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FACTS AND VALUES: WHAT'S IT TAKE TO BE AN EFFECTIVE SCIENTIST?

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To many, the image of a scientist is that of a white coat, alone in the lab peering into a microscope or computer monitor, interested in nothing but the facts.

But is that true? What qualities and virtues do scientists embrace that help guide their work?

Michigan State University's Robert Pennock and colleagues will be using a \$1 million grant from the John Templeton Foundation to explore the topic.

Pennock, a professor in MSU's Lyman Briggs College, and his team will interview as many as 1,000 of today's leading scientists, many of whom are Nobel Prize winners or members of the National Academy of Sciences, to find out what it takes, beyond lab smarts, to be a scientist.

They are especially interested in learning about the importance of values related to scientific methodology such as curiosity, honesty, and humility to data.

"People sometimes think of science as value-free, but there are moral threads that run throughout the fabric of science," Pennock said. "We uncover these hidden threads when we ask about the traits that scientists value and respect in each other."

Beyond its basic interest for understanding the nature of scientific practice, the research team thinks the study will help improve ethics training in science.

Currently scientists must participate in formal workshops and online courses to meet Responsible Conduct of Research requirements. Scientists must be certified with a certain number of hours of training every year.

But Pennock and his colleagues believe that these can be improved by incorporating aspects of how new scientists learn through mentoring relationships with experienced scientists.

"Basic scientific values are often passed on informally through anecdotes about personal research experiences or inspiring role models," he said. "This will be the first attempt to collect and compare such stories across the natural sciences."

The researchers think that these stories also will be of interest to those outside of the scientific community.

"The scientific virtues are not often spoken of outside the lab, so people fail to appreciate them" Pennock said. "Given some of the common stereotypes of scientists, the public may be surprised to learn of the depth of moral feelings they share."

Pennock also has appointments in MSU's Department of Philosophy; Department of Computer Science; and the Ecology, Evolutionary Biology and Behavior graduate program.

Other team members have included MSU graduate students Eric Berling, Chet McLeskey and Wendy Johnson; former MSU doctoral student Tony Givhan; and Jon Miller of the University of Michigan.

To learn more about the John Templeton Foundation, visit <http://www.templeton.org/>.

Additional support for the project comes from [BEACON: An NSF Center for the Study of Evolution in Action](#).