

FACULTY PROFILE: PABLO IRUSTA

By Bill Cessato

How do cells in the body commit suicide?
Professor Pablo Irusta says the answer could be lifesaving.

The self-destruction process—known as apoptosis—can be a positive function because it prevents cells from unfettered multiplication.

Working correctly, apoptosis keeps cells infected by micro-organisms, such as viruses, from making harmful inroads. But when apoptosis fails, damaged cells can grow uncontrollably. The process is what allows cancerous tumors to develop in the body.

“A cancer cell is a very selfish cell,” says Irusta, assistant professor in the Department of Human Science at NHS. “It divides even though it is in the wrong place at the wrong time.”

Preventing apoptosis failure is a goal of Irusta’s current research into the molecular mechanism of what he calls, “cellular suicide.”

Irusta, a Yale-trained microbiologist who grew up in Argentina, also researches cell aging and the cellular effects of viral infections such as those caused by respiratory syncytial virus (RSV).

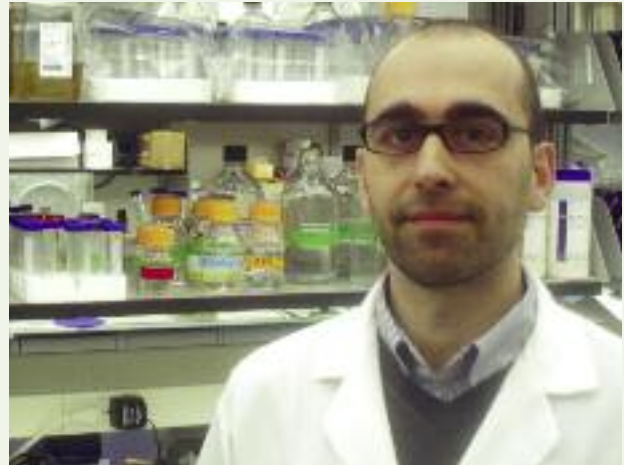
According to the Centers for Disease Control and Prevention, RSV is the most common cause of bronchiolitis and pneumonia among infants and children under 1 year of age.

The Georgetown professor works with Johns Hopkins University professor **Fernando Polack**, director of the INFANT Foundation. Based in Buenos Aires, the foundation is part of Johns Hopkins’ Panamerican Infant Network, which collaborates with Irusta’s lab on projects related to cellular responses to viral infections.

Irusta regularly teaches undergraduate students at the NHS Discovery Center, a 3,000-square-foot scientific laboratory located in the Med-Dent Building.

This past summer, he brought six Georgetown students to Buenos Aires, where he directed a six-week, six-credit program on translational science at the INFANT Foundation.

Translational science recognizes that scientific discoveries, which often begin with basic molecular or cellular



NHS Professor Pablo Irusta

research, need to be “translated” into practical applications, such as medications or other treatments.

“Dialogue across scientific disciplines—particularly between physicians and basic researchers—is critical if we are to translate discoveries made in the laboratory setting into clinical therapies and decisions that will directly benefit patients,” Irusta explains.

He believes undergraduates need to be exposed to the concept of translational science early on.

“I love working with undergraduates,” he says. “The excitement that they show when they learn something for the first time or when they find the answers to a question we just posed a few days earlier is tremendous. Those discovery moments are very gratifying.”

While in Argentina, the Georgetown group worked closely with Polack and a team of researchers and students from other universities. “The solution for many scientific problems—especially those that are global in nature—will only emerge from international research collaborations,” says Irusta.

The group researched RSV and dengue hemorrhagic fever in the classroom, through laboratory experiments, and during clinical work in local pediatric hospitals.

Two student participants say the internship helped solidify future career plans.

Martyna Skowron, a third-year NHS student majoring in human science, says the course reinforced her plans



NHS Professor Pablo Irusta (pictured near the INFANT sign), colleagues, and students during the translational health science internship in Argentina

to enter the medical field, either as a physician, public health representative or researcher.

“This trip has been one of the most influential experiences of my life,” she says. “It was fascinating to see RSV through the lens of basic science and clinical application.”

Emma Hust, a fourth-year international health major, says that she never before participated in this kind of program.

“Having these opportunities at INFANT—paired with the clinical experiences at the various hospitals—helped me gain a more complete perspective about the many components involved in global public health initiatives and scientific research,” she says.

Back at Georgetown, Irusta’s students have expressed interest in continuing the research they began in Argentina. One example is **Bridget Dowd**, a third-year human science major at NHS who is now working on her honors thesis in Irusta’s lab, specifically on RSV.

And plans for another international collaboration already are underway for next year’s internship.

“Scientific partnerships across national boundaries and academic disciplines continue to be critical in addressing biomedical problems,” Irusta says. “Our continuing goal is to prepare students in the health sciences to operate effectively in international multidisciplinary research teams.”

PABLO IRUSTA: MINI VITA

EDUCATION

Yale University Ph.D., Microbiology
December 1999

University of Buenos Aires B.S., Molecular Biology
March 1992

COURSES

Immunology
Molecular and Cellular Fundamentals of Health and Disease
Human Science Internship
Contemporary Issues in Health Science Seminar
Translational Health Science Internship in Argentina

RECENT PUBLICATIONS

Irusta has co-authored articles in:

Journal of Leukocyte Biology (April 2007)

“IL-4 Induces a Wide-Spectrum Intracellular Signaling Cascade in CD8+ T Cells”

Journal of Virology (January 2007)

“C5 Modulates Airway Hyperreactivity and Pulmonary Eosinophilia During Enhanced Respiratory Syncytial Virus Disease by Decreasing C3a Receptor Expression”

Mini Reviews in Medicinal Chemistry (September 2006)

“Anti-Tumor Therapeutic Molecules that Target the Programmed Cell Death Machinery”