



## } AARON WHEELER | Chemistry

### NEW LAB-ON-A-CHIP TECHNIQUE SHOWS PROMISE FOR EARLY BREAST-CANCER DETECTION

Aaron Wheeler thinks small — very small — to think big. He leads an interdisciplinary group of scientists and engineers working to develop lab-on-a-chip (LOC) devices — miniaturized, automated instruments capable of conducting several laboratory experiments at once. Aaron and his team made international headlines when they announced a LOC technique that analyzes tiny samples of blood and breast tissue that may someday be used to detect breast cancer more quickly than ever before.

A world-renowned expert in digital microfluidics, Aaron is working to unlock the potential of these new tools. “The new methods we’ve developed may someday facilitate routine screening of clinical samples for analysis of hormones. This may be useful in many applications, including screening for risk of developing breast cancer, especially in high-risk populations, and monitoring the response to antiestrogen breast cancer therapies such as aromatase inhibitors. It could also help with monitoring hormone levels in infertility treatments and detecting illegal doping in athletes.”

## } NATALIE ZEMON DAVIS | History

### HISTORIAN AWARDED ONE OF THE WORLD’S TOP ACADEMIC PRIZES

In the words of the Holberg International Memorial Prize Academic Committee, Natalie Zemon Davis’ imaginative approach to history, coupled with her intensive archival research, makes the past come alive. Natalie is an emeritus professor from Princeton University and a UofT historian who has earned a reputation as a top scholar and a popular lecturer. A pioneer of early modern history, social and cultural histories and the study of women and gender, she has been praised for her creativity, compelling narration as well as her innovative work in history on film. Natalie also has a long history of political activism in civil rights, women’s rights, anti-racism and issues of free speech.



Photos: Henry Feather

## } JENNIFER MURPHY | Chemistry

### PROBING TORONTO’S POLLUTION PARADOX

Cars and factories are running much cleaner than ever before, releasing fewer pollutants into the atmosphere. Surprisingly, this has not led to a reduction in smog in Toronto and Jennifer Murphy, an expert in atmospheric and environmental chemistry, is investigating why.

“Despite clean air strategies such as Ontario’s Drive Clean program, Toronto is still a polluted soup of chemicals,” says Jennifer. “We need to reduce emissions much more dramatically before we can expect to see a really big impact.” Jennifer’s research also reveals that more attention needs to be paid to the other factors contributing to the city’s smog — people using paints, solvents and even lawnmowers on hot hazy days add to the mix. Her work could contribute to improved policies and practices to help cities tackle air quality and climate change.







Knox College

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NICHOLAS EVERETT | History  
WALID SALEH | Study of Religion and Near and Middle Eastern Civilizations

**NICHOLAS EVERETT AND WALID SALEH ARE FIRST CANADIANS TO WIN NEW DIRECTIONS FELLOWSHIPS**

Medieval historian Nicholas Everett and Walid Saleh, a scholar of religion and Near and Middle Eastern civilizations, each received a highly competitive New Directions Fellowship from the Mellon Foundation to pursue cross-disciplinary research.

Nicholas hopes to shed new light on the history of medicine and science by undertaking specialized coursework in pharmacology and toxicology.

“By understanding the chemistry of natural drugs and the processes they affect, historical texts on pharmacy can be read more sensitively, claims more effectively evaluated and traditions better understood and explained.”

Walid will use his fellowship to undertake a comprehensive unified history of the Arabic Bible in the Middle East where three of the world’s major religions — Christianity, Judaism and Islam — began and still co-exist side by side.

“The presence of active members of the three communities side by side make for a fascinating relationship to the Bible, with each religious community aware of the other’s views of the same book,” says Walid. He will use his fellowship to undertake serious training in Jewish study, including Biblical Hebrew, so as to chart a detailed history of the ways in which Islamic religious tradition interacted with the Bible and how each religion’s interpretation of the Bible affected and influenced the other.

**In the 2009 Times Higher Education-QS World University Rankings, UofT was ranked by academic peers globally as one of the leading institutions in all fields including:**

**11th** in the world in humanities and life sciences

**14th** in the world in natural sciences

**15th** in the world in social sciences.

Photos: Henry Feather



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SCOTT SCHIEMAN | Sociology

**SHEDDING LIGHT ON RELIGIOUS BELIEFS**

Using data from two recent national surveys, sociologist Scott Schieman found that most Americans believe the good and bad things that happen to them are all part of God’s plan.

Some of Scott’s key findings include: 82 per cent say they depend on God for help and guidance in making decisions; 61 per cent believe that God has determined the direction and course of their lives; and 32 per cent agree with the statement, “There is no sense in planning a lot because ultimately my fate is in God’s hands.”

Given the prevalence of religion in American culture, understanding the ways people think about God’s influence — especially in the area of political discourse — is an increasingly important area for researchers to document, describe and interpret. Next, Scott plans to look into the perception of God choosing sides in a competition, a common theme in sports and politics.

Scott is also working on a new book, *Divine Intervention*, examining how beliefs about God’s influence in everyday life shape our health, our social lives and the nature of our politics.

Involving more students in research as part of their undergraduate learning experience is a major theme in the Faculty of Arts & Science. Not only do students experience the excitement and rigour of scholarship, they also develop critical thinking and problem-solving skills that are essential to lifelong learning and adapting to change.

**Here are a few ways undergraduates experience research directly in Arts & Science:**

The Research Opportunities Program enables second-year students to take part in professors’ research projects. Over 130 students participated in the 73 projects offered over the course of the year.

The Independent Experiential Program allows students to work with faculty on research projects taking place off-campus and often in other countries. During summer 2010, 27 students worked on a range of projects in the fields of anthropology, ecology and evolutionary biology, and geology in Canada, Indonesia, Peru, South Africa and Turkey.

Each year, hundreds of fourth-year students take part in Senior Independent Projects. Students propose a topic and work under the supervision of a faculty member, gaining valuable scholarship expertise as they produce a senior thesis or research paper.

The NSERC Summer Research Projects offered through the Natural Sciences and Engineering Research Council of Canada enabled 120 undergraduate students to do paid work with faculty members on a range of science research projects over the summer.