

The Power of Flow Cytometry in Immunology Research

Flow cytometry is an essential tool in modern immunology research. It allows researchers to examine the function of dozens of different types of immune cells and their responses to the activation of a large array of cell receptors. This activation is triggered by infectious agents, allergens, injuries, and normal and cancerous cells. This sheds light on mechanisms and potential solutions for allergic, autoimmune, inflammatory, infectious, cancerous, and immune-deficiency diseases.

Every penny raised through the 2012 Molly Appeal will be used to purchase a sophisticated high-speed flow cytometer. Equipped with the latest software and hardware capabilities, this machine will allow Dalhousie Medical Researchers to analyze more than 20,000 cells per second. It will meet a growing demand for immune system analysis that cannot be met by existing 10-year-old technology. This in turn will help ensure the future productivity and competitiveness of Dalhousie's immunity, inflammation and infectious diseases research effort.

Here's what some of our researchers have to say about the new high-speed flow cytometer:

"The flow cytometer will allow us to see how cells behave – what makes them proliferate or migrate, react or stop reacting. It will help us understand how the immune system works to fight infection and how it causes inflammation and allergic reactions."

—Dr. Jean Marshall, head of the Department of Microbiology & Immunology at Dalhousie Medical School

"We can use this equipment to understand the fundamental workings of the immune system and to see what's happening with individual patient's diseases... it will allow basic research to be translated very quickly into patient outcomes."

—Dr. Ian Alwaysn, associate professor of surgery, Dalhousie Medical School and surgical lead of the multi-organ transplant program at the QEII Health Sciences Centre

"Current equipment allows us to study four molecules at a time – the new flow cytometer will increase this to eight to ten molecules at a time. Not only will this allow us to conduct our experiments that much faster, we'll be able to track more interactions at once to get a more complete picture of the immune system's workings – while using fewer reagents and other supplies."

—Dr. Brent Johnston, Canada Research Chair in Inflammation and Immunity at Dalhousie Medical School

"The flow cytometer is the workhorse of immunology research... an up-to-date model is essential, because to be at the leading edge of science and compete successfully for funding, researchers need to operate at the highest level technology has to offer."

—Dr. Nikhil Thomas, assistant professor, Microbiology & Immunology and Medicine, Division of Infectious Diseases, at Dalhousie Medical School