Cardiovascular: Sod3

Sod3 TGEM® Rat: Exacerbated Pulmonary Arterial Hypertension and Right Ventricular Hypertrophy & Kidney Disease

Pulmonary artery hypertension (PAH) is a progressive disease with a very poor prognosis characterized by an elevation of pulmonary arterial pressure, ultimately inducing right ventricular (RV) hypertrophy and heart failure. Studies have demonstrated that increased oxidative stress may contribute to the pathogenesis and the development of idiopathic PAH in patients. The Sod3 TGEM® knockout rat model displays significantly increased oxidative stress and thus RV pressure and pulmonary vascular remodeling, as well as greater RV hypertrophy in response to induced chronic hypoxia as well as monocrotaline (MCT) induction (Xu et al. Hypertension. 2011 Aug;58(2):303-9).

Transposagen’s Sod3 TGEM® Knockout Rat model displays more severe hypertension, more remodeling of the pulmonary arteries and more RV hypertrophy and fibrosis in the setting of MCT-induced pulmonary hypertension.

Chronic Kidney Disease Model

A TGEM® Rat Model for chronic kidney disease (CKD) with known etiology is useful for drug discovery and development in CKD. CKD is a progressive disease that worsens with age; therefore, a non-acute CKD rat model is
ideal for relevant studies. The Sod3 TGEM® Rat Model lacks the extracellular superoxide dismutase 3 (Sod3) which is essential for regulating oxidative stress and is highly expressed in renal tissue.

The Sod3 TGEM® Rat Model is phenotypically indistinguishable from wild type littermates at 8 weeks of age. However, by 21 weeks Sod3 TGEM® Rats develop profound CKD characterized by focal necrosis and fibrosis, glomerulosclerosis, massive proteinaceous cast accumulation with tubular dilatation, interstitial fibrosis with hypertension and renal failure with increased serum creatinine.

**Potential Study Applications:**

- Cardiovascular
- Hypertension
- Kidney Disease
Access to the Sod3 TGEM® Rat

- Cryopreserved
- Live colony

Sod3 TGEM® Rat Publications:

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<td>Pulmonary arterial hypertension &amp; Right ventricular hypertrophy</td>
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