

## **Sigma-Aldrich's Targeted Knockout Rat Ranks in Top Five of The Scientist Magazine's Top 10 Innovations of 2009**

### **World's First Knockout Rat Developed Using Proprietary CompoZr ZFN(TM) Technology; 2009 Award Builds on 2008 CompoZr ZFN Win; Encompasses Proof of Concept**

ST. LOUIS, Dec 03, 2009 /PRNewswire-FirstCall via COMTEX News Network/ -- Sigma-Aldrich(R) (Nasdaq: SIAL) today announced that the world's first targeted knockout rat, made using its proprietary CompoZr(TM) Zinc Finger Nuclease (ZFN) technology, has been ranked fifth in the "Top 10 Innovations of 2009" by *The Scientist*(R) magazine. The scientific breakthrough, first announced in July 2009, detailed how CompoZr ZFN was used to create 'knockout' rats - animals with permanent, heritable gene mutations - that are now being used to develop novel genetically modified animal models for disease research. This advance in transgenics has far-reaching and positive implications for identifying and treating serious diseases and medical conditions. The entire list of Top Innovations of 2009 can be accessed at [www.the-scientist.com/top10innovations](http://www.the-scientist.com/top10innovations).

Judged by a panel of four leading scientific experts that have collectively published more than 600 academic papers, *The Scientist's* "Top 10 Innovations" ranks the year's best innovative technology introductions into the life science market. This award is in addition to the magazine's 2008 award for Sigma-Aldrich, where the company's CompoZr ZFN technology placed third. According to expert judge H. Steven Wiley: "This advancement shows the real power of the ZFN technology. Gene knockouts have proven to be revolutionary in understanding gene function, but have been mostly restricted to mice and simpler model organisms. ZFN technology provides a new approach for making knockouts in a greater variety of organisms."

In July 2009, proof-of-concept was established in a published study in which scientists from the Medical College of Wisconsin, led by Dr. Howard Jacob, used ZFN technology to create the world's first targeted Gene knockout rat. Scientists were able to knock out an inserted reporter gene and two native rat genes without causing measurable effects on other genes. Importantly, offspring of the ZFN-mutated rats also carried the modifications, demonstrating the genetic changes were permanent and heritable. Together, these results demonstrated the ability to deliver engineered ZFNs into early-stage embryos and rapidly generate heritable, knockout mutations in a whole organism.

"For this innovation to be recognized and confirmed by *The Scientist* and our peers in the scientific community is a great honor for Sigma-Aldrich and validates the power and broad applicability of the CompoZr Zinc Finger Nuclease technology and what it can accomplish to accelerate research," commented Dr. Dave Smoller, President, Sigma Research Biotechnology. "These new breakthroughs accelerate our goals to develop and provide innovative products, technologies and services that will enable Sigma-Aldrich to be the leading destination place for life science researchers to access deep biological information in order to resolve their biological questions."

"We are entering a new and exciting phase in the development of genetic research in which 'knockout' and 'knock-in' transgenic technologies will not only provide scientists with powerful new tools to study human diseases, but will enable the accelerated development of animal models targeted at specific diseases and medical conditions," added Dr. Edward Weinstein, Director of SAGE(TM) Labs, the company's genetic engineering laboratories focused on designing and producing off-the-shelf and custom animal models. "Using CompoZr ZFN, knockout rats and mice can be generated in as little as four months, about one-third of the time required to make conventional knockout models using embryonic stem cell based approaches. This technology has the potential to eliminate years of research time, make research more cost effective and potentially save lives."

Sigma-Aldrich is the premiere resource for commercial zinc finger nuclease technology and markets its CompoZr ZFN products and services in an exclusive partnership with Sangamo( )BioSciences. For more information on Sigma-Aldrich's CompoZr Zinc Finger Nuclease technology platform, visit <http://www.compozrznf.com> or email the company at [zfn@sial.com](mailto:zfn@sial.com). For information on SAGE Labs and Sigma-Aldrich gene editing technologies, visit [www.sageresearchmodels.com](http://www.sageresearchmodels.com).

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The foregoing release contains forward-looking statements that can be identified by terminology such as "far reaching and

potential implications," "provides a new approach," "ability to deliver," "validates," "will enable," "will not only provide," "can be generated" or similar expressions, or by express or implied discussions regarding CompoZr ZFN, or regarding potential future revenues from products derived therefrom. You should not place undue reliance on these statements. Such forward-looking statements reflect the current views of management regarding future events, and involve known and unknown risks, uncertainties and other factors that may cause actual results to be materially different from any future results, performance or achievements expressed or implied by such statements. There can be no guarantee that products derived from CompoZr ZFN will continue to meet the demands of the marketplace. Nor can there be any guarantee that any of these products will achieve any particular levels of revenue in the future. In particular, management's expectations regarding these products could be affected by, among other things, unexpected regulatory actions or delays or government regulation generally; the company's ability to obtain or maintain patent or other proprietary intellectual property protection; competition in general; government, industry and general public pricing pressures; the impact that the foregoing factors could have on the values attributed to the Company's assets and liabilities as recorded in its consolidated balance sheet, and other risks and factors referred to in Sigma-Aldrich's current Form 10-K on file with the US Securities and Exchange Commission. Should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, actual results may vary materially from those anticipated, believed, estimated or expected. Sigma-Aldrich is providing the information in this press release as of this date and does not undertake any obligation to update any forward-looking statements contained in this press release as a result of new information, future events or otherwise.

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