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BEACON Center publishes 1st report

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Matt Hallowell | The State News

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Lyman Briggs professor Robert Pennock shows a slide Tuesday outside MSU's BEACON Center for the Study of Evolution in Action that explains the contents of a paper on altruism he and three colleagues published last week. The study marked the first time scientists have been able to test generalizations of kin selection theory.

After five years of research by a collaboration of Spartan biologists, engineers and computer scientists, MSU's BEACON Center for the Study of Evolution in Action published its first report since opening its doors earlier this year.

The study focuses on why, in a survival of the fittest state of nature, organisms help each other, said Jeff Clune, an MSU alumnus and lead author of the study.

By witnessing digital evolution in motion, researchers now are able to better understand the behavior of the altruism gene.

The study was published online last week in the journal, *Proceedings of the Royal Society*, Clune said.

"I'm really ecstatic about where it ended up," he said.

"It's a great journal and it's already generating a lot of attention. It was my master's thesis at Michigan State and I'm glad it went to a good home."

The study was done by digital evolution in a situation that cannot be reproduced in a natural setting, said Robert Pennock, a coauthor of the report and professor of philosophy of science.

"The digital organisms became altruistic in just the way evolutionary science predicts," he said.

"It's the study of observing evolution in action and that's what the BEACON Center is all about. This is a nice demonstration of the kind of work that we're going to be able to do in the BEACON Center from now on that shows evolution in action."

Clune, now a postdoctoral fellow at Cornell University, said he first became interested in doing this kind of research after reading Richard Dawkins' "The Selfish

Gene” in one of his undergraduate classes.

“I wondered, ‘If nature is supposed to be so harsh, and the survival of the fittest, then why do we see so much altruistic behavior?’” he said.

“The underlying idea is that certain behaviors are altruistic, which is a selfless act from a person’s perspective ... but if you look at it from the gene’s perspective, it’s actually selfish.”

Heather Goldsby, an MSU graduate student and second author of the report, said this is because the altruism gene’s goal is to copy itself by being altruistic to other people with the same gene.

“The paper looks at different methods genes use to identify other people they should be altruistic to,” she said.

“It’s likely that your siblings or your parents are going to have the same genes, but wouldn’t it be better if the gene absolutely knew?”

To do this, they looked at the concept of the “greenbeard gene,” where all of the organisms with green beards in the program also were those who were altruistic.

Although researchers hypothesized the genes would be altruistic to those with green beards, the evolution didn’t work the way they predicted, Danielle Whittaker, the managing director of BEACON, said.

“(The greenbeards) were doing the bare minimum,” she said.

“They found out they could cheat the system by helping the least amount possible. Researchers found out they could adjust the system and give greenbeard genes new strategies to control the amounts of altruism and then it worked (the way researchers had hypothesized it would).”

Scientists can see all of this evolution digitally via a program called Avita-ED, developed by Clune, professors and faculty members at MSU throughout the past few years.

Clune said MSU was the perfect place to conduct this kind of research.

“One of the best things about BEACON and Michigan State is that on my team I had a philosopher, a computer scientist, an evolutionary biologist and a computer engineer,” he said.

“There are not many universities in the world where you’re going to get that kind of expertise at one table.”

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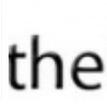
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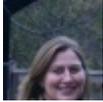
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