Rag1-KO(Rag1-EGFP)

Nomenclature	B6;129S-*Rag1*$^{tm1(loxP-EGFP-PolyA-loxP-Neo-loxP)Smoc}$
Cat. NO.	NM-KI-00069
Strain State	Repository Live

Gene Summary

Gene Symbol **Rag1**	**Synonyms**	Rag-1
	NCBI ID	19373
	MGI ID	97848
	Ensembl ID	ENSMUSG00000061311
	Human Ortholog	RAG1
	Human Ortholog Associated Diseases by GWAS	奥门综合症、免疫缺陷综合症

Model Description

A loxP-EGFP-PolyA-loxP-Neo-loxP expression cassette was knocked into the Rag1 gene start codon site. As a Rag1 knockout mouse model, this stain can be used in subcutaneous inoculation of liver cancer tissues and tumor cells. Tumors can esaily form and grow. The amount of T and B lymphocytes in peripheral blood of mice was extremely low tested by FACS, which was comparable to or lower than that of Nude mice, and there was a significant difference compared with wild type mice. The pathological sections of HE staining of tumor tissues showed that the tumor sections of Rag1 KO mice and Nude mice were similar. This strain has the potential to replace Nude, NOD-SCID mice as a tumor-bearing mouse model.

Research Application: Immunodeficiency,tumor-bearing model

*Literature published using this strain should indicate: Rag1-KO(Rag1-EGFP) mice (Cat. NO. NM-KI-00069) were purchased from Shanghai Model Organisms Center, Inc..

Validation Data

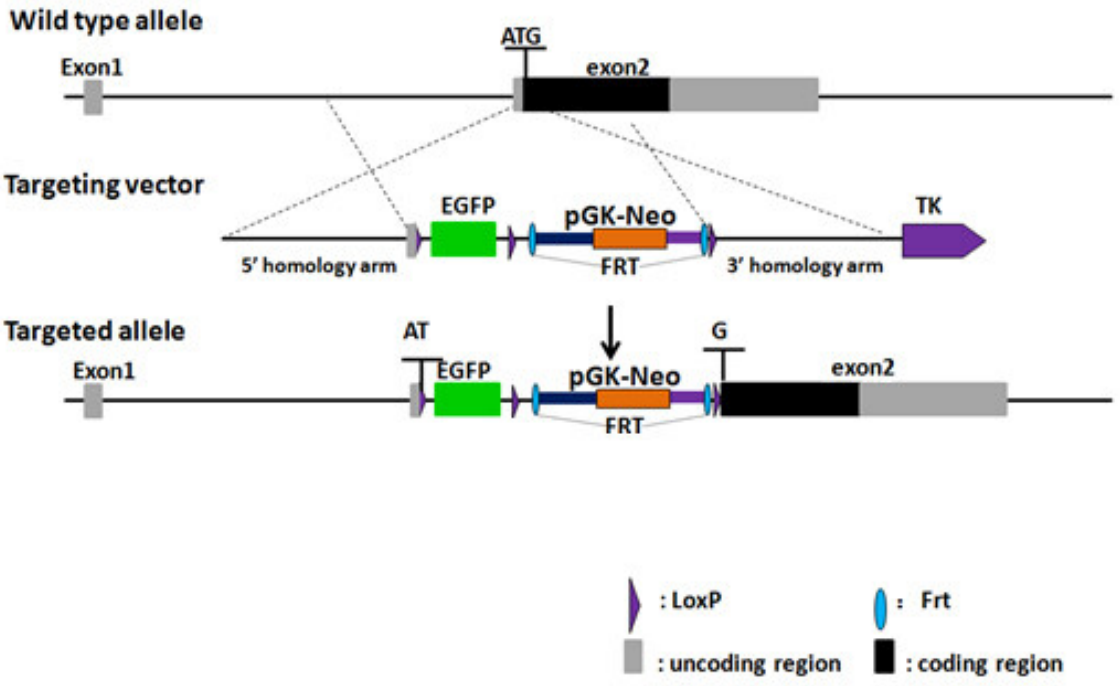

Figure 1. Generation strategy of Rag1 gene knockout mice.

