

The unique environment of the Babraham Research Campus enables the Institute to collaborate with several of the companies on site, including MedImmune, the global biologics research and development arm of AstraZeneca, to provide advice and mentoring on animal research and on developing their applications for Home Office licences.

Animal welfare practices across the Babraham Research Campus are well-regarded by those who use them, including the companies on the campus. The system of ethical review at Babraham ensures high standards of care are co-ordinated for the whole campus, and best practice is adopted wherever it is identified.

The collaboration helps the company scientists employ the most appropriate procedures, minimising animal use while facilitating their research, and enables them to benefit from independent ethical review of their work. The Institute enjoys an open and proactive relationship with the Home Office, which is responsible for overseeing and ensuring high standards of animal welfare in research in the UK.

## Thorough ethical review

Bioscience research at the Babraham Institute, and amongst the companies occupying the Babraham Research

### IMPACT SUMMARY

**As well as supporting excellent science at the Babraham Institute, the animal welfare and ethical review process also benefits companies on the Babraham Research Campus.**

**Institute scientists work with the companies to provide advice and guidance on the use of animals in research and on preparing Home Office licence applications that minimise the use of animals and ensure the highest standards of care for the animals while also supporting research goals.**

Campus<sup>4</sup>, relies on a variety of methods and technologies, including some animal research.

Animal research in the UK is governed by a strict system of Home Office licences<sup>5</sup>. Scientists need three separate Home Office licences to conduct animal research; a personal licence for the scientist carrying out the procedure, a project licence for the proposed research, and an establishment licence covering the entire research organisation. All animal research in the UK also has to be approved by an independent animal welfare and ethical review body (AWERB).

At Babraham, the establishment licence is held by Dr Geoff Butcher<sup>6</sup> and covers the entire research campus including the Babraham Institute itself, the MRC's Ares animal research facility and all of the companies on the Babraham site<sup>7</sup>. Any proposed research project that includes animal studies is subject to a thorough ethical review process, overseen by Butcher, and involving a committee of scientists and lay members.

"The feedback I've received from Home Office inspectors has always regarded our process as one of very good practice," says Butcher.

"They've told other people to look at ours and see how we do it. It's very hard work, and we've always tried to be inclusive. We have good lay members from outside the institute, some retired employees from the Institute. We are very probing with people."

## THE BABRAHAM INSTITUTE

The Babraham Institute, based on the Babraham Research Campus near Cambridge, UK, receives strategic funding from BBSRC for research into the biology of lifelong health and wellbeing<sup>1</sup>.

In 2013/14 the Babraham Institute received £28.8M<sup>2</sup> from BBSRC, consisting of Institute Strategic Programme Grants (ISPGs) and Campus Capability Grants (CCGs), capital and other funding. The ISPGs and CCGs from BBSRC provide strategic funding to help deliver the Council's priorities<sup>3</sup>. They enable the Institute to leverage funding from other sources, including industry. Support from BBSRC is complemented by funding from other Research Councils, especially the MRC, and medical charities such as Cancer Research UK.

The Institute plays an important role in the broader life science research community around Cambridge. Babraham researchers have established close links with local biotechnology companies, including those on the Babraham Research Campus. They also work with colleagues at the University of Cambridge, Addenbrooke's Hospital and the Wellcome Trust Genome Campus, amongst others.

These case studies illustrate the impact of major scientific breakthroughs at the Institute, and the development of the Institute's infrastructure and capability. Professor Michael Wakelam, Director of the Babraham Institute, says, "Long-term support from BBSRC has and continues to enable world-class bioscience at Babraham, which is leading to a wide range of current and future impacts from the Institute's research such as those outlined in these case studies."

## SUPPORTING EXCELLENT SCIENCE

The animal facilities at Babraham also support research at the Institute itself. Research involving laboratory animals has a long history at Babraham, including ground-breaking work in the 1970s and 1980s on the development of useful monoclonal antibodies through to current mouse genetics research on the PI3-kinase signalling pathway in cells. Early work used both rodents and a variety of farm species, although it is now limited to mice and rats. The health and husbandry of the animals is crucial for both good welfare and good science.

Current research led by people such as Dr Len Stephens, Dr Phill Hawkins, Dr Klaus Okkenhaug and Dr Martin Turner at Babraham into the PI3-kinase signalling pathway is leading to new treatments for cancer and chronic inflammation<sup>11</sup>. The research depends on mouse genetic studies to explore

the function of the PI3-kinase signalling pathway<sup>12</sup>. “A lot of the work of the Stephens and Hawkins lab and the Okkenhaug lab could not be done without the careful use of animal models. This is long-standing and likely to be very successful in the long-run,” says Butcher.

