

### Animal Research: Critical, Challenging & Creative Thinking

**Course description:** This online course is aimed at Bioscience research students at any stage of their MPhil or PhD projects, or young researchers who are actively planning and/or conducting research involving the use of live animals, animal derived material or animal-derived data.

The course is comprised of 4 scheduled live webinars, one reading activity, two activities for participants to complete and return in their own time, plus an optional 20minute 1:1 following the course to discuss individual project details or answer any remaining questions.

Session 1: Introduction to animals use and the 3Rs

Session 2: Animal Research Integrity

Session 3: Common experimental design pitfalls and how to avoid them

Session 4: Animal welfare and the 3Rs in practice

Following a brief introduction explaining the history behind the use of animals as research models participants will consider the range of Societal opinions that exist in relation to the conduct of animal research, the ethical theories than underpin these opinions and how social ethics are taken into account within the current licensing system. Participants will also be introduced to the 3Rs principles of humane experimental techniques and consider examples of each in practice. The second session will provide an overview of what research integrity means in practice specifically for those working within the laboratory animal sciences. During session three participants will learn about the most common experimental design errors made when planning animal studies and the tools and resources (including PREPARE) that exist to support them to avoid these pitfalls. Research reporting standards, including the ARRIVE guidelines will also be discussed. The final session focusses on animal welfare and implementation of the 3Rs. Participants will be introduced to the concept of marginal gains and the refinement loop whilst considering a lab animals lifetime experiences and reflect upon what they can do to provide research animals with ‘a life worth living’. Throughout this course participants will be supported to think critically and creatively with respect to how they plan, conduct, review and communicate their own research projects.

NOTE - This course does not require participants to hold a personal licence or to have undertaken licensee training. It is intended to compliment licensee training, not duplicate it.

#### **In summary:**

<b>Course title</b>	Animal Research: Critical, Challenging and Creative Thinking
<b>Who for</b>	Bioscience research students, or young researchers at any stages of their research project who wish to gain greater understanding of how to plan, conduct, review and communicate their research in accordance with current good practice guidelines.

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<b>Length</b>	4x 2.5-hour webinars, including interactive activities comfort breaks.
<b>Format</b>	Interactive mix of live webinar presentations, plus individual and group activities with discussion.
<b>Overall Purpose</b>	To support participants to: think critically when reading research and designing their own experiments; challenge research methods, models and practices to identify the best approach to test their hypothesis; be creative and innovative in how they conduct and communicate their research.
<b>Key content</b>	<p>1. Theory:</p> <ul style="list-style-type: none"> <li>• Introduction to animal use in research and the 3Rs includes: the historical context for animal use in research, the range of Societal viewpoints on the use of animals in research and ethical theories unpinning them, an introduction to the 3Rs principles of humane experimental technique.</li> <li>• Animal research integrity includes: discussion of the research framework as it relates to the responsible use of animals in bioscience research; expectations regarding openness and transparency and good practices relating to the dissemination of research outputs. The culture of research will be discussed, along with relevant real-life examples of non-compliance, fabrication, falsification, plagiarism, improper conduct and misrepresentation.</li> <li>• Common pitfalls in experimental design, how to identify and avoid them includes: topics to help maximise the robustness, reliability and reproducibility of results (how to maximise statistical power, sources of bias, identifying the experimental unit, hypothesis testing); a brief introduction to systematic reviews and meta-analysis; plus the free tools and resources available to help support the effective planning and reporting of research, including the PREPARE and ARRIVE guidelines.</li> <li>• Introduction to animal welfare and the 3Rs in practice includes: what is animal welfare and why it is important; factors to consider throughout an animal's lifetime experience; potential sources of uncontrolled variables and confounding factors; and an introduction to concepts such as the refinement loop and marginal gains.</li> </ul> <p>2. Activities:</p> <ul style="list-style-type: none"> <li>• Participants will write and receive feedback on a non-technical summary of their research project</li> <li>• Participants will discuss real-life case studies of common misconduct issues and ethical dilemmas</li> </ul>

	<ul style="list-style-type: none"> <li>• Participants will use the ARRIVE guidelines to assess a research paper, what is/is not reported, and how this impacts the results, conclusions, and study reproducibility</li> <li>• Participants will write and receive feedback on a draft experimental protocol to apply what they have learnt, identify opportunities to implement the 3Rs and any additional training/mentoring needs they may have.</li> </ul>
<b>Learning outcomes</b>	<p>By the end of this course delegates will be able to:</p> <ul style="list-style-type: none"> <li>• communicate their research in an open and transparent manner, with an informed understanding of how animals are used for scientific purposes within the UK and of the range of societal opinions that exist on this issue.</li> <li>• recognise what responsible, ethical, good practice research conduct means in the context of their individual research project, and why it is important for the quality, reproducibility and reliability of their research data.</li> <li>• design and plan their experiments using a range of tools and resources that are available to support them to implement best practice.</li> <li>• understand what good animal welfare means, consider what factors can impact on the welfare of the animals used in research, and reflect on how the 3Rs can be effectively implemented during the course of their own research project/activities</li> </ul>
<b>Pre-requisites/pre-work</b>	None
<b>Course provider</b>	Responsible Research in Practice
<b>Course Tutor</b>	Nikki Osborne
<b>Max no. of attendees</b>	10
<b>Specifications</b>	The course can be tailored to individual establishment requirements and the individual webinars that make up the course run at a frequency to suit the client institution.