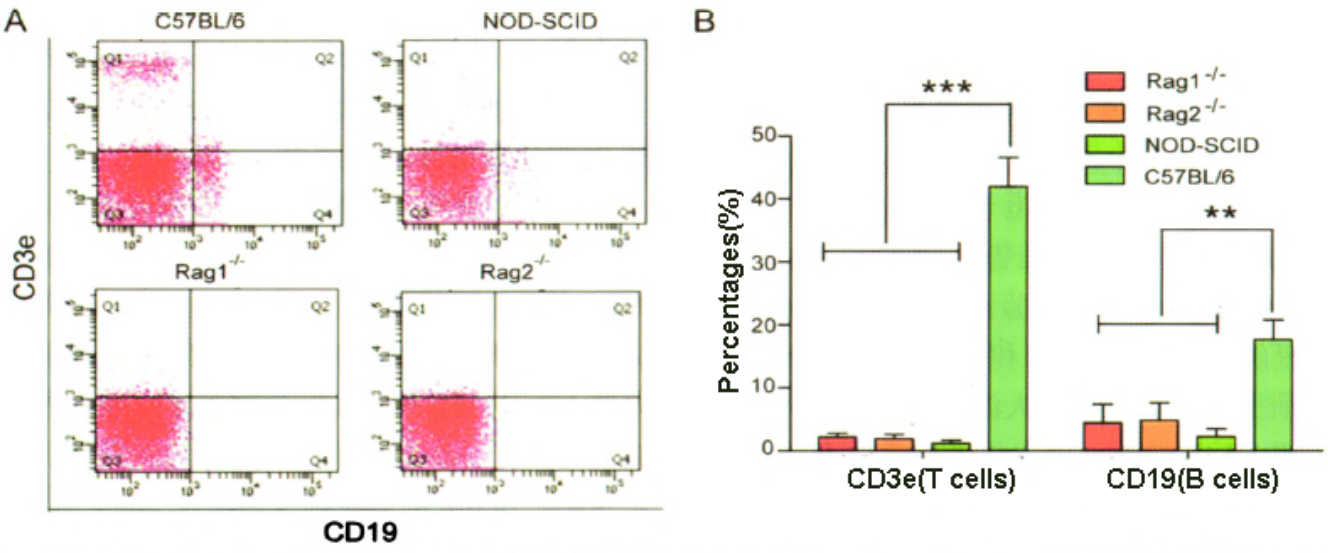

Figure 2 Splenocytes cells of C57BL/6J, NOD-SCID, Rag1-/-, and Rag2-/- mice were isolated. Fractions of T and B cells were characterized using flow cytometry.

