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Choosing Your Flow: Northwestern's Cytometry Cores

If a researcher needs to separate and characterize thousands of cells per second, then it's fairly evident that he or she needs to use flow cytometry for the job. But with two flow cytometry core facilities on the Chicago campus, the less obvious question is which one to choose.

Physically being able to sort and analyze cells based on certain characteristics allows researchers to isolate populations of interest. From there, they can see what makes a population die, proliferate, or change in any way. With the exception of sorting the cells — only the core associated with the Cancer Center performs this process — both facilities have similar equipment; however, they aid with this process in different ways.

"We train our users and set them free," says Rebecca Bultema, manager of the Interdepartmental Immunobiology Center Flow Cytometry Core Facility located in the Tarry Building. "We are happy to help with problems or questions. But we want our users to be independent."

Directed by Stephen D. Miller, microbiology-immunology, the core that Bultema manages is described as "user run." Investigators who want to use this core can expect to run samples and complete data analysis by themselves after receiving training and initial recommendations for approaching the research.

For investigators who prefer to have less involvement with their samples or more supervision for their work, the core that is a part of the Robert H. Lurie Comprehensive Cancer Research Center, located in the Olson Building, is a better match. Under the direction of Charles Goolsby, pathology and editor-in-chief of the journal *Cytometry*, the staff offers everything from full-service sample preparation through data analysis.

If a researcher prefers to complete experiments independently, then the staff is prepared for that too. They offer training for specific instrumentation, and hands-on guidance is always available upon request. "Even when they are using the instruments by themselves, we are pretty much looking over their shoulders the whole time," says James Marvin, manager of the facility. "We have a lot of expertise here, so we can see if the data look strange."

Flow cytometry can be used for experiments in many disciplines, including immunology, cancer research, microbiology, and nanotechnology. Both Bultema and Marvin remark that what makes their respective core facilities exciting is the diversity of projects.

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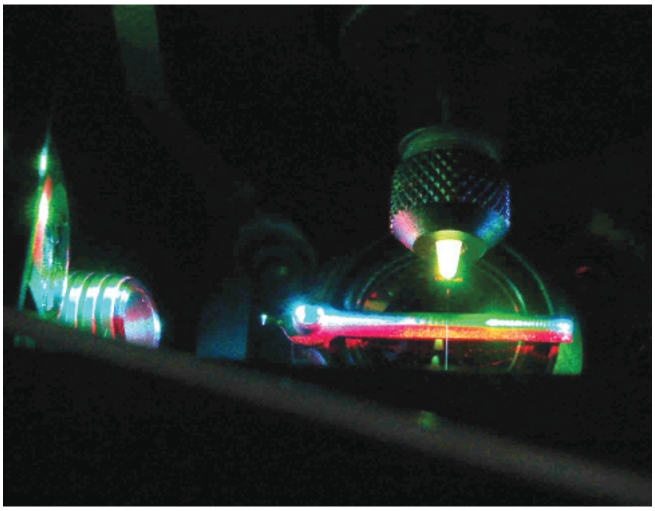

Colorful lasers intersect with cells in the interrogation chamber of a flow cytometer in the Robert H. Lurie Comprehensive Cancer Research Center. *Image by James Marvin*

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"Every day I come to work unsure of what's going to happen," says Bultema who studies Epstein-Barr virus tumor progression in Burkitt's lymphoma by examining proteins with flow cytometry. "Either with my own work or through what other people bring in, I'm always learning something new."

Marvin, who works on Goolsby's investigation into the biology of cells in patients with leukemia, says a lot of the projects that come through the facility are exciting because they have the possibility to translate directly to medicine.

"The University's link with Northwestern Memorial means that we see a lot of translational projects," he says. "It's one step closer to treating humans."

For more information about the Interdisciplinary Immunobiology Center Flow Cytometry Facility, please click here.

And to learn more about the Robert H. Lurie Comprehensive Cancer Center Flow Cytometry Core facility, follow this link.

Science Chicago Social Media Aspects to Continue

Students work with pipettes to burst cells open and isolate DNA at the Center for Genetic Medicine during a Science Saturdays event. *Photograph by Peter J. Schulz, courtesy of Science Chicago*

Science Chicago — the city's yearlong celebration of science – concluded at the end of October. The initiative's social media efforts, however, will continue to publicize science-related events in and around Chicago. This includes the web site, Twitter and Facebook pages, and e-newsletter.

For 12 months, Science Chicago offered more than 1,500 programs designed to engage community members in science. Northwestern organized several of these, including multiple Junior Science Cafes and Science Saturdays, which explored various topics such as genetics, nanotechnology, astronomy, and evolution.

"I would like to thank everyone at Northwestern who participated in Science Chicago. Your efforts contributed greatly toward making it a resounding success," says Meg McDonald, executive director of ORPFC and member of the Science Chicago advisory board. "It is my hope that, through the framework laid by Science Chicago and maintained by the Museum of Science and Industry, our faculty and students will continue to share their knowledge and love of science with the broader community."

A web-based final report on the initiative is available for those who would like to learn more about the organizations and people who made the project a success. That report can be accessed here.

Inquiries about Science Chicago should be directed to Rabiah Mayas, science director, Center for the Advancement of Science Education at the Museum of Science and Industry, at rabiah.mayas@msichicago.org.

Argonne's Connection to the 2009 Nobel Prize in Chemistry

The Nobel Prize in Chemistry was awarded to three scientists for determining the three-dimensional structure of the ribosome, which helps translate DNA code into life. This accomplishment was partly made possible by the Advanced Photon Source (APS) at Argonne.

Venkatraman Ramakrishnan, MRC Laboratory of Molecular Biology, Cambridge, England; Thomas A. Steitz, Yale University and Howard Hughes Medical Institute; and Ada E. Yonath, Weizmann Institute of Science, Rehovot, Israel, performed important research with Argonne's APS that led to their findings.

The APS, constructed in 1996, provides the brightest coherent x-ray beams in the Western Hemisphere. The beam allowed the three Nobel laureates to view the ribosome assembly's subunits in high-resolution.

As a result of research completed at Argonne, the three scientists wrote more than 60 papers explaining why ribosomes are an essential component of life. They also developed 3-D models of the structure that are now being used to develop new antibiotics to fight bacterial infections.

More information about Argonne's APS can be found at www.aps.anl.gov.

Aerial view of the Advanced Photon Source at Argonne National Laboratory. *Image used courtesy of Argonne National Laboratory*