# Identifying Relations of Student Math Values in Biology

## Introduction

- In recent years, there have been calls to increase the use of math in biology classrooms. [1]
- If we teach more math in biology, there are hurdles to be approached.
- Student views of math in biology needs to be more favorable to implement.
- Student math anxiety could be a problem.
  - Math anxiety causes drop in math performance – It’s a problem. [2]
- What can instructors use to easily predict student math anxiety or student perceptions of math in biology?
- What relationships exist between math anxiety, views of math in biology, and student performance?

## Data Collected

Survey data was collected from two classes:
- BIOL 151 – General Biology II (n=157)
- BIOL 252 – Plant and Animal Diversity (n=33)

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Description</th>
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<tbody>
<tr>
<td>TOSLS [3]</td>
<td>A 28 question test that assesses 9 skills. These skills are broken into two groups: quantitative practices (QP) and non-quantitative practices (NQP).</td>
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<td>MBVI [5]</td>
<td>Eleven question survey to assess math values in biology. It has three categories: Cost (C), Utility (U), and Interest (I).</td>
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## Conclusions

- The ACT can be used as a predictor for introductory classes, but cannot be used as a predictor for upper division course
  - There has been too much time since the student took the exam for it to be predictive.
- With favorable views of math in biology being strongly linked quantitative scientific literacy, an emphasis on improving one will likely improve the other.
  - Cost is the most important factor of favorability in this.
- Student math anxiety is its own problem.
  - It must be approached independently.
- In contrast to previous literature, no significant relationship between math related anxiety and QP was observed.
- Other differences between introductory courses and important to note:
  - Cost is a more important factor in scientific literacy in upper division courses.

## Future Work

- Research should be conducted to determine if the relationship between student favorability of math in biology causal relationship.
- A more specialized anxiety survey relating to math anxiety in the sciences in order to account for discrepancies between established research and observed relationships between math anxiety and quantitative performance.
- Surveys given (particularly AMAS and MBVI) should be given to lager classes of upper division students in order to gain more resolution of the results.

## References and Acknowledgements

[1] American Association for the Advancement of Science. 2011

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