Effect of MUC16 Blockade using the Humanized AR9.6 Antibody in Patient Derived Organoid Models of PDAC

Jordan N. Muirhead  
*University of Nebraska Medical Center*

Satish Sagar  
*University of Nebraska Medical Center*

Christabelle Rajesh  
*University of Nebraska Medical Center*

Adrian Black  
*University of Nebraska Medical Center*

Prakash Radhakrishnan  
*University of Nebraska Medical Center*

Follow this and additional works at: [https://digitalcommons.unmc.edu/surp2022](https://digitalcommons.unmc.edu/surp2022)

**Recommended Citation**

Muirhead, Jordan N.; Sagar, Satish; Rajesh, Christabelle; Black, Adrian; and Radhakrishnan, Prakash, "Effect of MUC16 Blockade using the Humanized AR9.6 Antibody in Patient Derived Organoid Models of PDAC" (2022). *Posters: 2022 Summer Undergraduate Research Program*. 37.  
[https://digitalcommons.unmc.edu/surp2022/37](https://digitalcommons.unmc.edu/surp2022/37)

This Poster is brought to you for free and open access by the Summer Undergraduate Research Program at DigitalCommons@UNMC. It has been accepted for inclusion in Posters: 2022 Summer Undergraduate Research Program by an authorized administrator of DigitalCommons@UNMC. For more information, please contact digitalcommons@unmc.edu.
Effect of MUC16 Blockade Using the Humanized AR9.6 Antibody in Patient-Derived Organoid Models of PDAC

Jordan Muirhead, Satish Sagar, Christabelle Rajesh, Adrian Black, Prakash Radhakrishnan

Eppley Institute for Research in Cancer and Allied Diseases, Fred & Pamela Buffett Cancer Center, University of Nebraska Medical Center, Omaha, NE 68198

Background
Pancreatic cancer is an aggressive malignancy, 90% of which is accounted for by Pancreatic ductal adenocarcinoma (PDAC). As of 2022, PDAC accounts for 3.2% of new cancer cases and 8.2% of all cancer related deaths, owing to its poor overall survival of a mere 11.5% [1]. Patients with PDAC often present at a late-stage of disease progression, thereby increasing the need for effective standard of care, which is met with issues of therapeutic resistance. Mutations in the KRAS oncogene is a salient feature of PDAC that acts partly by increasing the expression of pro-tumoral proteins such as Mucin-16 (MUC-16) [2]. MUC16, a heavily glycosylated transmembrane protein is overexpressed in more than 65% of PDAC cases and is absent in the normal pancreas, making it a suitable biomarker for PDAC [3]. Our research focuses on the development of the humanized, monoclonal antibody AR9.6 (HuAR9.6) [4] that targets MUC16 and its application in clinically relevant patient-derived PDAC organoids.

Objective
Evaluate the MUC16 mediated transcriptomic changes by using the humanized AR9.6 antibody in patient-derived organoid models of PDAC.

Methods

Development of Primary PDAC Organoids from RAP #142 [5]

RNA Sequencing and Bioinformatic Analysis by Novogene

Conclusions
• Tumor cells isolated from primary PDAC of RAP #142 successfully formed organoids in vitro that had a MUC16<sup>GH</sup> profile.
• RNA quality was determined to be sufficient.
• About, 413 genes were uniquely expressed – of which 201 were upregulated and 102 were downregulated.
• Gene Ontology and KEGG Enrichment analyses revealed pathways like Hippo signaling were altered by blocking MUC16 in PDAC organoids.

References