Innovations
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

Novel Murine Lung Cancer Cell Lines with Specific Oncotic Drivers

Product

Six transplantable murine cell lines with specific oncogenic drivers

Indication

Lung cancer research and drug development

Value Propositions

- Cell lines with identified biologically relevant genetic drivers of lung cancer
- Highly malignant and transplantable in immunocompetent hosts
- Potential for more realistic tumor-host models

Market

- $17.9 billion—The global market for lung cancer therapeutics in 2018 (CAGR of 9.0%)
- $350 million—NIH funding for lung cancer research in 2018

Intellectual Property

- Available for Exclusive or Non-Exclusive Licensing

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Background on CU5582H

Immunocompetent animal models are required to study tumor-host interactions, immunotherapy, and immunotherapeutic combinations. However, available murine lung cancer cell lines have substantial limitations in their ability to accurately replicate complex tumor-host environments during lung cancer progression in immunocompetent mouse models. Some of the most significant limitations of available murine cell lines include their restricted malignant potential, non-specific genetic mutations, and inadequate ability to develop transplantable tumors in immunocompetent C57BL/6 hosts. Additionally, finding murine lung cancer cell line that meet laboratory needs can be challenging because of the relative paucity of existing options.

Technical Innovation

Researchers at the University of Colorado, led by Dr. Stephen Malkoski, developed 6 novel murine lung cancer cell lines with defined genetic mutations that are capable of transplantable tumor formation in immunocompetent hosts. The cell lines include various combinations of tumor suppressor and oncogene genetic variants. Mutant cell lines genotypes include:

1) KrasG12D.Smad4+/−

2) KrasG12D.Tgfbr2−/−

3) KrasG12D.Map3k7−/−.GFP+

4) KrasG12D.PTEN+/−.p53+/−.GFP+

5) Pi3kca+.p53+/−

6) EML4-ALK.

All cell lines have high malignant potential in C57BL/6 hosts murine hosts. Tumors produced by the aforementioned cell lines can be used to model biologically relevant tumor-host interactions and their response to immunotherapeutics.

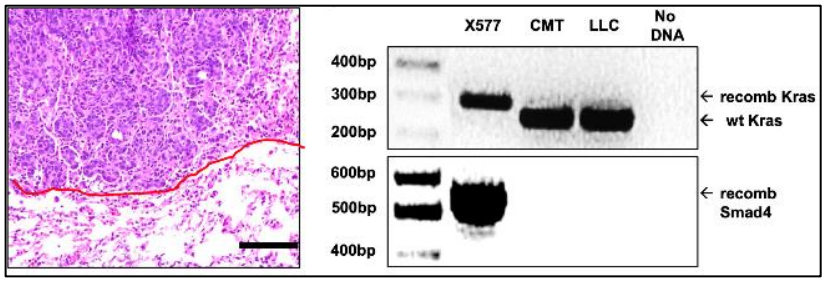

Figure: H&E stain of tumor developed from KrasG12D.Smad4+/− cell line (Right). PCR showing the recombinant KrasG12D and Smad4 allele (Left).

Resources & Documents:

Nolan K, Verzosa G, Cleaver T, et al. Development of syngeneic murine cell lines for use in immunocompetent orthotopic lung cancer models. Cancer Cell International. 2020;20(1). doi:10.1186/s12935-020-01503-5