Life Science Research Unlocks Human Health Discoveries

The Need: Basic research in areas such as genetics, microbiology and biochemistry is critical to improving our understanding of and finding treatments and cures for human disease.

Serving the Need: A number of life science faculty in the College of Agriculture and Life Sciences are conducting basic research that impacts human health. Here are a few examples.

- Dr. Trudy Mackay, William Neal Reynolds professor of genetics, has discovered that both gender and environment can affect gene expression. These findings have given medical researchers new insight into the genetic mechanisms responsible for complex traits such as disease resistance, high blood pressure and longevity.
- Malaria kills more people than all inherited human disorders. Despite decades of research and treatment, *Plasmodium falciparum*, the single-celled organism that causes malaria, always seems to stay a step ahead of human immune systems and pharmacies. Geneticist Dr. Philip Awadalla recently received three major research grants to study the genetic underpinnings of the human-versus-plasmodium arms race.
- Dr. Scott Laster of the Department of Microbiology and the research and development arm of Erimos Pharmaceuticals – a Houston, Texas, company focused primarily on the discovery, development and commercialization of cancer drugs – filed a joint provisional patent in 2006 for use of a developmental Erimos product to reduce the often fatal complications of multiple flu strains, including avian flu. The product – a small molecule named EM-1421 – is currently in clinical trials for treatment of malignant tumors.
- Arthropod-borne viruses are a major source of mortality throughout the world. Dr. Dennis Brown of the Department of Biochemistry investigates the structure, function and assembly of the model membrane containing virus Sindbis. Sindbis is the prototype of the alpha viruses, a group of infectious agents that are transmitted in nature by blood sucking insects. Brown’s research findings could reveal ways to control diseases caused by these viruses.

Impact beyond North Carolina: The College’s basic research produces discoveries that push the frontiers of medicine. By learning the “what” and “why” behind gene expression or the molecular composition of a virus, for instance, our scientists are opening doors to treatments and cures for human disease.

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