

8-5-2010

Cinderella of Modern Genetics

Follow this and additional works at: https://ecommons.udayton.edu/news_rls

Recommended Citation

"Cinderella of Modern Genetics" (2010). *News Releases*. 1142.
https://ecommons.udayton.edu/news_rls/1142

This News Article is brought to you for free and open access by the Marketing and Communications at eCommons. It has been accepted for inclusion in News Releases by an authorized administrator of eCommons. For more information, please contact frice1@udayton.edu, mschlangen1@udayton.edu.

University of Dayton, Ohio (url: <http://www.udayton.edu/index.php>)



Cinderella of Modern Genetics

08.05.2010 | Research, Faculty, Science

A University of Dayton biologist has received a prestigious National Institutes of Health grant to study the genetics of fruit flies in an effort to gain a greater understanding of how birth defects happen in eyes.

Amit Singh will use the \$218,250 two-year grant to "help unravel the genetic underpinnings" that are responsible for pediatric blindness, retinal diseases and other eye defects.

Every minute somewhere in the world a child goes blind, according to the World Health Organization, yet specialists say half of all childhood blindness could be avoided by early treatment.

"Fruit flies are referred to as the Cinderella of modern genetics. Their entire life cycle is just 12 days, so, roughly, you can study at least 24 generations in a year. The genes of these flies are similar to those of humans. Therefore, what we learn from flies can be extrapolated to mice and, eventually, humans," said Singh, assistant professor of biology, who has been conducting research on eye defects for a dozen years.

Singh's lab in the Center for Tissue Regeneration and Engineering at Dayton (TREND) contains 1,500 strains of fruit flies. He is working side by side with graduate and undergraduate students to identify key genes involved in early eye patterning, which holds the clue to healthy eye development.

"Generally a common problem with studying gene function is that most genes are essential and mutations in these genes are lethal, meaning they kill the organism at some stage of development. Thus, researchers cannot obtain 'mutant organisms' to study defects caused by the particular mutation," he explained.

"Now new tools developed in flies allow us to circumvent this problem. Using these genetic tools we can trick the fly by removing the gene function in a small subset of cells within a fly. As a result, we can obtain mutants and study the defects over a longer period of time without killing the fly. We can understand which cell types are affected and when they're affected during development of the eye or any other organ," he said.

Singh said his research grew out of both a personal interest and curiosity. "My research started as an inquisitive approach, then with years of rigorous training became a specialization. Some relatives in India were born with birth defects in the eye, and it raised questions about the cause. Today, this research field is growing in leaps and bounds."

Last year, Singh was chosen to join an exclusive network of scientists working to improve genetics education for high school students. Through a \$1.1 million National Science Foundation grant, the American Society of Human Genetics has developed a national network of 70 partnerships between geneticists and educators, who are working together to design teaching plans for classroom teachers.

On campus, Singh conducts research with more than 20 researchers from six academic departments and the Research Institute in the TREND Center. They perform more than \$1 million annually in sponsored biomedical research and have compiled more than 500 peer-reviewed articles.

Earlier this year, the state of Ohio named TREND an Ohio Center of Excellence.

For more information, contact Amit Singh at 937-229-2894.