



Rag1 Sprague Dawley knockout rat

Model	Rag1 knockout rat
Strain	HsdSage:SD - Rag1 ^{tm1Sage}
Location	U.S.
Availability	Cryopreserved

Characteristics/husbandry

- + 29 bp deletion within Exon 2 on chromosome 3
- + Homozygous Rag1 knockout rats display loss of RAG1 protein via Western blot
- + Homozygous Rag1 knockout rats show loss of B and T cells by FACS analysis
- + Background Strain: Sprague-Dawley

Zygoty genotype

- + Cryopreserved as heterozygous embryos

Research use

- + Xenograft
- + Cancer metastasis
- + Vaccine development
- + Inflammation/Autoimmune disorders
- + Thrombosis/Cardiac fibrosis
- + Vascular defects
- + Hematopoieses
- + Infectious disease

Origin

The Rag1 knockout rat model was originally created at SAGE Labs, Inc. in St. Louis, MO and distributed out of the Boyertown, PA facility. The line continues to be maintained through the original SAGE Labs animal inventory acquired by Envigo.

Description

Recombination Activation Genes (Rag) encode enzymes that play an important role in the rearrangement and recombination of the genes of immunoglobulin and T cell receptor molecules during the process of V(D)J recombination. Rag1 knockout rats lack mature B and T lymphocytes.

Mature B and T cells are critical components for an adaptive immune system. Rats deficient in Rag1 protein produce no mature B or T cells. This non-leaky model for severe combined immune deficiency is useful for vaccine development, as well as the study of autoimmune and infectious diseases.

Citations

Tsuchida, T; Zheng, Y-W; Zhang, R-R; Takebe, T; Ueno, Y; Sekine, K; Taniguchi, H; The development of humanized liver with Rag1 knockout rats. Transplantation proceedings Vol.46, 2014

Figure 1: Flow cytometric analysis of T cell subsets (CD4 and CD8), B cells and NK cells from wild type and Rag1 (-/-) knockout blood samples. The top panels represent wild type female and male rats. The lower panels represent samples from female and male Rag1 (-/-) knockout rats. Blood samples were collected from 4-, 10- and 20-week-old rats.