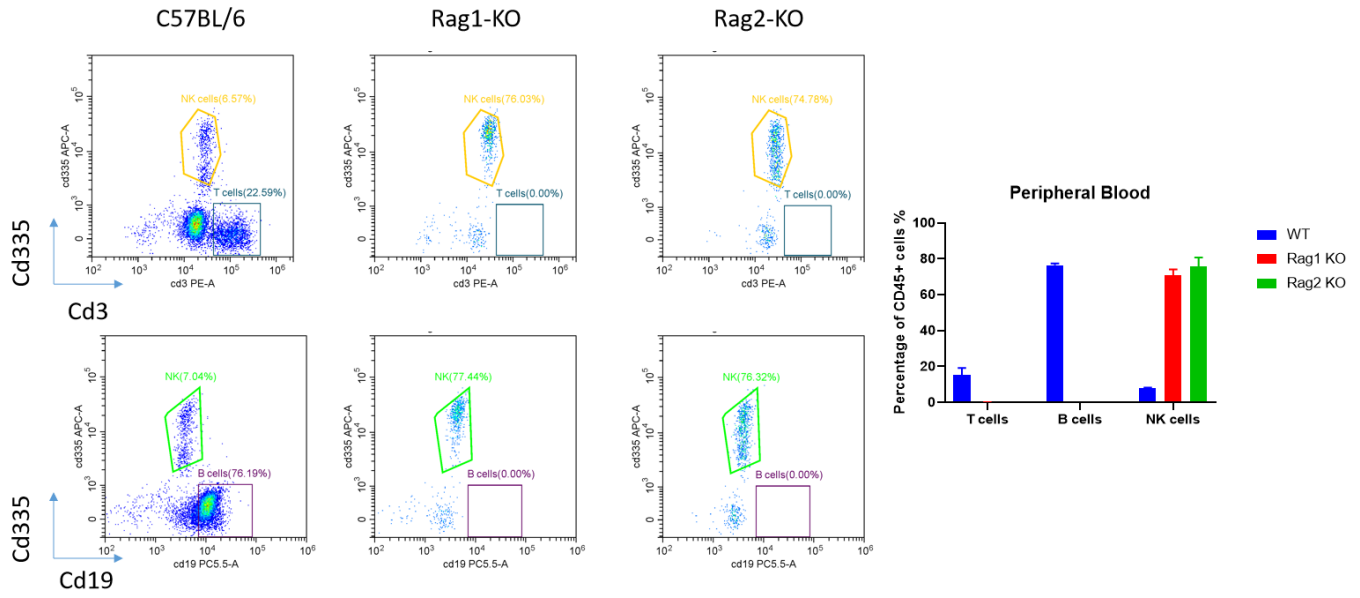

Figure3. Complete deletion of T and B cells in the blood of Rag1-KO/ Rag2-KO mice.

(A) The peripheral blood samples of C57BL/6, Rag1-KO and Rag2-KO mice were collected to analyze their compositions of T, B and NK cells by FACS.(B) Statistical analysis of sorted cells.

