The average number of persons employed by the Institute (including members of the Governing Council) during the year, analysed by category, was as follows:

	Number of employees	
	2022	2021
Office, management and estate support	121	126
Scientific	240	247
	361	373

The aggregate payroll costs of these persons were as follows:

	2022 £'000	2021 £'000
Wages and salaries	13,967	14,103
Social security costs	1,432	1,418
Other pension costs	2,549	2,613
	17,948	18,134
	2022 £'000	2021 £'000
Termination payments:		
Redundancy	148	168
	148	168

At 31 March 2022 £60K (2021 £66K) of these payments were outstanding

Some employees of the Institute are members of the Research Councils' Pension Schemes, which are funded principally through employer and employee contributions.

The pension schemes are analogous to the Principal Civil Service Pension Scheme (PCSPS), except that while the schemes that are defined benefit schemes and provide retirement and related benefits on final emoluments, redundancy and capability ill health are administered and funded by the council, the pension schemes are administered by the Research Councils' Joint Superannuation Services and the schemes' finances are administered by BBSRC UKRI. It is an unfunded scheme, and there are no separately identifiable assets and the actuarial cost to the Institute is not known. Consequently, it is not possible to supply the information referred to in Financial Reporting Standard 102, Section 28 and the Institute has accounted for the scheme as though it were a defined contribution scheme.

The Institute pays employers' contributions at a percentage of scheme members'

pensionable pay and emoluments assessed by the Government Actuary's Department (GAD) on a periodical basis. The rate for the year was 26.0%, which was established following GAD's most recent assessment. The pension costs represent contributions payable by the Institute to the scheme and amount to £890,200 (2021: £1,011,524).

Since April 2015, all new staff are members of The Pirbright Company Pension, a defined contribution scheme administered by Aviva on behalf of the Institute. The Institute contributes 10% of scheme members' pensionable pay and emoluments. The pension costs represent contributions payable by the Institute to the scheme and amount to £1,658,814 (2021: £1,516,186).

Staff engaged at the Institute prior to April 2015 were previously employed by BBSRC UKRI and deployed back to the Institute. Following the Transfer of Undertakings (Protection of Employment) (TUPE) exercise as of 1 January 2017, all BBSRC employees are now employed by the Institute. The Institute therefore retains responsibility

for paying employment costs in relation to all employees, including basic pay and allowances, contractual payments, tax, national insurance and pension contributions. Employees engaged prior to April 2015 remain members of the Research Councils' Pension Scheme (RCPS), a defined benefit scheme for multiple employers. The BBSRC Employment Code remains applicable and frozen at the date of TUPE transfer. The Institute does not have any liability for pensions other than for monthly employer contributions, the rate of which is determined by the GAD on a periodic basis.

The key management personnel of the Institute comprise the Senior Leadership Board and the Trustee Directors (Note 7). The total employee benefits (including wages and salaries, employer's national insurance and pension costs) of the key management personnel of the Institute were £613,449 (2021: £558,121).

The number of staff with emoluments greater than £60,000, (excluding pension costs), was:

	2022 Number	2021 Number
£60,000 – £69,999	13	13
£70,000 – £79,999	6	6
£80,000 – £89,999	3	4
£90,000 – £99,999	4	4
£110,000 – £119,999	1	1
£140,000 – £149,999	1	1

The number of staff earning over £60,000 for whom retirement benefits are accruing under defined benefit schemes amounted to 14 (2021: 13) and the amounts paid in the year were £257K (2021: £273K)

9 TANGIBLE FIXED ASSETS

	Land and buildings £'000	Plant and machinery £'000	Fixtures etc £'000	Assets under construction £'000	Total £'000
Cost/revaluation					
At 1 April 2021	248,792	19,480	1,283	99,286	368,841
Additions	389	1,454	–	30,897	32,740
Transfers	–	77	–	(77)	–
At 31 March 2022	249,181	21,011	1,283	130,106	401,581
Depreciation					
At 1 April 2021	55,266	17,120	1,283	–	73,669
Charge for year historic	8,494	1,174	–	–	9,668
Charge for year revaluation	16	–	–	–	16
Disposals	–	–	–	–	–
At 31 March 2022	63,776	18,294	1,283	–	83,353
Net book value at 31 March 2022	185,405	2,717	–	130,106	318,228
Net book value at 31 March 2021	193,526	2,360	–	99,286	295,172

Land and buildings include land with a book value of £13,603K.

