

7-17-2009

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Recommended Citation

"A New Way to Teach Genetics" (2009). *News Releases*. 1414.
https://ecommons.udayton.edu/news_rls/1414

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A New Way to Teach Genetics

07.17.2009 | Science A University of Dayton biologist and a Centerville High School science teacher have been chosen to join an exclusive network of scientists working to improve genetics education for high school students.

The American Society of Human Genetics and the National Science Resources Center selected University of Dayton researcher Amit Singh and Centerville High School biology teacher Stan Hughes to be partners in the Geneticist-Educator Network of Alliances Project, known as GENA.

The GENA Project is funded by a \$1.1 million grant from the National Science Foundation to develop a national network of 70 partnerships between geneticists and educators who will design teaching plans related to state standards, misconceptions in genetics and effective teaching methods. After testing in classrooms, these teaching plans are made available online for other geneticists and teachers to use.

"The rapid advances in genetic research, its popularity in the news and on TV shows like *CSI*, and the direct role that genetics plays in human health and reproduction make it a scientific discipline everyone needs to understand," Singh said. "Yet several studies reveal that students fail to critically understand the genetics knowledge taught in the classroom, and this lack of understanding translates to an inability to apply basic knowledge to their everyday lives."

Singh and Hughes met for the first time last month in Seattle for a three-day workshop to begin their yearlong partnership. They began development of their lesson plan and expect to have it completed by the start of the school year this fall.

Singh, an ASHG member, studies cell type specification in the eyes of fruit flies, offering insights on diverse biological processes such as patterning cell proliferation, cell death, cell survival, polarity and the genetic basis of human diseases. He works in the University's TREND laboratory — the Center for Tissue Regeneration and Engineering at Dayton.

"The benefit is not only the lesson plan we create, that's just a start," Hughes said. "The vision is to have a relationship between high school and college genetics. Dr. Singh is able to provide specific knowledge of questions scientists are tackling in the field right now, instead of just learning from books, and Centerville students come to see the University of Dayton as a scientific research university. If the relationship works well, we can expand to do workshops and summer camps or move into other areas of study."

The American Society of Human Genetics said it hopes the GENA Project can serve as a model that could be adapted by other scientific disciplines to improve K-12 STEM (science, technology, engineering and math) education.