

MMRRC – Helping to Optimize and Enhance Scientific Rigor, Transparency & Experimental Reproducibility

Background

Over the past several years, there has been a growing awareness of the need for rigorously designed published research studies that are both transparent and reproducible. In response to this need, the National Institutes of Health (NIH) launched on January 25, 2016 a formal initiative aimed at improving research reproducibility through an emphasis on scientific rigor and transparency.

MMRRC's Commitment to Optimizing Reproducibility

The MMRRC is committed to upholding the highest standards of experimental design and quality control to optimize the reproducibility of research studies using mutant mice. For example, understanding, documenting, and accurately reporting the genetic backgrounds of mouse models used in research is essential for recreating an experimental study and achieving reproducible results.

If research is to be reliable and reproducible, specific quality control and assurance testing need to be in place. This is why mouse models available from the MMRRC repository are annotated with well documented genetic backgrounds. Furthermore, because of our commitment to maintaining specific-pathogen-free vivaria and quality control measures, investigators can rely on mice obtained from the MMRRC to generate robust and reproducible results.

What is Scientific Rigor & Transparency?

Specifically, the NIH defines scientific rigor as “the strict application of scientific method to ensure unbiased and well-controlled experimental design, methodology, analysis, interpretation, and reporting of results.” Scientific rigor also includes transparency in reporting full experimental details so that others may reproduce experimental procedures and extend the findings.

The MMRRC helps you address the NIH's new focus areas of rigor and transparency:

Scientific Premise – the MMRRC provides genetically-engineered mouse models for virtually every field of biomedical research ranging from neurobiology to infectious disease. These mouse models are critical to the advancement of our understanding of health and disease.

Rigorous Experimental Design - the MMRRC provides authentic and key biological resources that are easily reported and described using unique identifiers (e.g., RRID numbers) to ensure full transparency so that others may obtain the same models with which to reproduce studies.

Consideration of Relevant Biological Variables - models from the MMRRC are genetically defined (including background strain genetics, incipient congenic strains and congenic strains) and confirmed specific-pathogen-free. Moreover, the MMRRC has extensive expertise in troubleshooting how other biological variables, such as husbandry factors, microbiota and sex, may modulate phenotypes.

By obtaining mice from the MMRRC you eliminate the risk of genetic drift or contamination with adventitious pathogens that potentially can arise through the use of long standing in-house colonies or obtaining mice from colleagues. Furthermore, mice obtained through the MMRRC minimizes interlab variability and negates the need for extensive re-genotyping and phenotyping.

In addition, the MMRRRC supports the NC3R's ARRIVE (Animal Research: Reporting of *In Vivo* Experiments) initiative to improve the reporting of research using animals. The MMRRRC centers' stand behind and support efforts with 3R development, training and advances and as such adheres to standardized reporting guidelines.

Career Development Assistance

In addition to a commitment to reproducibility, the MMRRRC provides training opportunities in research using genetically-altered mice. We believe in fostering the development of outstanding scientists and to help them expand their potential to make significant contributions in their field of research. The MMRRRC has the ability to provide training through guest lectures, webinars, seminars, and workshops in areas including nomenclature and biological variables to name just a few.

If you are interested in learning more about educational training and career development please contact service@mmrrc.org directly to find out how MMRRRC can assist you with your educational needs.

Authentication of Mice Using the Strain Detail Sheet

At the MMRRRC we document, verify and authenticate each detail on our archived strains. Investigators wishing to publicize information about their strains on their own web site may want to include a link to the MMRRRC's Strain Detail Sheet (SDS) for their specific strain. This would save visiting investigators from having to locate it themselves. On the SDS page, investigators will find information provided by the donating investigator, additional information curated by the MMRRRC, relevant genotyping protocols and specifics about husbandry, care, and management. In addition, users can find information on availability and prices, including fees for shipping and handling, for available product items. The online request form can be accessed directly from a strain's SDS page.

How to Acknowledge MMRRRC Mice

Your research is important to the MMRRRC and the greater research community. By obtaining mice from the MMRRRC, we respectfully request that you acknowledge the MMRRRC (Mutant Mouse Resource and Research Center) in your research publications. Suggested text to include in publications, grants, and presentations is provided below. As an NIH-supported, not-for-profit resource center, your acknowledgement is vital to inform others of our commitment to rigor, transparency and reproducibility. We ask that investigators provide via email (service@mmrrc.org) copies of any published papers using products obtained from the MMRRRC.