Public Health England

Protecting and improving the nation's health

Animal usage data for 2018 for the 3 PHE sites (including PBL)

The following tables provide the numbers of animals used, per species, at our scientific campuses at Porton, Colindale and Chilton, in 2018.

Read more about how and why we use animals in research.

Site	Mice	Rats	Hamsters	Guinea pigs	Rabbits	Ferrets	Turkeys	NHP
Porton	1193	0	267	166	0	153	0	114
PBL	439	0	0	1314	25	0	0	0
Chilton	2015	60	0	0	0	0	0	0
Colindale	35	0	0	51	0	19	12	0

Porton

All animals were used for the development and testing of vaccines or therapies to counteract diseases that cause a direct threat to human health world-wide. Research activities in 2018 included the development of drugs and/or vaccines against a large range of potential infectious threats (both viruses and bacteria).

Biothreat and emerging pathogenic agents

We have ensured that a drug intended for use in humans does not have adverse effects on non-human primates whilst generating an immune response to plague and have published that data (Plague vaccine). In addition, we continue to develop a patented vaccine to Q fever and helped identify a suitable vaccine against Monkeypox during the recent UK outbreak. We have also assessed three different therapeutics for use against Monkeypox infection.

We continued with the development of models of Rift Valley Fever Virus in mice and Hanta virus in Ferrets. We subsequently, used the RVF model to test the ability of a monoclonal antibody to prevent infection which was published.

We tested vaccines and therapeutics against Zika and Ebola. We also successfully tested the immunogenicity of a Lassa vaccine and the efficacy of a Hanta virus vaccine.

Tuberculosis

Work has been performed to support the global effort to combat tuberculosis. Using well established mouse, guinea pig and macaque models, data from our projects have provided significant support to the progression of novel treatments for Tuberculosis into clinical trials, enabling the identification of vaccine candidates which have the best chance of success. Furthermore, our projects have identified different virulence characteristics of relevant clinical isolates, including effects of multi-drug resistance on vaccine efficacy. Novel techniques were also successfully established to reduce animal numbers used for, and to refine pharmacokinetic data. A model of natural transmission of bacilli was also successfully achieved to further understand tuberculosis infection and to provide more relevant models for pre-clinical evaluation of novel interventions.

Studies in non-human primates have been conducted to assess the immunogenicity of new TB vaccine regimens and the data generated are informing human experimental medicine studies focused on the re-purposing of Bacillus Calmette-Guérin (BCG) vaccine. Efficacy assessments have supported the clinical development of new vaccine approaches and studies have identified a TB vaccine candidate capable of conferring a protective effect better than that provided by BCG administered by the conventional route of intradermal injection. Work continues to characterise and dissect the host immune response to identify correlates of risk, correlates of protection and biomarkers of disease, the identification of which would revolutionise TB vaccine development. monocyte:lymphocyte ratios in distinct populations

Clostridium difficile infection (CDI)

Our in vivo experiments, using the hamster model of CDI, have focussed on obtaining proof of concept for a novel oral antibody therapy to facilitate its journey to a Phase 1/2a clinical trial. In these experiments we have determined the best combinations of antibodies and the use of protease inhibitors to improve clinical performance.
In collaboration with commercial and academic partners, we are ready to prepare an Investigator's Brochure and Investigational Medicinal Product Dossier to gain approval for the Phase 1/2a trial. These excellent results also allow us to apply for funding for the clinical trial.

Our novel, toxin-based antigens have potential as vaccine candidates. An immunogenicity pilot study has been undertaken and results suggest that it may be possible to stimulate a mucosal immune response after systemic immunisation.

Influenza

A study using ferrets showed that a live attenuated influenza vaccine was able of either completely protect or to reduce disease caused by two unrelated strains of virus. No cross-reactive antibodies were detected, suggesting that a protective T-cell response is involved.

Porton Biopharma Limited (PBL)

PBL's work is focussed on quality-assured development of life-saving biopharmaceuticals. We manufacture the licensed product Erwinase® a childhood leukaemia therapy and the UK's licensed anthrax vaccine. The vaccine has, as part of its licence, the requirement to undertake a limited number of animal tests to ensure each batch of the vaccine is safe and efficacious. This involves mice and guinea pigs with more than half of this work being classified as mild or moderate, whilst the remainder was classified as severe.

Further information is available on the PBL website.
www.portonbiopharma.com/concordat-on-openness-on-animal-research

Chilton

Animals were used to investigate the impact of environmental hazards on the body, including both radiation, particles and chemical exposures. The majority of these animals were classified as having mild severity with some classified as moderate.

Since the introduction of reduced eye lens dose limits to ionising radiation for the protection of UK workers, there has been an increasing need for understanding of the biological mechanism(s) involved in radiation-induced cataract induction. Recent experimental work by Public Health England has identified a genetic strain-dependant influence on early DNA damage in the lens following low dose ionising radiation exposure, as well as an inverse dose-rate response of DNA damage in the lens. Both studies have recently been published in international journals and have added to our understanding of the influence of low dose and dose rate on the susceptibility of the lens to ionising radiation and cataract induction.

www.ncbi.nlm.nih.gov/pubmed/30359158

www.ncbi.nlm.nih.gov/pubmed/31320710

In addition, to the lens work, we have continued our experimental studies investigating how radiation may contribute to leukaemia or intestinal tumours, the effects of non-ionising radiation (such as that emitted by mobile devices) on the brain, and the responses to inhaled nanoparticles, diesel particles and/or dust mite allergens. Such work is important for understanding the potential health effects of radiation, particles and chemicals on exposed individuals.

Colindale

In total 51 guinea pigs were used in 2018. Guinea pig red blood cells are used for influenza H3 subtype assays and we also use their red blood cells in serology studies to determine the level of immune response in humans.

In total 35 mice were used. 11 mice were used for the detection of bacterial toxin assay (C Botulinum & C Tetani). This test is exclusively for testing clinical samples taken from patients that are suspected to have contracted the bacteria. The remaining 24 mice were used to raise antisera for human papilloma virus (HPV). The antisera raised will provide novel information which will inform a global health public priority, HPV vaccination.

In total 12 turkeys were used to supply normal red blood cells to be used in influenza assays. As a reduction and refinement, the birds are re-used and have a maximum of 5 bleeds each whilst on project.

In total 19 ferrets were used in 2018. 13 ferrets were used for to produce antisera for new and emerging strains of influenza, this work contributes to UK vaccine development. The remaining 6 animals were nasally vaccinated with live attenuated influenza vaccine (LAIV) to investigate virus shedding and immunogenicity. This test is used to support evaluation of the LAIV nasal vaccine used in the UK childhood influenza vaccination programme.