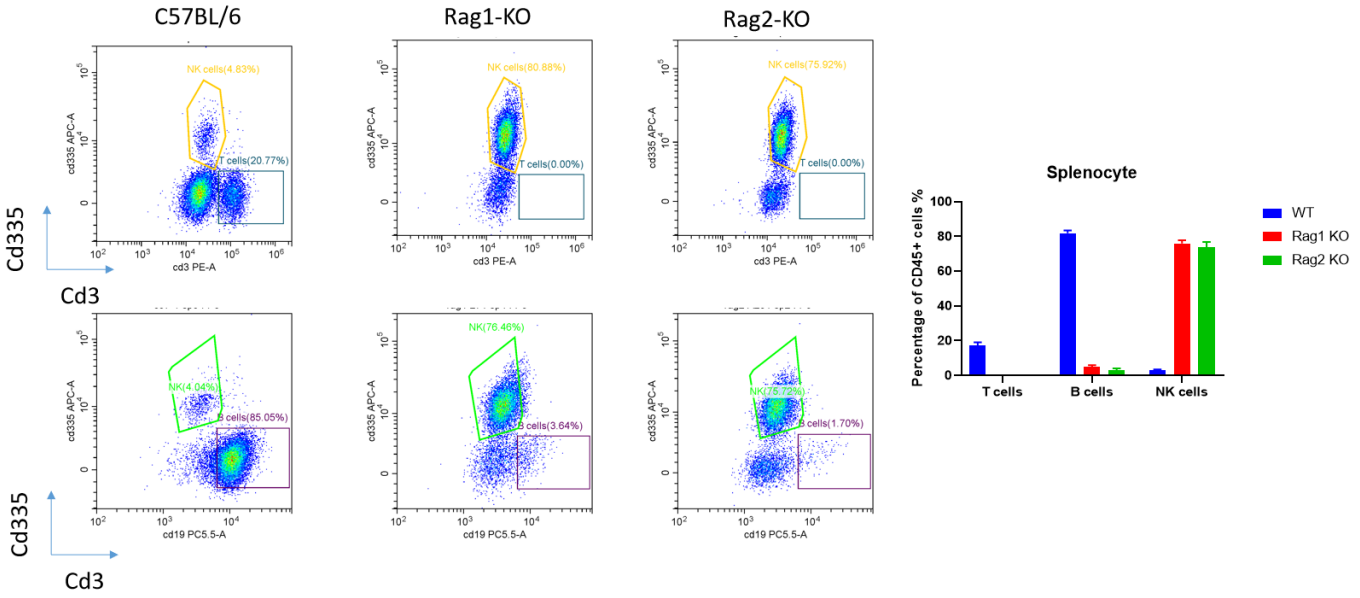

Figure4. Complete deletion of T and B cells in the spleen of Rag1-KO/ Rag2-KO mice.

(A) The splenocytes of C57BL/6, Rag1-KO and Rag2-KO mice were collected to analyze their compositions of T, B and NK cells by FACS.(B) Statistical analysis of sorted cells.

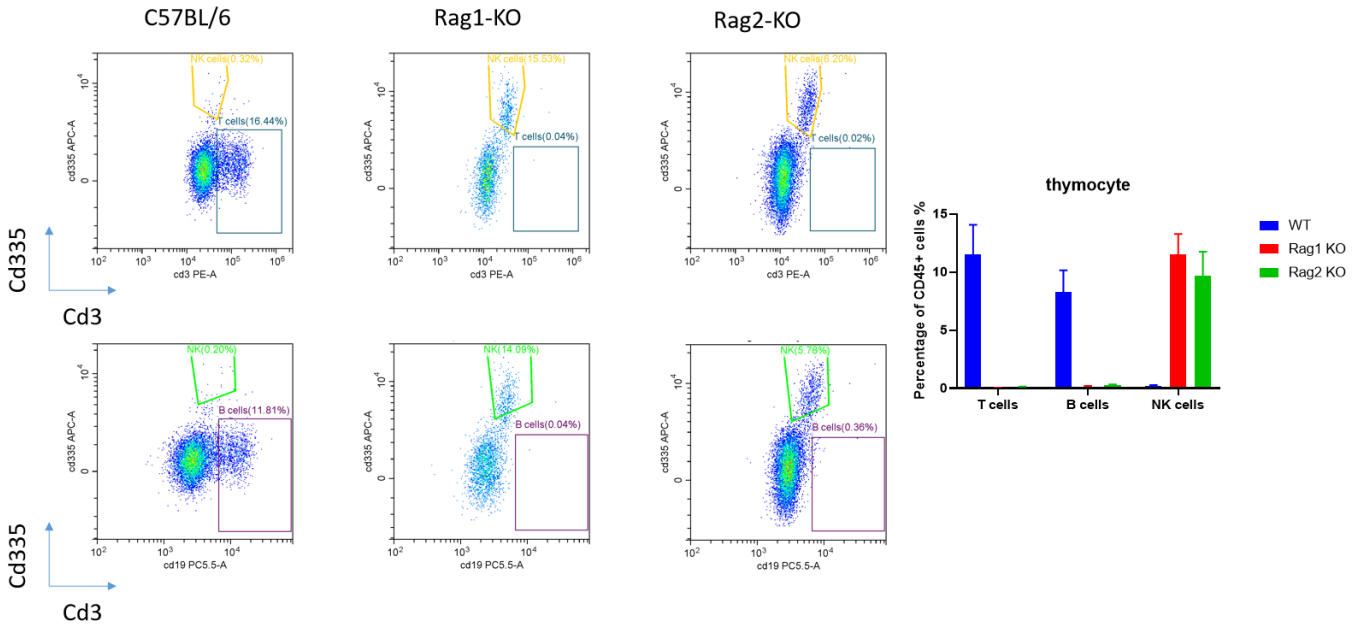

Figure5. Complete deletion of T and B cells in the thymus gland of Rag1-KO/ Rag2-KO mice.

