



JOHN LOPPNOW: The chemist's latest experiment is a new, multi-disciplinary science course taught by profs from eight different disciplines

The 3M Awards: our best teachers

These 10 professors are leading the way, challenging their students—and putting teaching back at the centre of the university

BY NICHOLAS KÖHLER, SUSAN MOHAMMAD AND RACHEL MENDELSON • Baljit Singh, a professor of anatomy at the University of Saskatchewan's Western College of Veterinary Medicine, laughs about it now—but during his first year as a veterinary student, he *failed* the very course he now teaches. "I always tell my students," says Singh. "I use it as a very inspirational example. I say, 'Look, this is what happened to me in my first year. And I ended up teaching anatomy.'"

Singh, the one-time academic bungler, has since gone on to receive numerous academic distinctions, and is one of 10 professors

named this year to the 3M National Teaching Fellowship. The award was established 24 years ago by 3M Canada in collaboration with the Society of Teaching and Learning in Higher Education. *Maclean's* has been the award's media partner since 2006.

These new fellows join an elite club that now includes 238 professors. To win, it's not enough to be merely a great teacher. "We're looking for personalities, for people who are authentic, who are passionate—and Baljit is a great example," says program coordinator Arshad Ahmad, a Concordia University business professor and a 3M fellow himself.

Singh attributes his pedagogic success to the teachers in his own life. "They have built a fire in my mind," says Singh. "This is the power of a teacher—once you are hooked up with an outstanding teacher, half the battles are won."

The 3M National Teaching Fellowship rewards great teaching, and the teaching leadership required to share innovations with the broader educational community. Fellows are regularly brought together to exchange ideas, making the club an incubator for new teaching techniques. In June, they will gather in Fredericton; in November, this year's inductees will attend a retreat at the Fairmont Le Château Montebello in Quebec. "We bring these people together to get to know each other as teachers and learn from each other," says Ahmad. "There they are using their cur-

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THIS YEAR'S BEST

IN 1986, to recognize the importance of university teaching, the Society for Teaching and Learning in Higher Education and 3M Canada created the 3M Teaching Fellowships. Up to 10 university faculty members are recognized each year for their exceptional contributions to teaching and learning. Since 2006, *Maclean's* has proudly been the program's media sponsor.



This year's 3M Teaching Fellows, from left to right: David Barnett, Department of Drama, University of Alberta; Nick Bontis, DeGroote School of Business, McMaster University; Ken Cramer, Department of Psychology, University of Windsor; Carolyn Eyles, School of Geography and Earth Sciences, McMaster University

ting edge stuff and sharing it, mentoring others to follow in those footsteps." Here are a few that will be among them:

Glen Loppnow, Department of Chemistry, University of Alberta

"This is the extract from thousands of fireflies," jokes Loppnow. Before a class of rapt first-year science students, Loppnow pours a beaker of bleach into a bottle containing the chemical luminol. The result, known as chemiluminescence—what a firefly does inside its glowing tail—transfixes his students. "No fireflies were harmed in this experiment," Loppnow promises, before outlining how the energy of the chemical reaction has been converted into this blue, otherworldly light. That illuminating glow is a nifty metaphor for Loppnow's brand of teaching excellence.

Loppnow admits he wasn't always a great teacher. Had you caught one of his lectures a decade ago, he says, "you would have seen somebody whom the students considered mediocre and grumpy. I was rapidly getting a really bad reputation." Caught up in the imperatives of research, Loppnow realized he was neglecting his real passion. "I was really denying my true self," he says. "I really wanted to be a teacher."

As a kid growing up in a tough neighbourhood in New Mexico, university didn't appear to be in the cards for Loppnow. No one in his family had gone beyond Grade 12. But it was a high school English teacher, Susan Frye, who saw promise and encouraged him to apply to college. He got in, eventually doing graduate work at Berkeley and Princeton. Frye "changed my life," says Loppnow. "That's really the transition from my being a truck driver—which is what I thought I was going to be—to being a professor."

