

# International Conference on Genetic Engineering & Genetically Modified Organisms

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## Rapid targeted genome modification in mice, rats and rabbits

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The rat, rabbit, zebrafish, and pig have long been important experimental models in multiple fields of study. Unlike the mouse, efficient gene targeting in these species has remained a near impossibility with researchers forced to rely on random methods of mutagenesis. The zinc finger nuclease technology is a well-established tool for targeted manipulation of genomes and has been utilized extensively for a broad array of *in vitro* applications. We have now taken this technology and applied it *in vivo*. Data will be presented on the creation and characterization of targeted “knockout” mice, rats, and rabbits where key genes have been removed from the genome. Using zinc fingers we have created rat models such as a *p53* knockout rat, a suite of drug transporter knockout rats, and a suite of knockout rats that model Parkinson’s disease. Furthermore, data will be presented on the addition (“knock-in”) of genes, in a targeted manner, into the rodent genomes as well as the creation of conditional knockouts and humanized models.

### Biography

Edward Weinstein is the Director of Sigma Advanced Genetic Engineering, where he manages a state-of-the-art facility dedicated to creation of genetically engineered mouse, rat and rabbit models designed for research use. Prior to this position, he served as a Principal Scientist in the R&D division and Manager of Operations for Functional Genomics in the Research Biotechnology business unit of Sigma-Aldrich. Before joining Sigma, he performed basic research within the pharmaceutical industry. Edward had responsibility for the Molecular Profiling portfolio within Merck’s oncology franchise. His work there centered on discovery of new therapeutic targets as well as biomarkers for drug safety and efficacy. At Pfizer, he worked on development of several therapeutic targets, developing mouse models for breast and colon carcinoma. He completed his master’s in Medical Science from Harvard Medical School and his Ph.D. in Genetics from Harvard University where his research focused on mouse models of mammary gland carcinoma. Throughout his career Edward has focused on the application of animal models for the elucidation of mechanisms of complex disease processes.

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