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Transgenically Modified ApoE KO Rats

Research has identified a mechanism causing sudden death from laryngospasm in an epilepsy model and developed a solution that eliminates this risk, offering critical insights for preventing sudden unexpected death in epilepsy (SUDEP) and other sudden death scenarios.

Therapeutic development often utilizes transgenically modified animals that lack a specific protein. By "knocking out" a gene and observing the corresponding phenotype, investigators can get a better sense of the role that a specific protein plays. Rodent models are particularly useful as many of the physiologic characteristics are similar to humans, while gene modifications are much easier in mice and rats.

A Purdue University researcher has developed a knockout rat that is deficient in apolipoprotein E (ApoE), an important protein that which binds to a specific receptor on liver cells and peripheral cells and helps in the transportation and metabolism of cholesterol. This model may be useful for studying cardiovascular disease, Alzheimer's disease, and other neurodevelopmental disorders. This research model will be created using transcription activator-like effector nucleases (TALENs), injecting recombinant DNA constructs directly into a fertilized egg, and then injecting these eggs into pseudopregnant females.

Advantages:

-Specific removal of apolipoprotein E with site-specific DNA nucleases

-Useful for wide range of clinically relevant disorders including cardiovascular disease and Alzheimer's disease

Potential Applications:

-Researching cardiovascular disease, Alzheimer's disease, and other neurodevelopment disorders

TRL: 6

Intellectual Property:

Technology ID
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Category
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Biotechnology & Life Sciences/Biomarker Discovery & Diagnostics
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Authors
Craig Jonathan Goergen

Further information
Patrick Finnerty
pwfinnerty@prf.org

Joe Kasper
JRKasper@prf.org

Nathan Smith
nesmith@prf.org

View online

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