(A) The thymocyte of C57BL/6, Rag1-KO and Rag2-KO mice were collected to analyze their compositions of T, B and NK cells by FACS.(B) Statistical analysis of sorted cells.

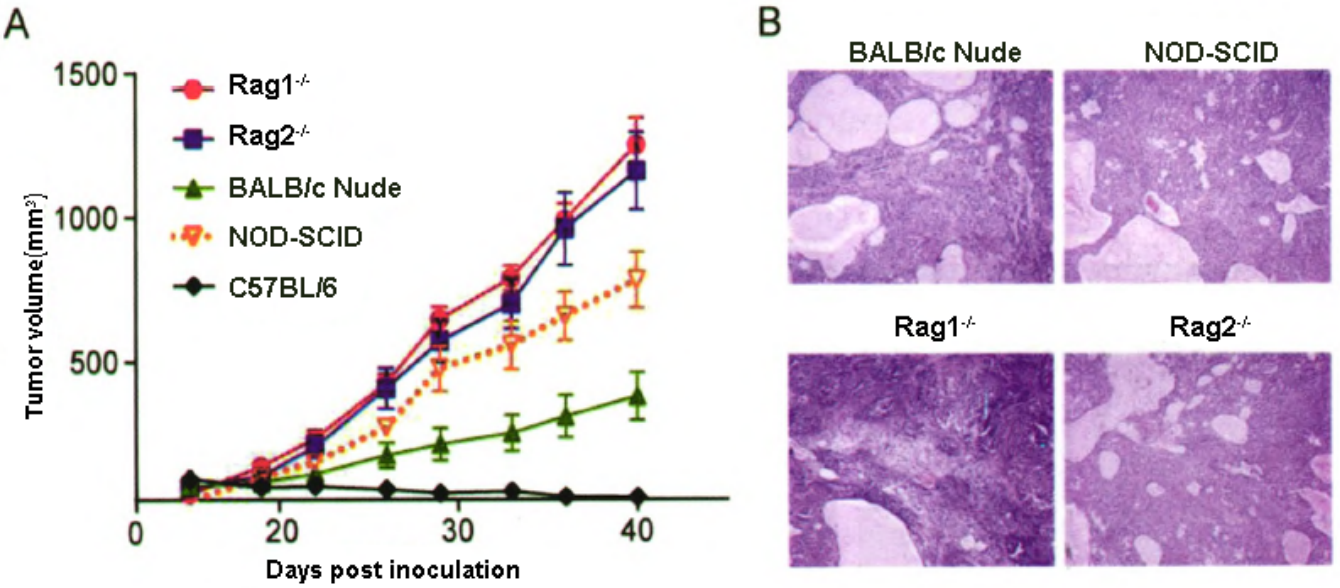

Figure6.The establishment of tumor models using A549 lung cancer cells is more effective in Rag1-/- or Rag2-/- mice.

Table 1. Blood routine tests in Rag1-KO(Rag1-EGFP).

