Immune Response and Splenomegaly in B16 Melanoma

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Overview of Presentation

- Background Information
- Hypothesis
- Procedures
- Data
- Conclusions
- Discussion
- Future Experiments
What is melanoma?
B16 Melanoma
Spleno meg a ly

www.melanoma.com
Hypothesis

- Splenomegaly in mice implanted with B16 melanoma is an immunological response to the developing tumor
Spleen Size in B16 Melanoma

- Purpose is to examine Spleen enlargement in response to a developing tumor
Procedure

- Establish Tumor Line
- Implantation
- Allow to grow
- Excise tissue
- Weigh tissues
- Preserve tissues

Appearance of B16 Melanoma in Mice
Spleen Enlargement

Size Comparison of Day 0 and Day 18 Spleen
Spleen Weight Compared to Tumor Size

![Graph showing the relationship between average spleen size and average tumor size.](image)
Procedure for Cell-Free Homogenate

- Homogenize B16 Tissue
- Centrifuge
- Filter Sterilization
- Inject 8µg Protein

- Inject PBS Buffer
Spleen Enlargement in Control Groups

- PBS Buffer
- Cell-free Extract
- B16 Melanoma

Increase in Size (in %)
Summary

- Spleen enlarges as the tumor grows
- PBS Control negative
- Cell free extract less effect indicating response to soluble tumor antigens
Histological Changes in the Spleen

- Examine histology of spleen in normal, melanoma implanted, and cell-free extract injected mice
Procedures

- Fixation
- Embedding
- Staining

Microtome

Nikon camera
Anatomy and Function of the Spleen

Sears, D. 1997

Gude, W. 1982
Structural Changes

Day 0

Day 18
## Histology Results

<table>
<thead>
<tr>
<th></th>
<th>Normal</th>
<th>B16 Melanoma</th>
<th>Cell-Free Extract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Diameter of Follicles</td>
<td>279.21μm +/- .509*</td>
<td>249.49 +/- .394*</td>
<td>311.11 +/- .564</td>
</tr>
<tr>
<td>Follicles per mm²</td>
<td>61.55/mm² +/- 9.71#^</td>
<td>55.02/mm² +/- 5.03#</td>
<td>38.2/mm² +/- 8.79^</td>
</tr>
<tr>
<td>Total Follicles of Cross-section</td>
<td>72.66 +/- 17.01*</td>
<td>126.93 +/- 20.49*</td>
<td>74 +/- 12.16</td>
</tr>
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</table>

*, #, ^ = Significant Difference
Summary

- Structural changes indicate a humoral response is occurring in the B16 Melanoma
- Humoral response is seen in Cell-free extract injected mice, but not to the same degree
Overall Conclusions

- Splenomegaly is an immune response to B16 Melanoma
- Histology of spleen indicates a humoral immune response to B16 melanoma suggesting production of B16 specific antigens
Discussion

- The immune system can recognize cancer cells as antigens, or foreign invaders.
- Researchers have identified that some cancer cells do carry antigens on their surfaces.
- By training the immune system to attack these antigens, or "build up an immunity," doctors may be able to halt the disease.
Future Experiments

- Confirm type of immune response
- Identify specific antigen associated with the melanoma tissue
- Examine splenomegaly in other mice strains implanted with B16 melanoma
Acknowledgements

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Questions?