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Press Release**Contact:**Barbara Laskin
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**Macalester Professor Awarded \$250K NSF Grant
to Study Biological Swarming**
— Grant will link applied math theory and
experiment



St. Paul, Minn. – Dr. Chad Topaz, associate professor in the Mathematics, Statistics, and Computer Science Department at Macalester College, has been awarded a three-year, \$250,000 grant from the National Science Foundation (NSF) to study biological swarming and chemical

pattern formation. The project will provide research experience to 12 Macalester undergraduates who will collaborate with Topaz and with each other.

"The most exciting aspect of the project is that it forges links between applied mathematical theory and experiment," said Topaz. "Some of the participating students will perform experiments in addition to their applied math research, and all of the students will train within the experimental/theoretical XMAC (eXperiment, Modeling, Analysis, and Computation) Lab established at Macalester, one of a handful of its kind in the country."

Macalester students will also interact with senior scientists from Brandeis University, Harvey Mudd College, Wofford College and the University of British Columbia.

Recent Macalester graduate Amelia McNamara '10 said research in applied mathematics is "especially hard to come by at the undergraduate level, and this type of research makes Macalester stand out."

"I know my research experience on pattern formation in chemical systems prepared me for graduate school and made my PhD program applications much more competitive," said McNamara. "I am indebted to Prof. Topaz, Macalester, and the NSF for giving me the opportunity to learn these skills."

Current student Elise Delmas '12 said she's been lucky to be doing research with Prof. Topaz. "His previous NSF

IN THE NEWS**News**

"Walking Dead" actress to give Macalester commencement speech | Pioneer Press | March 29, 2016

Introducing the L.A. Times Critics-at-Large | L.A. Times | March 30, 2016

Walking Dead's Michonne (Danai Gurira) to give commencement speech at Macalester | City Pages | March 29, 2016

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grant has allowed me to work on modeling the movement of locust swarms," said Delmas. "Mathematical modeling has never seemed so exciting!"

Swarms are large, cohesive groups of organisms such as insects, fish and birds. These groups can arise from social interactions between swarm members and from external environmental factors such as food and light. Swarms can have ecological, environmental and even economic impacts. For example, locust plagues occurring in many parts of the world destroy hundreds of millions of dollars of crops each year, and the pesticides currently used to control the swarms are themselves problematic. Topaz and his students hope to determine more benign ways to influence biological swarms.

"This NSF grant offers Dr. Topaz and his students an important opportunity to link applied math theory and experiment while studying biological swarming and chemical pattern formation in a research setting," said Macalester Provost Kathleen Murray.

Macalester College, founded in 1874, is a national liberal arts college with a full-time enrollment of 1,958 students. Macalester is nationally recognized for its long-standing commitment to academic excellence, internationalism, multiculturalism and civic engagement.

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