



THE UNIVERSITY of TEXAS

HEALTH SCIENCE CENTER AT HOUSTON

Office of Technology Management

ADENOSINE DEAMINASE DEFICIENT TRANSGENIC MICE AND METHODS AND USES THEREOF

Market: Restrictive lung disease, including asthma, SCID, chronic obstructive pulmonary disease (COPD), and pulmonary fibrosis, is a prevalent condition. In the US asthma affected 29.5 million people in 2005. Asthmatics visited the doctor in offices and outpatient clinics 14.6 million times in 2004, and there were 1.8 million visits to the emergency room. Unfortunately, asthma was the cause of death for 3,780 people in the US in 2004. Likewise, COPD, including emphysema and chronic bronchitis, affect many people. It is estimated that 16 million people are diagnosed with COPD, with 14 million more yet undiagnosed. In 2000 alone there were 1.5 million emergency room visits, and 726,000 hospitalizations. In 2004 there were \$20.9B in direct costs attributed to COPD. COPD is the 4th leading cause of death in the US, and is predicted to be the 3rd by 2020. There is a significant and growing market looking for earlier diagnosis and better treatment options.

Competitors and Current Problems: Adenosine signaling is complicated, and abnormal adenosine levels lead to multiple effects. Likewise, restrictive lung diseases are multi-factorial and require both genetic and environmental factors. The ability to focus on individual factors in a controlled setting is both appealing and necessary to advance the field.

The Technology: Scientists at UTHSC-Houston and Baylor developed adenosine deaminase (ADA)-deficient mice that contain the deaminase under a placenta-specific promoter, allowing fetal development to proceed normally and then resulting in a live mouse lacking post-partum ADA expression. This well-characterized model has very high levels of adenosine, making it an excellent model for biochemical, genetic, and immunological studies of adenosine signaling. It is becoming increasingly clear that adenosine signaling through adenosine receptors plays an important role in regulating features of chronic lung disease. This mouse model exhibits lung abnormalities, making it an excellent tool for screening adenosine based therapeutics on pulmonary endpoints.

NON-CONFIDENTIAL TECHNOLOGY DESCRIPTION

The preceding is intended to be a non-confidential summary of a novel technology created at the University of Texas Health Science center at Houston (UTHSCH), for which the University has obtained patent protection.

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