

The benefits of optimising the role of Animal Technicians in biomedical research

MOLLY BURGESS and JAMIE WHITCHER

The Francis Crick Institute

Correspondence: molly.burgess@crick.ac.uk

Abstract

The primary role of an Animal Technician is to deliver excellent husbandry and promote Animal Welfare whilst supporting scientists in achieving their essential research objectives. Technicians are responsible for providing the animals in their care with a suitable environment, appropriate enrichment, ample food and water, as well as monitoring daily for signs of ill health or injury. They may also perform many of the routine regulated procedures required, such as administration of substances or sample collection.

Technicians are the key advocates for the animals they care for and hold a unique position within the facility. With investment into strengthening a team’s skillset, their in-depth familiarity and knowledge about the animals they care for daily can be further harnessed to enhance many aspects of research and Animal Welfare.

In this poster we will look at a range of areas where technicians can further support research and explore the benefits that this collaboration brings. From the direct benefits to the technicians themselves, the animals

in their care and to researchers and their research objectives with a focus on Animal Welfare, scientific consistency and staff development and retention.

Areas in which Animal Technicians can further support research:

Procedural support

Animal Technicians are in an ideal position to provide procedural support to aid researchers in their experiments.

At The Crick, our Animal Technicians regularly perform routine procedures such as administration of substances via intraperitoneal (IP) injection and oral gavage, weighing, tumour measuring, dissections and tissue biopsies for genotyping. (Figure 1)

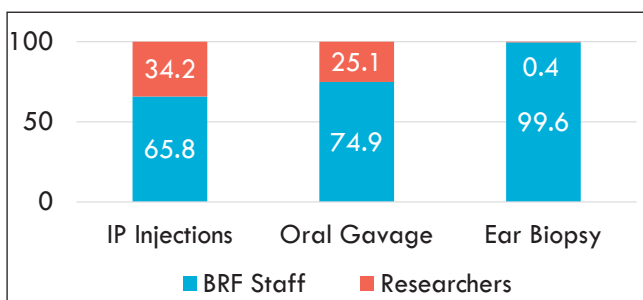


Figure 1. Percentage of routine procedures performed per person 2024.

“It can be challenging to get reliable dosing when you are not experienced. BRF technicians performed the injections and allowed our lab to get instantly good results. This also probably helped to reduce the number of animals by ensuring a low variability.”

A. Blot, Principal Laboratory Research Scientist

In addition to this, a range of other regulated and non-regulated procedures are increasingly being carried out by trained and competent unit staff on behalf of our researchers. This programme of developing and upskilling BRF staff was accelerated by the impact of COVID-19 and the subsequent reduction of on-site research staff. The BRF embraced this opportunity for Animal Technicians to provide a wider range of procedural support in their day-to-day operations.

Colony management

The efficient management of colonies is a fundamental part of optimising research, whether working with genetically altered or wild type strains.

Where Animal Technicians are provided with a foundation in basic genetics and are given the responsibility of managing colonies according to scientific requirement, they can further draw on their practical knowledge and experience.

Technicians can provide invaluable insights into the strains they care for and can utilise this to efficiently plan breeding strategies and appropriately decide the fate of stock animals. This hands-on approach can often maximise productivity whilst also ensuring colonies are not over-breeding. Cage side colony management allows technicians to adjust and adapt colonies accordingly without delay and removes the need to wait for instructions to be received.

When provided with the necessary information, such as experimental needs, or breeding aims, technicians can ensure research requirements are fulfilled, whether for the supply of experimental cohorts or complex breeding strategies.

“The lab has benefitted greatly from the BRF team managing our breeders. The breeding is more effective, as actions can be taken immediately instead of waiting for a task to be set up. It’s great to be able to give the team more responsibility for the mice they spend so much time looking after.”

N. Bernitz, Senior Laboratory Research Scientist

Necropsy

A necropsy is the post-mortem examination of an animal to determine cause of death or illness. Animal Technicians can be utilised to perform necropsies when animals are found dead or culled sick without an obvious explanation.

Where a technician discovers a health issue, it is the logical next step that they carry out the necropsy of these animals rather than sending the animal to the animal health team or researcher for them to perform. This helps develop the technicians’ technical skills as well as their understanding of basic anatomy, whilst also saving time as they can collect any relevant information immediately.

A technician's experience of caring for the animal gives them the best insight into its normal appearance and behaviour. They are in an ideal position to provide detailed information on any deviation from this, whether in terms of the animal itself, its environment or cage mates. They can also provide information on any similar cases across the strain or even other colonies within the facility.

Technicians will also be aware of any other factors such as issues with environmental conditions or equipment which may be relevant and could lead to any unexpected issues with the animals.

