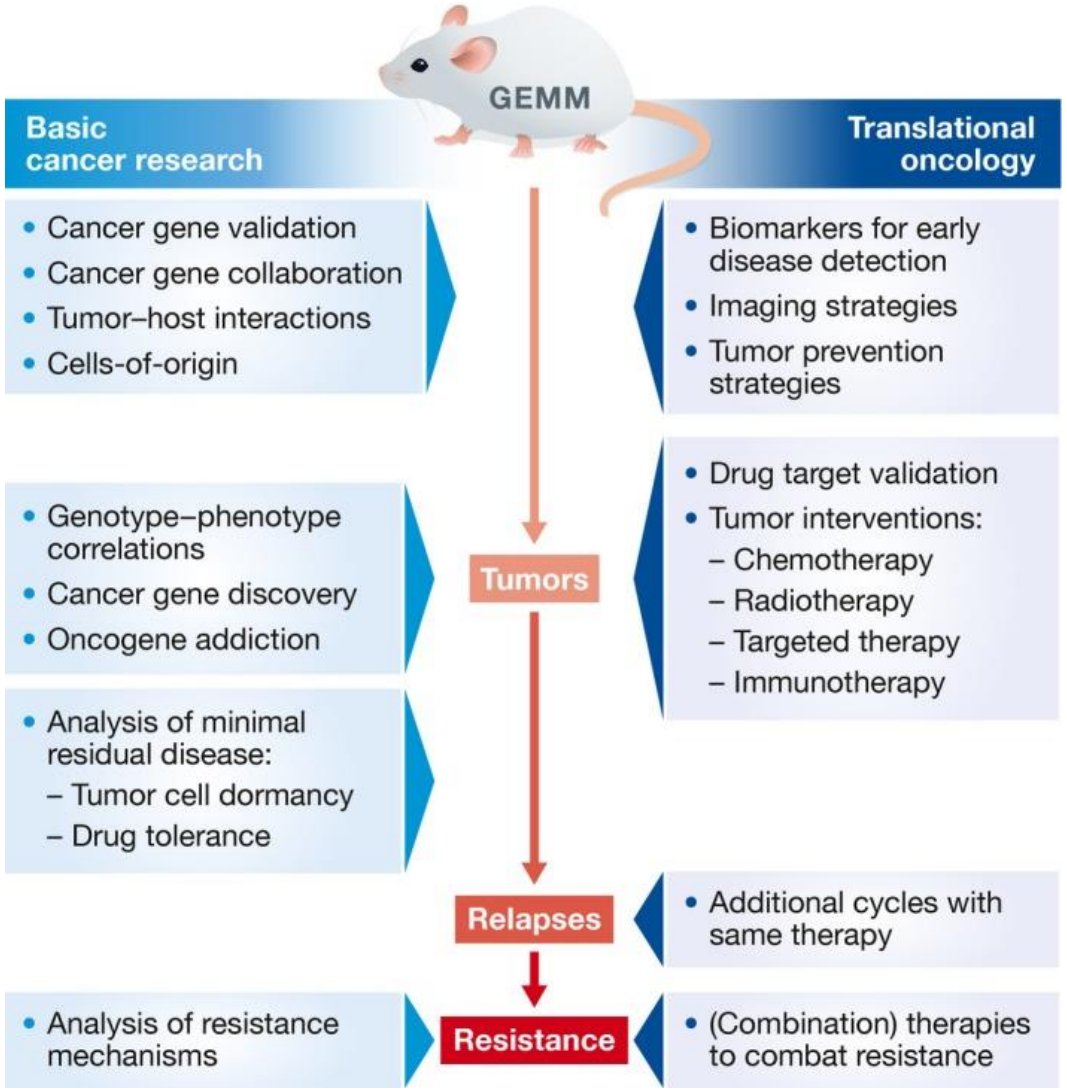
Spontaneous mouse tumor-derived syngeneic models

2025.09

OncoWuXi Newsletter

Applications of engineered mouse model in cancer research



- Advantages:
  - Tumors develop naturally in an immunocompetent background
  - Recapitulates tumor microenvironment, metastasis, and drug resistance
  - Closer to human tumors in molecular and histopathological features
- Limitations:
  - Long modeling time and high cost
  - Variable penetrance and latency
  - Genomic complexity lower than human tumors

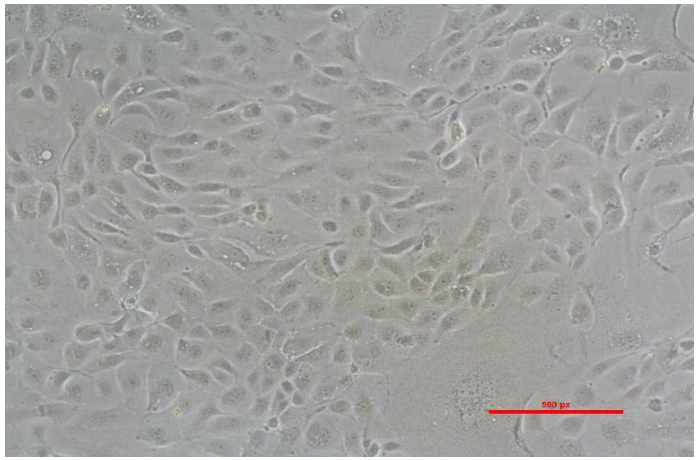
Kersten K. EMBO Mol Med. 2017 Feb;9(2):137-153.

