Columbia Technology Ventures

Ret-Men2B Mouse Model for Investigation of Pheochromocytoma Linked Endocrine Tumors

Technology #2994

“Lead Inventor: Franklin Costantini, Ph.D.

Transgenic Mouse Models Needed for Multiple Endocrine Neoplasia (MEN) Type 2B Investigation

In biomedical research, transgenic mouse models are used to provide a test subject as a substitute for humans. These mouse models are made by altering a gene of interest in a mouse’s genome to induce or repress genetic expression. Although valuable, these mouse models need to be extensively investigated to validate that the desired model genotype was produced and the desired phenotype is being expressed.

Understanding development and cell lineage are key to combating genetic and developmental diseases. Thus there is a need for new model systems that allow the study of cell lineage. One such model would be for the investigation of multiple endocrine neoplasia (MEN) type 2B, a severe type of MEN that typically strikes individuals in late childhood and early adolescence.

M918T Mutation Shown to be Responsible for Development of MEN Type 2B in Humans

This technology is a line of transgenic mice that aid in exploring the role of the Ret tyrosine kinase in the development of MEN type 2B in vivo. This transgenic mouse model expresses a targeted M919T mutation in the Ret tyrosine kinase. Mutant M919T mice demonstrated the development of C-cell hyperplasia and chromaffin cell hyperplasia, progressing to pheochromocytoma. The results support the conclusion that the M918T mutation is responsible for the development of MEN type 2B in humans. Further research indicates that this mutation does not interfere with the normal role of Ret tyrosine kinase in the development of the enteric nervous system.

Applications: • The study of MEN type 2B development via M919T mutagenesis of Ret tyrosine kinase. • The study of Ret mutagenesis in the development of an oncogene.

Advantages: • Developed and validated mouse model for MEN type 2B, reducing research time and costs.

Patent Status: Copyright / Material

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Inventors

Franklin David Costantini Ph.D.