The Institute includes in its financial statements leasehold land and buildings owned by third parties, that it occupies and enjoys through peppercorn leases, at their full value. The North side leases was renewed in December 2020 for 25 years and the South side lease for a term of 99 years. The Trustee Directors consider that in substance the risks and rewards of ownership of the assets have passed to the Institute, and as such follow a policy of recognising the assets on the balance sheet to reflect the continuing occupancy of these assets for the foreseeable future. The only circumstance under which the Institute could be asked to vacate the site is due to a failure to deliver the required programme, which in the Trustee Directors view is highly unlikely. The Institute derives a rental income from some of the buildings included in its financial statements which has reclassified as investment properties, as per note 10.

The Institute used the option in FRS102 to use fair value at the date of transition to FRS102, (1 April 2014), as deemed cost on transition. GVA Grimley Limited, Chartered Surveyors, and an independent valuer derived these values from a professional valuation.

10 INVESTMENTS AND INVESTMENT PROPERTIES

Investment in subsidiary undertaking

Pirbright Innovations Limited was dormant during the current and previous year. The Institute owns the entire share capital of 100 ordinary shares of £1 each.

The assets and liabilities of the subsidiary were:

	2022 £'000	2021 £'000
<i>Current assets</i>		
Creditors: amounts falling due within one year	(8)	(8)
Net liabilities	(8)	(8)
Aggregate share capital and reserves	(8)	(8)

The Institute has provided for the deficit shown by the subsidiary undertaking by writing off the amount owed to it by Pirbright Innovations Limited.

Investment in associated undertaking

Genomia Management Limited was formed on 16 April 2004 and is a company limited by guarantee. The company was established by way of grants from the Department of Innovation, Universities and Skills and the European Regional Development Fund. The company manages the Genomia Fund the objective of which is to assist in the development of research output from the members into commercially realisable opportunities. The Institute has equal membership in this company with Roslin Foundation, Moredun Research Institute, Rowett Institute of Nutrition and Health and Scotland's Rural College (SRUC). The company's turnover for the year ended 31 March 2022 was £29,580 (2021: £93,722) and its net assets as at 31 March 2022 were £141,122 (2021: £161,678).

Investment in properties

The value of the investment properties were:

	2022 £'000	2021 £'000
At 1 April 2021	-	-
Revaluation in the year	2,000	-
At 31 March 2022	2,000	-

Part of the site in Pirbright is sublet to a third party. During the year the lease with the third party was renegotiated resulting in a new lease to 22 March 2025 being signed. In line with FRS 102, the signing of this lease has resulted in the recognition of an investment property in these financial statements. The investment property was valued at 31 March 2022 by RICS Registered Valuers from Powis Hughes Ltd. The valuers are not employees or officers of the Institute. Part of the Head Leasehold interest subject to the Boehringer Ingelheim leases at The Pirbright Institute, Ash Road, Pirbright, Surrey, GU24 0NF was valued as at 31 March 2022 by Powis Hughes Ltd acting as external valuer on the special assumptions that The Pirbright Institute is allowed to retain the rental but not the reversionary value of the land. The valuation has been carried out in accordance with the RICS Valuation – Global Standards 2022 (which incorporate the International Valuation Standards) and FRS 102 The Financial Reporting Standard applicable in the UK and Republic of Ireland on the basis of Fair Value using an Income Approach.

11 STOCKS

	2022 £'000	2021 £'000
Laboratory consumables	359	264

The Institute's stock consists of laboratory supplies for research purposes.

