



Meet the Expert

Masahito IKAWA, PhD

Dr. Ikawa is a Professor of the Research Institute for Microbial Diseases and Director of the Animal Resource Center at Osaka University. In these capacities, Dr. Ikawa runs an active transgenic program in his lab, Center, and Institute that includes the use of CRISPR/Cas9 to produce mutant mice with a focus on male infertility. Dr. Ikawa earned his PhD degree in 1997 from the Osaka University, Osaka, Japan (mentored by Drs. Masaru Okabe and Yoshitake Nishimune), and spent 2 years of postdoctoral training at the Salk Institute, San Diego, USA (mentored by Dr. Inder Verma).

Dr. Ikawa received the Japanese Association for Laboratory Animal Science Young Investigator Award (1998), the JSPS Prize from the Japan Society for the Promotion of Science (2012), the Research Award from the Society for the Study of Reproduction (SSR; 2017), and the Japanese Association for Laboratory Animal Science Ando-Tajima Award (2021). He co-chaired SSR annual meeting program in 2019.



Major Research Interests

Dr. Ikawa's research focus is to mechanistically study the mammalian reproduction system *in vivo* using gene-manipulated animals. He was the first to generate "green mice" expressing GFP ubiquitously and sperm specifically. He also generated a knockout of Calmegin, a testis-specific endoplasmic reticulum chaperone, and showed that these knockout male mice are sterile due to defective sperm migration through the utero-tubal junction and altered binding to the zona pellucida. To date, his group has used both the conventional gene targeting and the CRISPR/Cas9 system to generate over 400 knockout lines of mice, including mice with mutations in male-reproductive tract-specific genes. Recently, the group clarified the NELL2-ROS1-OVCH2 mediated lumicrine signaling is required for sperm ADAM3 maturation and male fertility. Further, they found six novel sperm proteins as are necessary for the sperm-egg fusion process.

Besides, during and after his postdoctoral training, he has established the Sertoli cell-specific gene manipulation system with lentiviral vectors and applied it to rescue male infertility. He also developed placenta-specific gene manipulation methodology by transducing pre-implantation blastocyst with lentiviral vectors. Dr. Ikawa has published over 250 papers, and his research has appeared multiple times in *Nature*, *Science*, *Proceedings of the National Academy of the Sciences of the United States of America*, and *Biology of Reproduction*, among many others. He serves on the Editorial Board for *PLoS Biology*, *Biology of Reproduction*, *Experimental Animals*, and *Asian Journal of Andrology*.

Relation to Asian Journal of Andrology

Dr. Ikawa is proud to serve on the *Asian Journal of Andrology* Editorial Board and handles research papers on spermatogenesis, spermiogenesis, and sperm function.

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