Spontaneous tumor-derived syngeneic model available at WuXi AppTec

Model ID	Cancer Type	Genetic Features	Comment
KL-Luc	Lung Cancer	KRAS G12D activated and LKB1 deleted specifically in lung tissue via Cre recombination	Kras(G12D+/-)-LKB1(-/-)-Luc (KL-Luc) cells are derived from spontaneous lung cancer tumors arising in LKB1(flox/flox)-Kras (LSL-G12D)-Luc mice infected by AAV-CRE virus
KPC	Pancreatic Cancer	KRAS G12D and TP53 R172H activated specifically in pancreatic tissue via Pdx1-Cre	KPC cells were derived from spontaneous pancreatic tumors arising in Kras LSL-G12D/+; Trp53 LSL-R172H/+; Pdx1-Cre mice
MMTV-PyMT	Breast Cancer	Expresses Polyoma Middle T (PyMT) oncogene under the control of the MMTV promoter	MMTV-PyMT cells were derived from spontaneous breast tumors arising in MMTV-PyMT transgenic mice

In vitro validation of KRAS(G12D+/-)- LKB1(-/-)-Luc (KL-Luc) cells

A



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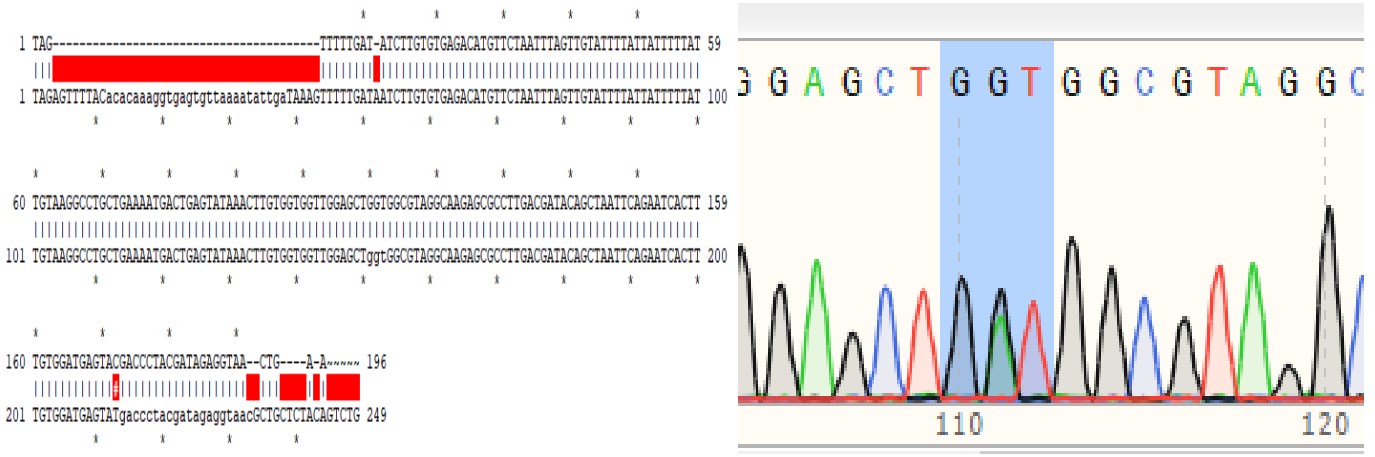