By carrying out necropsies, technicians can help to establish whether health concerns could be linked to a procedure, genetics, or infection, as well as determining actual severity and spotting trends in colonies. Findings

“Working with animals within a research setting is rewarding because we get to see the good that can come from our work first hand.”
P. Sinclair-Jones, Animal Technician

“Working closely with scientists gives us the opportunity to learn a range of procedures. This is great, as more involvement makes us more invested in the projects which can help motivate us. By learning more procedures, we are also better suited to providing further support in the future.”
S. Cooper, Animal Technician



Benefits to the Animals

- Focus on 3Rs - high welfare standards
- Animals taken care of by technicians whose sole focus is husbandry and welfare
- A routine is maintained when the same technician performs daily tasks and procedures, leading to less stress for the animals
- Technicians attend a variety of meetings and are often very aware of refinements in techniques etc so have a contemporary knowledge of good practice
- Colonies streamlined for maximum efficiency and minimal wastage

from necropsies can also help to identify areas for review, such as unexpected harmful phenotypes, or experimental effects.

Training and support

An investment of time and resources into training is vital in enabling Animal Technicians to make a significant impact when supporting scientific research. A well-trained technician can offer support in many aspects of research including colony management and breeding strategies, procedural support and animal health and welfare.

At The Crick, continued professional development (CPD) allows technicians to continuously expand their skills, knowledge and experience, enabling them to further support researchers in achieving high-quality results. Early in their careers, our technicians are required to complete a Level 2 Diploma in Laboratory Animal Science and Technology and gain their personal licence. Additionally, this learning is supplemented with practical training and attendance of a range of workshops covering topics such as genetics and colony management, providing the opportunity to learn technical skills and the theory behind them. The Level 3 Diploma in Animal Science and Technology is an optional qualification that is available for technicians to undertake if they wish to expand their learning further.

Several staff have attended an assessor course and are now qualified assessors. These technicians are heavily involved in the training and competency checking of our researchers, ensuring good practice and consistency across techniques being carried out.

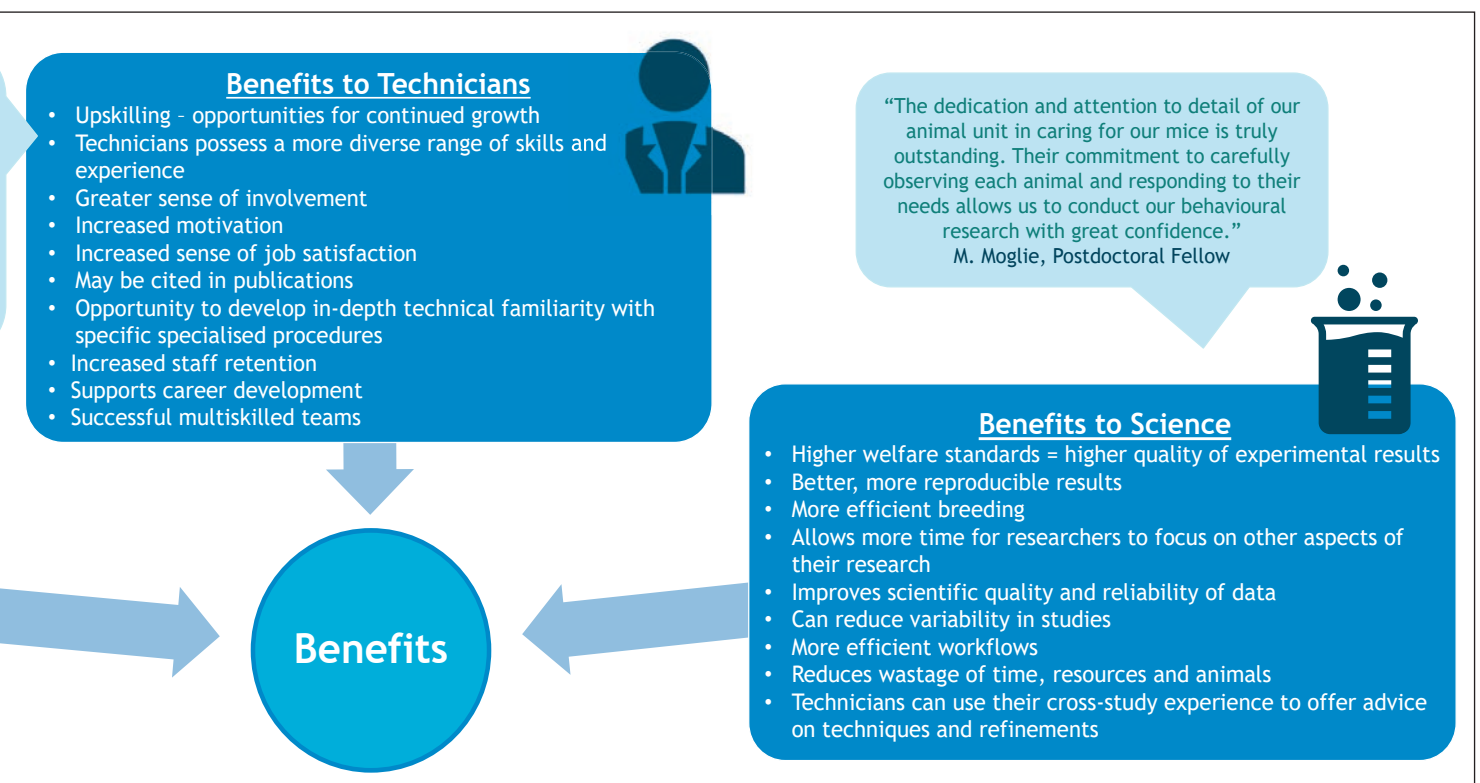
“Technicians are eager to be trained and help with procedures, which frees up valuable time for me. I like to share my results so they can see how their efforts are helping contributing to the world class science we are doing together.”