12 DEBTORS: AMOUNTS FALLING DUE WITHIN ONE YEAR

	2022 £'000	2021 £'000
Trade debtors	1,848	2,181
Prepayments	1,663	1,539
Accrued income	6,996	2,321
Other debtors	196	7,356
	10,703	13,397

13 CREDITORS: AMOUNTS FALLING DUE WITHIN ONE YEAR

	2022 £'000	2021 £'000
Trade creditors	3,547	2,484
Taxation and social security	156	550
Other creditors	-	154
Accruals	5,276	7,655
Deferred income	11,094	9,285
Short-term compensated absences	490	490
	20,563	20,618

14 RECONCILIATION OF MOVEMENT IN ACCRUED AND DEFERRED GRANT INCOME

	2022 £'000	2021 £'000
Accrued income	6,996	2,321
Deferred income	(11,094)	(9,285)
	(4,098)	(6,964)
Net deferred research grant income at the beginning of the year	(6,964)	(7,440)
Research grant income received during the year	(13,415)	(14,027)
Research grant money released to SOFA during the year	16,281	14,503
	(4,098)	(6,964)

15 FUNDS

	Balance 1 April 2021 £'000	Net income/ expenditure £'000	Transfer between funds £'000	Balance 31 March 2022 £'000
Current year:				
<i>Unrestricted funds:</i>				
General	7,504	(15,352)	15,263	7,415
Designated	2,493	(368)	(250)	2,375
<i>Restricted funds:</i>				
Fixed Asset Fund	317,191	13,394	(342)	330,243
<i>Other restricted funds:</i>				
Fixed Asset Project Support Costs	593	(396)	342	539
DP2 phase 2 occupation	1,224	(199)	-	1,025
BBSRC UKRI core grant funding	-	15,513	(15,513)	-
Brooksby support costs	1,573	-	-	1,573
Investment property revaluation	-	2,000	-	2,000
Other	68	-	-	68
	330,646	14,592	-	345,238

Unrestricted designated funds

Unrestricted designated funds comprise sums set aside for specific purposes including the acquisition and improvement of tangible fixed assets, the presentation of scientific conferences, and contributions towards capital to be replaced using the fully economic costing policy adopted by the Institute. This includes £1,173k for occupation costs relating to capital projects (2021: £1,661k), £100k to maintain scientific equipment capacity and capability (2021: £41k), £319k for group leaders and scientists (2021: £352k) and £783k for other projects (2021: £396k)

	Balance 1 April 2020 £'000	Net income/ expenditure £'000	Transfer between funds £'000	Balance 31 March 2021 £'000
Prior year:				
<i>Unrestricted funds:</i>				
General	5,102	(14,953)	17,355	7,504
Designated	3,026	(333)	(200)	2,493
<i>Restricted funds:</i>				
Fixed Asset Fund	284,798	29,400	2,993	317,191
<i>Other restricted funds:</i>				
Fixed Asset Project Support Costs	3,343	-	(2,750)	593
DP2 phase 2 occupation	1,620	(359)	(37)	1,224
IS4L Interim Insectary	6	-	(6)	-
BBSRC UKRI core grant funding	-	18,928	(18,928)	-
Brooksby support costs	-	-	1,573	1,573
Other	68	-	-	68
	297,963	32,683	-	330,646

FUNDS (CONTINUED)

Restricted funds

Restricted funds comprise grants received from funders specifically to be applied in the acquisition or improvement of tangible fixed assets or otherwise applied for such purposes as specified by the grants provided.

	2022 £'000	2021 £'000
Fixed Asset Fund		
Balance brought forward	317,191	284,798
Grants received	24,904	43,687
Depreciation/impairment (Note 6)	(9,684)	(9,469)
Revenue spend	(1,826)	(4,818)
Transfers	(342)	2,993
Balance carried forward	330,243	317,191

The Fixed Asset Fund represents funding received, principally from BBSRC UKRI, for the past and future acquisition of tangible fixed assets. These assets are built on land that is not owned by The Pirbright Institute. The capital fund has been set up to assist in identifying those funds that are not free funds and it represents the net book value of tangible fixed assets held by the Institute and amounts received for capital but not yet spent.

The unexpended balance of unrestricted designated funds and restricted funds is invested temporary and appears in the balance sheet under current assets.

Other restricted funds

Fixed Asset Project Support Cost grants have been received from BBSRC UKRI to provide funding towards support costs and overrun costs relating to the DP capital projects.