PI3-kinase mouse genetics research has also led to collaborations between Babraham scientists and researchers working for the pharmaceuticals industry. For instance, in 1999 Dr Martin Turner’s lab received funding from US pharmaceutical company ICOS to create a line of mice missing the gene for one of the PI3-kinase enzymes. The mice contributed to the development, by pharmaceutical company Gilead Sciences Ltd<sup>13</sup>, of a PI3-kinase inhibitor to treat chronic lymphocytic leukaemia, which has recently completed phase III clinical trials.

“I think it’s well-appreciated by the communities it’s meant to be serving,” he adds.

### Company mentoring

Those communities include several of the companies based on the Campus. “We do provide significant mentoring to small companies in how to accommodate themselves to the Home Office regulatory process,” says Butcher. “Many of the small companies are naïve in this area. They do need mentoring, and they need to go through the serious steps involved in understanding and communicating how they are going to apply the 3R’s<sup>8</sup> to their research. The whole of the ethical review process, and our named vet and named animal care and welfare officers (so-called because they fulfil specified functions under Home Office guidance), provide that.”

As well as the small bioscience companies on the campus, Butcher and colleagues also advise and support MedImmune, the global biologics research and development arm of AstraZeneca, which has a facility on the site<sup>9</sup>. MedImmune is interested in developing new therapeutics based on a class of molecules known as ‘monoclonal antibodies’ and use mice in their research. Butcher and the named vet at Babraham, Colin Gilbert, advise MedImmune scientists regarding how best to refine their research proposals and submit the required licence documentation.

“It’s a partnership,” says a MedImmune spokesperson. “How can we get this information from as few animals as possible? All the processes we go through with the Institute are geared that way. For us that is a very important stepping



A healthy mouse. The Babraham Research Campus animal welfare and ethical review processes are well-regarded by the Institute and company researchers who use them. Image: The Babraham Institute.

stone to making sure we get what we need. They are an enabling force for us to do our work.”

“We’ve come to understand each other, and what the other expects, and that’s vital to us. We couldn’t operate any other way now.”

Subjecting their work to the ethical review process at the Institute also ensures an efficient process when MedImmune scientists submit their licence applications to the Home Office, giving scientists the freedom to devote more time and energy to their research. Importantly for MedImmune, Butcher and other scientists at Babraham understand what MedImmune researchers are trying to accomplish. As a result they can provide constructive advice on the procedures MedImmune plan to use. This

collaborative relationship strengthens the science by providing alternative ideas and concepts which may not have been previously considered.

MedImmune has also sought international accreditation for their standards of animal care and welfare from the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC)<sup>10</sup>, a private, non-profit organisation that promotes animal health and welfare in scientific research. Both MedImmune and the Babraham Institute have been pleased that the ethical review process in place at the Campus for the scrutiny of research proposals and on-going experimentation has been well-received by AAALAC.

## REFERENCES

- 1 The Babraham Institute: <http://www.babraham.ac.uk/>
- 2 Figures from BBSRC Annual Report 2013/14. £28.8M consisting of £12.5M strategic funding, including the ISPGs and CCGs, £10.5M capital funding and £5.8M other funding, including competitive grants. See: <http://www.bbsrc.ac.uk/publications/accounts/bbsrc-annual-13-14.aspx>
- 3 BBSRC Strategic Plan: <http://www.bbsrc.ac.uk/publications/planning/strategy/strategic-plan-index.aspx>
- 4 The Babraham Research Campus: <http://www.babraham.co.uk/>
- 5 Research and Testing on Animals. The Home Office: <https://www.gov.uk/research-and-testing-using-animals>
- 6 Dr Geoff Butcher: <http://www.babraham.ac.uk/our-research/lymphocyte/butcher/>
- 7 Companies on the Babraham Campus: <http://www.babraham.co.uk/companies/companies.html>
- 8 For more information about the 3Rs, see: <http://www.nc3rs.org.uk/page.asp?id=7>
- 9 MedImmune: <https://www.medimmune.com/>
- 10 About the AAALAC: <http://www.aaalac.org/about/index.cfm>
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- 12 See, for instance:  

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- 13 See press release <http://www.gilead.com/news/press-releases/2014/7/us-food-and-drug-administration-approves-gileads-zydelig-idelalisib-for-relapsed-chronic-lymphocytic-leukemia-follicular-lymphoma-and-small-lymphocytic-lymphoma>. Note that CAL-101 was being developed by spinout company called Calistoga. Icos spun out Calistoga from its drug discovery programme to develop CAL-101, which inhibits PI3 kinase delta - In 2011, Calistoga was acquired by Gilead Sciences Inc.