**T. Nguyen,
Doctoral Clinical Fellow**

Developing opportunities for Animal Technicians at The Crick

The Crick is continuing to invest in CPD and upskilling its Animal Technicians. The BRF team routinely explore opportunities for technicians to further support research, with a focus on expanding our existing range of skills to complement current and anticipated research requirements. As new techniques are introduced or developed, there are always more skills to be learnt, or techniques to be refined.

Figure 2 shows a sample of the initiatives we are currently exploring with our technicians:



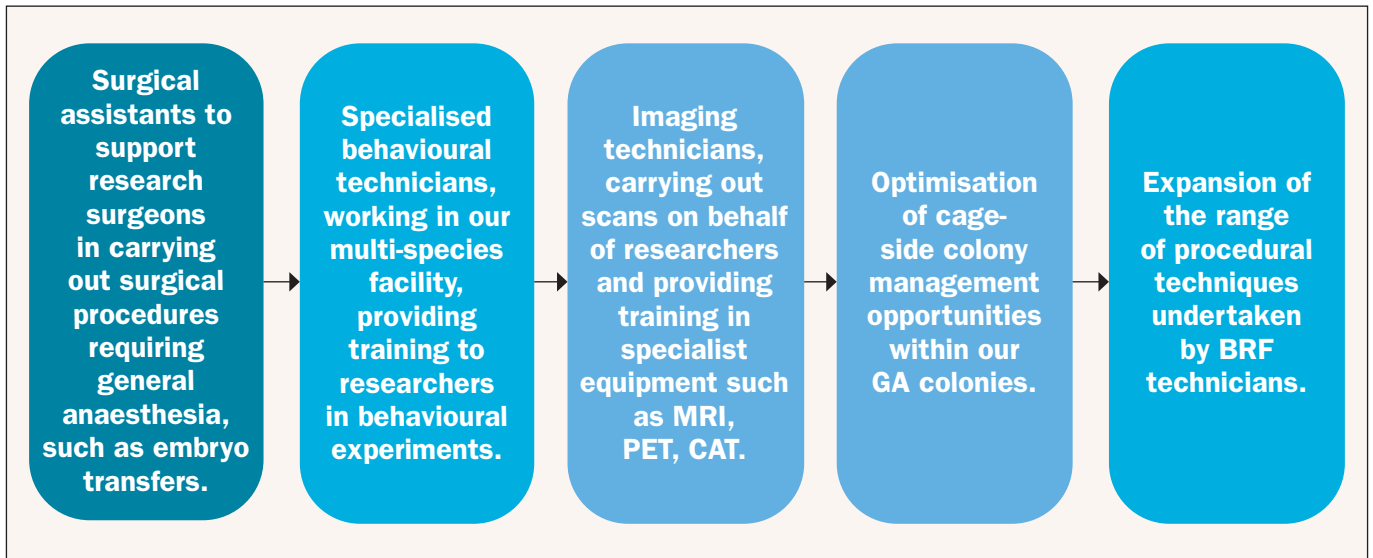


Figure 2.

Conclusion

Whilst involving Animal Technicians does require an investment of time, training and resources, it can be hugely beneficial to all involved.

At The Crick we have found that in providing opportunities for animal care staff to take on a wider range of responsibilities, this leads to increased job satisfaction, whilst also making work streams more efficient and importantly in many cases has a direct positive impact on the animals we care for.

By unlocking the full potential of Animal Technicians, facilities can offer a more comprehensive service to their researchers whilst simultaneously increasing technician engagement.

Acknowledgements

Anna Sullivan, Helen Bailey, Sam Cooper, Flora Sands, Lydia Thomopoulou, Kerry Stoneman and Clare Brazill-Adams.

“Technical staff are an invaluable component of the research community. They act as a great reservoir of knowledge offering husbandry, technical and procedural knowledge. Their specialised expertise ensures a high-quality result both scientifically and for welfare. Their efforts allow for research to continue seamlessly through a wide range of supportive responsibilities including the management of colonies and by performing procedural work.”

V. Mitchener, Research Scientist