After the death of his father, Loppnow took an introspective sabbatical and realized what he needed to do to change his life—concentrate on teaching as much as on research. "I wanted to change students' lives the way that my life had changed."

He's done that with a vengeance. Loppnow is helping pioneer Science 100, a holistic

approach to teaching undergraduate sciences the U of A is introducing this year, putting eight profs from eight different disciplines—mathematics, physics, psychology, and so on—together in one class. As one instructor leads, the others sit at a long table (they've dubbed it "the peanut gallery"), raising questions and caveats.

"They draw connections between the sciences," says 18-year-old student Lindsey Heagy. That combination of disciplines is designed to produce a kind of chemiluminescence of the mind—the glow of learning from combining different ways of thinking. "It's really neat to see a concept approached from all sides," says Kaylee Bohaychuk, also

lived with them. He's the first prof to participate in a University of Saskatchewan program designed to bolster academic advising by asking a professor to make his home inside an undergraduate student residence.

Approachability and empathy are the hallmarks of his teaching. "If you were frustrated, you could talk to him," says Sharmila Makhan, a former student who now practises emergency veterinary medicine in Vancouver. "That's not something you could do with a lot of the professors." Indeed, Singh, who prides himself on recruiting Aboriginal students to his research lab, is most passionate when recalling the students who have stuck with university due to his counsel. "These

are the people who were just one step away from leaving," he says. "Some of them have done their master's degrees now, a couple are in Ph.D. programs, a couple have finished their M.D. programs."

That student-centred philosophy stems from his own early academic difficulties. Singh, a former president of the American Association of Veterinary Anatomists, flunked anatomy at Punjab Agricultural University because "I did not like it—I did not like the subject, I did not like the way it was being taught." India's universities were "very regimented," he

says. "I was the most happy when I was learning on my own by doing things." Such experiences convinced him that students learn most and best when they are actively engaged in the learning process. "Students have to become equal partners in designing a learning program," he argues.

It's a conviction he's demonstrated works in practice. A few years ago, Singh identified an ongoing complaint among his first-year students: they learn the basics of animal anatomy, physiology and biochemistry, but until third year, they are frequently denied access to the kinds of hands-on learning that would

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SARAH KEEFER: Making Old English literature come alive

18. It's a style of learning that's only going to become more in-demand, says Loppnow. "The way that science is moving is that the important questions for understanding how the world works occur at the interface between these different disciplines," he says. "We really needed a way of getting students to have that broad-based exposure."

Baljit Singh, Western College of Veterinary Medicine, University of Saskatchewan

How committed is Singh to his students? For the past eight years, he and his family have



3M Teaching Fellows (continued), left to right: Sarah Keefer, Department of English Literature, Trent University; Glen Loppnow, Department of Chemistry, University of Alberta; Sylvain Robert, Department of Chemistry and Biology, Université du Québec à Trois-Rivières; Hamzeh Roumani, Department of Computer Science and Engineering, York University; Baljit Singh, Western College of Veterinary Medicine, University of Saskatchewan; John Smol, Department of Biology, Queen's University

help them make sense of the book learning. Singh's response? He created a clinical role-playing game not unlike an episode of TV's *House*. Students receive a case history detailing the health travails of an animal. Working in a group, the students dissect the data until they arrive at a conclusion as to what new information they require to reach a diagnosis—an MRI scan or blood report, say. The process continues, with more and more information doled out to the team according to the students' decisions. "This clinical scenario helps them to integrate the information and also relate it to a very specific example of a clinical abnormality," says Singh.

Almost more impressive than the teaching

kilometres below Greenland's centre.

An internationally recognized paleo-ecologist, Smol's research into environmental changes has brought many accolades. He is a Canada Research Chair, has received 25 research awards and fellowships, and in 2003 was awarded the \$1.25-million Gerhard Herzberg Gold Medal for Science and Engineering, Canada's most prestigious science prize. He's known as one of the country's leading research scientists, but the Queen's professor

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JOHN SMOL: One of Canada's top scientific researchers is also one of our best teachers

method is the persistence with which Singh pursued its implementation. The course was not part of the curriculum when he began recruiting students and profs—all on a voluntary basis: no pay for the profs, no credit for the kids. It ran for five years before becoming a recognized course in 2007.