Parameter	Units	Rag1-KO; Male	Rag1-KO; Female
		8-10 weeks; n=10	8-10 weeks; n=10
WBC	10^3 cells/μL	2.16±0.44	0.76±0.24
RBC	10^6 cells/μL	9.69±0.09	10.13±0.09
HGB	g/dL	14.34±0.13	15.10±0.12
HCT	%	46.78±0.37	48.36±0.20
MCV	fL	48.27±0.28	47.76±0.31
MCH	pg	14.81±0.08	14.90±0.03
MCHC	g/dL	30.67±0.10	31.23±0.17
PLT	10^6 cells/μL	2252.00±70.30	1573.78±77.11
RDW-SD	fL	32.10±0.49	29.20±0.23
RDW-CV	%	21.42±0.21	20.57±0.17
PDW	fL	7.47±0.11	7.37±0.13
MPV	fL	6.79±0.08	6.66±0.08
P-LCR	%	5.22±0.31	4.67±0.33
PCT	%	1.53±0.05	1.05±0.06
NEUT#	10^3 cells/μL	1.28±0.33	0.32±0.09
LYMPH#	10^3 cells/μL	0.57±0.06	0.34±0.12
MONO#	10^3 cells/μL	0.27±0.09	0.08±0.03
EO#	10^3 cells/μL	0.02±0.00	0.01±0.01
BASO#	10^3 cells/μL	0.02±0.01	0.01±0.01
NEUT%	%	54.72±4.84	46.99±5.04
LYMPH%	%	32.15±4.90	42.13±5.31
MONO%	%	11.24±1.19	8.79±1.27
EO%(%)	%	0.98±0.19	1.31±0.53
BASO%	%	0.91±0.51	0.78±0.39
RET#	10^6 cells/μL	0.50±0.01	0.53±0.03
RET%	%	5.19±0.10	5.25±0.33
LFR(%)	%	42.78±0.95	42.93±1.28
MFR(%)	%	24.65±0.66	25.69±0.52
HFR(%)	%	32.57±1.49	31.38±1.25
IRF(%)	%	57.22±0.95	57.07±1.28

Table2. Blood biochemistry in Rag1-KO(Rag1-EGFP).

Parameter	Units	Rag1-KO; Male	Rag1-KO; Female
		8-10 weeks; n=10	8-10 weeks; n=10
TP	g/L	54.00±1.25	57.11±1.65
ALB	g/L	25.50±0.50	27.17±1.11
ALP	U/L	469.00±13.76	806.78±15.20
ALT	U/L	69.50±8.31	44.17±16.91
AST	U/L	191.00±36.25	223.06±62.00
T-BIL	μmol/L	1.62±0.15	1.76±0.66
D-BIL	μmol/L	1.78±0.28	7.65±4.93
CHE	U/L	4143.50±148.13	6539.22±205.63
CRE	μmol/L	20.97±0.66	21.77±1.31
BUN	mmol/L	10.10±0.44	8.17±0.61
UA	μmol/L	311.60±41.33	120.06±5.81
TCHO	mmol/L	2.93±0.07	2.44±0.11
TG	mmol/L	1.04±0.06	0.39±0.05
HDL	mmol/L	2.62±0.11	2.12±0.22
LDL	mmol/L	1.92±0.03	2.25±0.16
NEFA	mmol/L	0.70±0.05	0.78±0.14
LDH	U/L	702.50±99.53	813.67±272.32
CK	U/L	1107.50±464.45	1915.67±500.47
Hcy	μmol/L	11.45±0.98	13.78±0.88
GLU	mmol/L	16.94±0.87	9.49±0.60
Ca	mmol/L	3.18±0.05	2.79±0.05
IP	mmol/L	4.20±0.13	3.31±0.11
Fe	μmol/L	38.35±1.20	36.66±2.64
CRP	mg/L	0.46±0.26	0.27±0.16

Publications

Programmed death protein 1 is essential for maintaining the anti-inflammatory function of infiltrating regulatory T cells in a murine spinal cord injury model
References: Journal of Neuroimmunology

Peli1 negatively regulates noncanonical NF-κB signaling to restrain systemic lupus erythematosus
References: Nature Communications

Interleukin-17 Regulates Neuron-Glial Communications, Synaptic Transmission, and Neuropathic Pain after Chemotherapy
References: Cell Reports

Tpl2 Protects Against Fulminant Hepatitis Through Mobilization of Myeloid-Derived Suppressor Cells
References: Frontiers in Immunology

Gut Microbial Metabolite Pravastatin Attenuates Intestinal Ischemia/Reperfusion Injury Through Promoting IL-13 Release From Type II Innate Lymphoid Cells via IL-33/ST2 Signaling

References：Frontiers in Immunology