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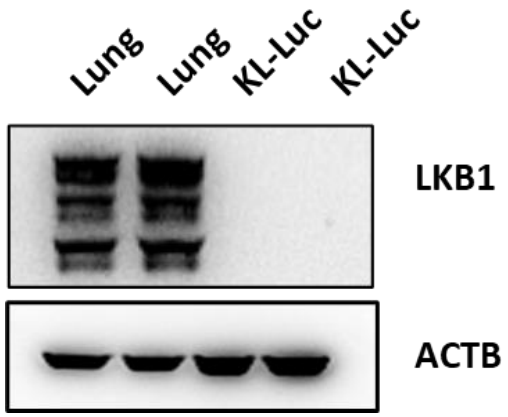
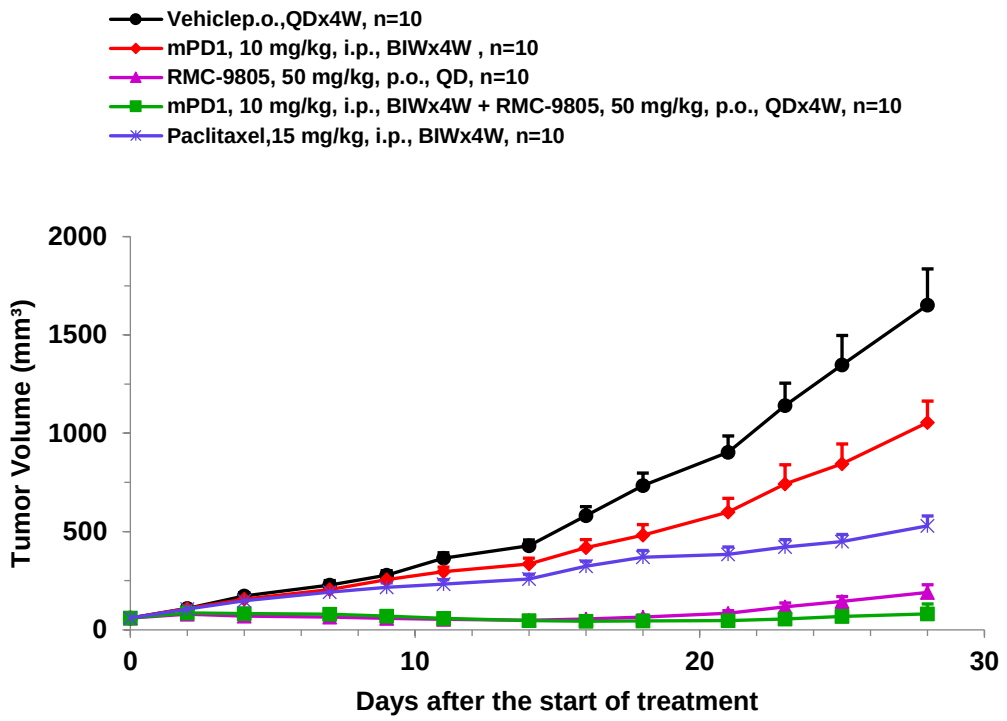


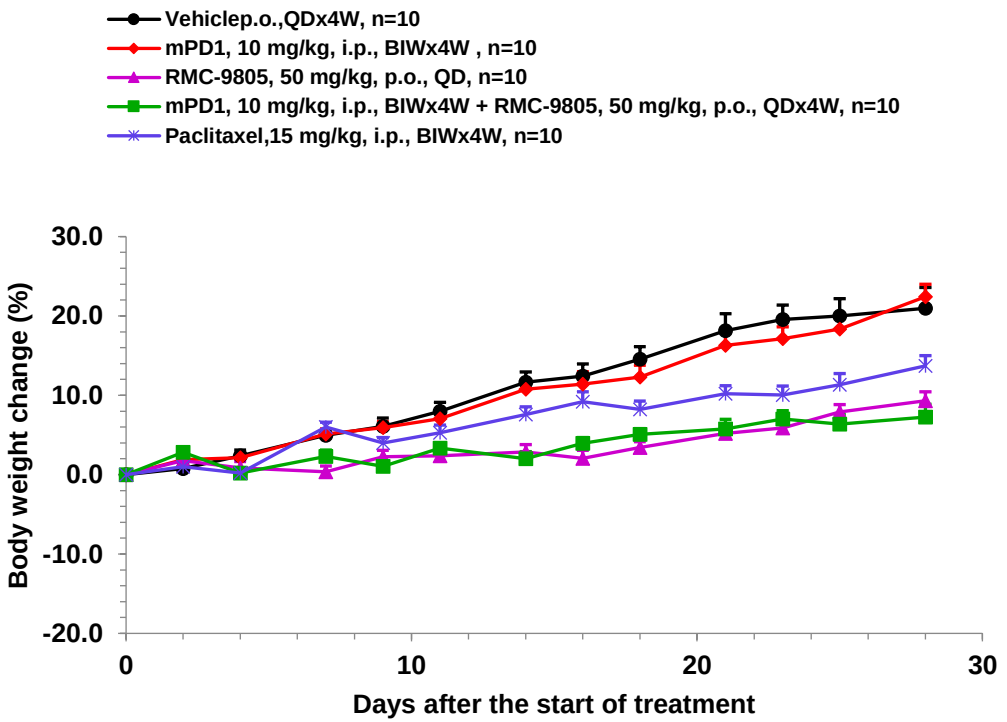
Kras(G12D+/-)-LKB1(-/-)-Luc (KL-Luc) cells are derived from spontaneous lung cancer tumors arisen in LKB1(flox/flox)-Kras (LSL-G12D)-Luc mice infected by AAV-CRE virus.

Figure A. *In vitro* morphology of KL-Luc cell line. **Figure B.** WB validation of LKB1 KO in KL-Luc cells. **Figure C.** KRAS (G12D) DNA mutation sequencing data.

In vivo validation of subcutaneous KL-Luc syngeneic model

Treatments	Dosing schedule	TGI
mPD1	10mg/kg, i.p., BIW*4W	37.55%
RMC-9805	50mg/kg, p.o., QD*4W	91.80%
mPD1+RMC-9805	10mg/kg, i.p., BIW*4W+50mg/kg, p.o., QD*4W	98.66%
Paclitaxel	15 mg/kg, i.p., BIW*4W	70.54%





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