But Singh is unfailingly modest. "I wish I had these types of opportunities," he says. "I'm sure I would have learned much more and become an even better student—and, later on, teacher." None of his teaching awards are displayed on his office walls. "I've done reasonably well in my life," he says. "But it's simply because I had outstanding teachers."

John Smol, Department of Biology, Queen's University

John Smol is lecturing to an oversubscribed fourth-year biology class. Dark bands of volcanic ash run through the majestic ice cliffs of Greenland, projected onscreen behind Smol, as students listen to the professor of limnology and paleolimnology explain how changes in climate, pollution and ice-floe dynamics over the past 300 years can be understood by studying ice taken from three

is now being recognized as one of Canada's greatest teachers, too.

Sharing his research discoveries with students is a natural fit for Smol, who has been doing it for the last 24 years. He studies the evolution of lakes with the same care that he brings to nurturing his students, some of whom have gone on to become professors, Canada Research Chairs and associate deans. "He's very engaging and really passionate about what he teaches," says Susan Ma, 21, a fourth-year biology major. "It makes us students more interested since sometimes you have professors who are just lecturing."

Smol, who has sponsored more than 60 undergrad thesis students, says he gets a kick out of watching things "click" with students. "The whole goal of a professor is to try to tap whatever potential a student has," says Smol. "My job is not to get them as far as they think they can go but as far as they can really go." Good teachers, he says, are the ones who maintain passion for their chosen field. He remains excited by his own job and area of study because he never wakes up wondering whether what he does is important. "For a democracy to function correctly we need an

educated and engaged citizenry," he says. "I know climate change is important. This is our planet, why are we screwing it up?"

Sarah Keefer, Department of English, Trent University

It's been 35 years since Sarah Keefer first set foot in an Old English class as a master's student at the University of Toronto. And as the self-described "Tolkien nut" explains how she felt when she heard the language of pre-11th-century England, there's a wistfulness in the smile that spreads across her face. "It was twilight zone," she says. "I thought, 'Oh my God, I've come home.'"

Still smitten with the evocative alliteration in poems like "Dream of the Rood" and "The Wanderer," Keefer endeavours to satiate the curiosity of her students at Trent University, who wonder, "what could possibly motivate anyone to this degree?" she says. To Keefer, Old English isn't just a language; it's a culture. Her goal, she says, "is to have them, for a split second, look at [the text] through the eyes of the person that wrote it." When she introduces the literature of the pre-industrial world, she passes around a modern replica of the vellum that was used to make books in Anglo-Saxon times. As the students run their fingers over the calfskin parchment, distinguishing the hair side from the flesh side, "They suddenly think, 'Whoa. We're not talking about Staples here,'" she says.

Her enthusiasm is contagious. As a group of upper-year students translate a passage from Aelfric's *Lives of Saints* in a recent seminar, they note how "cool" it is that a seventh-century Anglo-Saxon saint was able to stave off the advances of a powerful male suitor, and debate the details of the monastic life she led, including the scratchiness of the wool she wore next to her skin and what drove her to starvation. Though they sometimes stumble over foreign-sounding Old English phrases, Keefer hangs on their every word, offering more than just the occasional "Very Good!" "Terrific!" and "Go with it!"

Third-year student Graeme Johnson says this kind of encouragement makes Keefer's class a place where "you're never going to be worried about mispronouncing words." Her desire to provide the historical and cultural context for the literature attracts students from a range of disciplines, says Johnson, who is majoring in women's studies. "Professor Keefer has really picked up on where everyone's area of expertise lies and draws them into the conversation at appropriate places," he says. According to Keefer, there's simply no other way to teach. "They're people," she says, "and we're learning together." **M**