



BEACON Summer Program

July 6-10, 2014

Audience

BEACON Summer Program was attended by 26 participants (9 males, 17 females, 46% minority), ranging in grade from high school juniors to incoming college freshmen. Students throughout the United States were invited to attend the program based on test scores, GPA, transcripts, and demonstration of interest in engineering at Michigan State University.

Funding

Funding for the program is fully provided through a grant from the National Science Foundation, which covers all costs for participants.

Objectives

The goals of BEACON Summer Program are:

- To apply principles of Science, Technology, Engineering, and Math (STEM) knowledge to solve problems in teams
- To introduce students to BEACON-related science and engineering college majors
- To teach students how to integrate concepts of evolutionary biology into engineering methods
- To gain research and professional skills through conducting team-based research projects and preparing presentations
- To teach students about evolution in action in biological and non-biological systems

Description

Held on the campus of the Kellogg Biological Station near Battle Creek, this program focuses on preparing a diverse new generation of scientists and engineers with the advanced STEM skills necessary to progress interdisciplinary research on evolution in action, and develop innovative applications with actively evolving biological and technological systems. Session focuses included computational evolution, natural selection and implications of the integration of these concepts in engineering, biomimicry in robotic fish, as well as group work with separate research focuses in evolving digital robotic gaits, BoxCar2D software work. By the end of the program, students develop inquiry projects in collaboration with MSU faculty and graduate students focused on integrating evolutionary biology to solve problems.



Outcomes

Based on pre- and post-program evaluations, participant feedback shows that:

- Approximately 90% of participants agreed or strongly agreed that the program educated them about evolutionary science, BEACON-related science and engineering college majors, and the importance of conducting research.
- On a scale of 1 to 4 from low to high, student knowledge about evolution increased from an average rating of 2.76 to 3.27.
- Knowledge about engineering and computer science increased from a level of 2.88 to 3.08.

Participant testimonials:

- "It is a great opportunity for anyone who is interested in evolution and STEM"
- "This program has offered a great experience to me and has definitely opened my eyes as to how college works and also validated my intention of studying engineering"
- "MSU has definitely impressed me through this camp and I am now seriously considering attending this college because of the amazing experience"

Additional Significant Information

The BEACON Summer Program is the K-12 Outreach component of the BEACON Center for the Study of Evolution in Action which brings together faculty from the College of Engineering, Natural Science, Lyman Briggs, Agriculture and Natural Resources.

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