The Capital Rebuild Grant, Additional Construction Support has on approval from BBSRC UKRI been transferred to development phase 2 occupation fund. As part of the ongoing development, project funds from these reserves have been transferred to the Fixed Asset Fund.

The BBSRC UKRI core grant funding is received from BBSRC UKRI to ensure that the Institute's facilities are maintained at the necessary cutting-edge high containment level that is essential to provide a national capability.

Transfers between funds

	Unrestricted general funds £'000	Unrestricted designated funds £'000	Restricted funds £'000
Transfer of funds to general reserves	15,263	250	15,513

The transfers during the year are as follows:

In accordance with the original grant offer letter, core funding from BBSRC UKRI is required to be shown as restricted income. The Institute subsequently received confirmation that the income could be applied for general purposes and therefore the transfer of income to unrestricted funds has been made.

£250k has been transferred to designated reserves to support grant extensions arising from delays caused by Covid19 lockdowns. £342k has been transferred from the Fixed Asset Project Support cost restricted fund to the restricted fixed asset fund in respect of expenditure incurred and subsequently capitalised as construction in progress.

16 ANALYSIS OF NET ASSETS BETWEEN FUNDS

	Investments £'000	Fixed assets £'000	Net current assets £'000	Total £'000
Current year				
Unrestricted funds	-	-	9,790	9,790
Restricted funds				
Capital fund	-	302,945	12,015	314,960
Fixed Asset Revaluation Reserve	-	15,283	-	15,283
Investment Property Revaluation Reserve	2,000	-	-	2,000
Other restricted funds	-	-	3,205	3,205
	2,000	318,228	25,010	345,238
Prior year				
Unrestricted funds	-	-	9,997	9,997
Restricted funds				
Capital fund	-	279,873	22,019	301,892
Revaluation reserve	-	15,299	-	15,299
Other restricted funds	-	-	3,458	3,458
	-	295,172	35,474	330,646

17 FINANCIAL INSTRUMENTS

	2022 £'000	2021 £'000
Financial assets measured at amortised cost	2,044	9,537
Financial liabilities measured at amortised cost	(4,319)	(3,188)
	2,044	6,349

Financial assets measured at amortised cost comprise trade debtors, amounts owed by related parties and other debtors.
Financial liabilities measured at amortised cost comprise trade creditors, other tax and social security and other creditors.

18 COMMITMENTS

(a) Capital commitments at the end of the financial year for which no provision has been made:

	2022 £'000	2021 £'000
Authorised but not contracted for	6,113	28,835

The capital commitments of £6,113k (2021: £28,853k) will be funded by the BBSRC UKRI capital grants already awarded.

(b) Operating lease commitments

The Institute is committed to the following charges in respect of:

	2022 £'000	2021 £'000
Land and buildings		
Within one year	52	52
In two to five years	218	210
In over five years	250	293
Plant and Machinery		
Within one year	8	8
In two to five years	8	16

19 CONTINGENT LIABILITIES

There is a contingent liability to account to BBSRC UKRI for the net proceeds of disposal of fixed assets acquired with grant assistance and for recurrent and capital grants in excess of the financing requirements. No such liabilities existed at either 31 March 2022 or 31 March 2021.

20 RELATED PARTY TRANSACTIONS

Biotechnology and Biological Sciences Research Council part of UK Research and Innovation (BBSRC UKRI) BBSRC UKRI provides substantial funding to the Institute. The Institute is affiliated with BBSRC UKRI along with seven other institutes. Details of grants received from BBSRC UKRI are detailed in Notes 1 and 2. During the year, BBSRC UKRI charged the Institute £0, (2021: £0) for other costs and Engineering and Physical Sciences Research Council UKRI charged the Institute £42,134 (2021: £41,789) for other costs.

REFERENCE AND ADMINISTRATIVE DETAILS

Trustees:

Professor Vince Emery: Chair
Ian Bateman: Deputy Chair
Ian Black
Rona Chester
Jon Coles
Emma Griffin
Alison Hardy
Dr Paul Logan
Jane Tirard

Director of the Institute:

Professor Bryan Charleston MRCVS

Company Secretary:

Helen Watts, FCA

Registered office:

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