The world’s first targeted knockout rat models of autism spectrum disorders

Horizon has partnered with Autism Speaks to develop an innovative collection of knockout rat models of the Autism Spectrum Disorders.
Rats offer numerous advantages over mouse models, including superior behavioural modeling and technical advantages afforded by their larger size. Rat models enable the study of behaviors absent in mice, including juvenile play behaviour, a translationally relevant endpoint for autism. Modeled in the Sprague-Dawley background strain, these innovative models allow the performance of safety and efficacy studies in the same species, eliminating dosing guesswork.

FMR1 and NEUROLIGN 3 KO rats faithfully model the core features of autism including reduced social interaction, presence of repetitive behaviors, and impairments in communication.

Gene knockouts include

- FMR1
- NEUROLIGIN 3
- NEUREXIN 1
- MGLUR5
- MECP2
- CNTNAP2
- PTEN
- MET

MeCP2 KO rats investigated a strange similarity to WT counterparts, but exhibited fewer direct contact and play behaviors

![Graph showing behavior frequency for Sniff-Follow, Contact, and Play behaviors for wildtype (wt) and knockout (ko) rats. The graph shows a statistically significant difference (p < 0.01) between the two groups for all behaviors depicted.](attachment:graph.png)