Expression of ALDH Isoforms in Colon Tumorigenesis
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RESULTS

INTRODUCTION

• Aldehyde dehydrogenase (ALDH) has been identified as a reliable biomarker for colorectal cancer (CRC) stem cells
• There are 19 different isoforms of ALDH each of which play a role in balancing the proliferation and differentiation of colorectal stem cells (SC)
• It is not known which isoforms are important for colonic stem cell function
• Hypothesis: Colonic SC’s express unique ALDH isoforms and aberrant expression of these isoforms decreases differentiation and increases growth of SC’s in CRC

References
• Cancer Lett. 2015. 369: 50-57.

MATERIALS & METHODS

• Immunofluorescence staining
• RNA isolation and PCR
• Protein extraction and Western Blot
• Cell culture and cell counts

LIMITATIONS

• The only limitation that we experienced was the lack of patient samples for Western blot analysis.

CONCLUSIONS

• Variable expression in isoforms; there is a need to look at protein in western blot analysis
• ALDH 2, 7A1 and 3A1 play a role in colon tumorigenesis
• These isoforms will be targets for knockdown analysis

FUTURE WORK

• More complete profile of the target ALDH isoforms
• Quantitative comparison of protein expression through Western blot analysis
• Currently working on growing and expanding ALDH7A1 knockdown clones in HT29 cells to assess protein function in vitro.

CLINICAL IMPLICATIONS

• Understanding how isoforms of ALDH contribute to stem cell overpopulation in colon tumor formation may lead to the development of new more effective treatments for colorectal cancer

ACKNOWLEDGEMENTS

• Supported by the NIH NIGMS Institutional Development Award (IDeA) Program (P20 GM103446) and the State of Delaware
• Shirin Modarai PhD, Lynn Opdenaker PhD.
<table>
<thead>
<tr>
<th>Isoform</th>
<th>Expression in Tumor relative to matched normal sample</th>
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<tbody>
<tr>
<td>ALDH 2</td>
<td>Elevated</td>
</tr>
<tr>
<td>ALDH 7A1</td>
<td>Elevated</td>
</tr>
<tr>
<td>ALDH 3A1</td>
<td>Elevated</td>
</tr>
<tr>
<td>ALDH 1A3</td>
<td>Decreased</td>
</tr>
<tr>
<td>ALDH 6A1</td>
<td>Elevated</td>
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<tr>
<td>ALDH 4A1</td>
<td>Unable to tell</td>
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