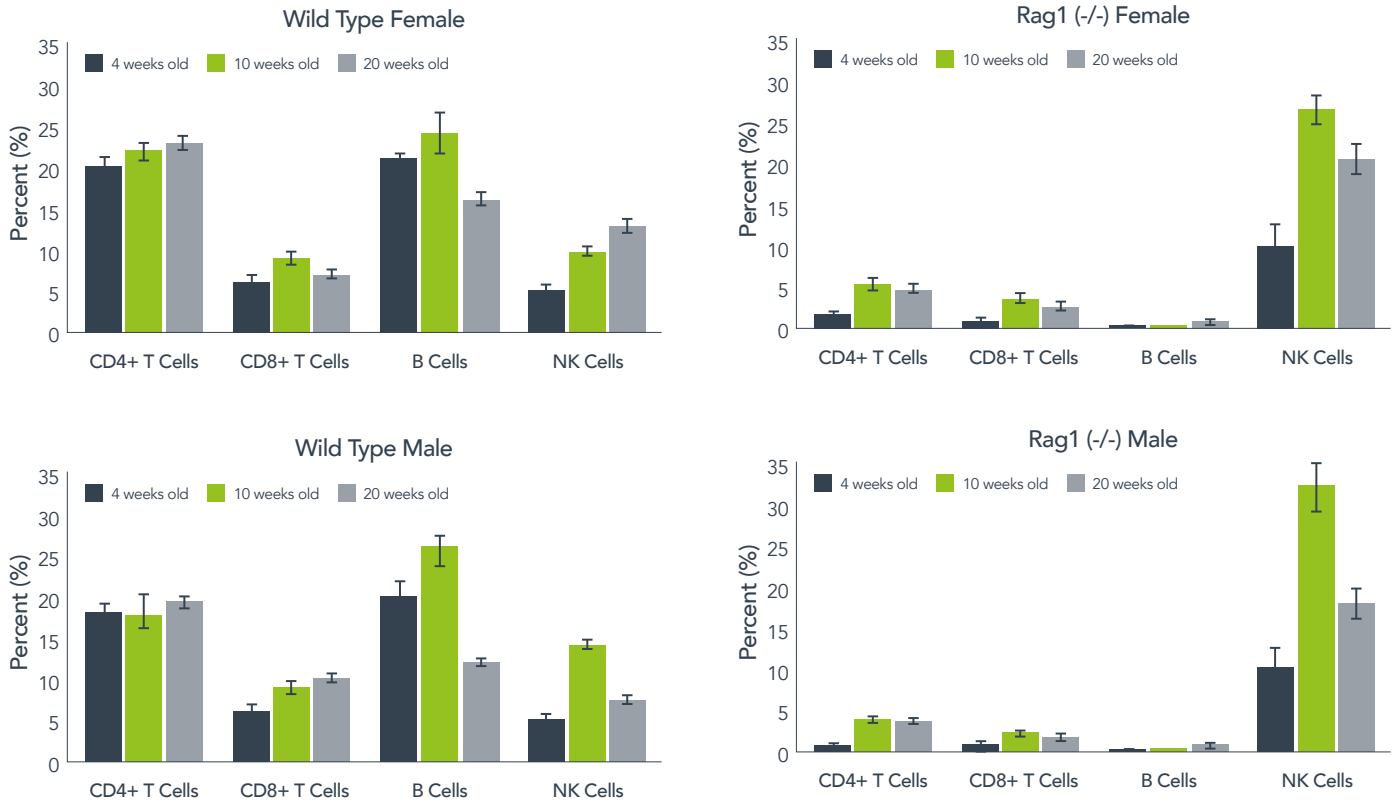
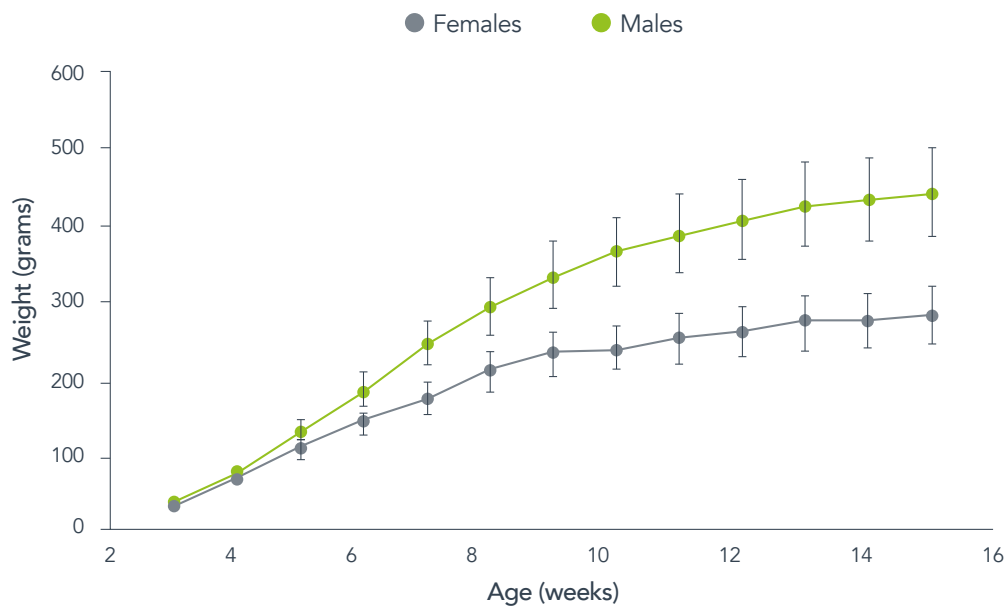


Figure 2: Age and weight chart



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