



ALL: RYAN SQUIRE GRAPHICS

## THEN & NOW

A reminder of the pace of change, and of timeless truths, from a 2000 booklet about Dr. Rolf Syvertsen, DMS's dean from 1945 to 1960:

"Steve Zaslow '58 tells a story illustrating how Sy also taught by example: 'It was the Asian flu epidemic of 1958. I had to go to [the student infirmary after falling ill]. . . . An hour after I was admitted, Dean Syvertsen popped in. I was amazed that he visited me. When he left, . . . I cried. It was then that I realized my vulnerability, sickness, and need for support. That one-minute visit taught me the power and influence of the physician to comfort and reassure. . . . It's a lesson that comes home to me repeatedly.'"



232

Number of hours DMS students now spend learning the art of patient care in the On Doctoring course



The skies were leaden but the mood upbeat at Dartmouth Medical School's 2007 Class Day ceremonies. Among those reveling in the festivities were 1 Rebecca Hurley, left, who did her doctoral research in the lab of biochemist Lee Witters, right; 2 a gaggle of gowned master's degree students, including 3 Sajida Kimambo, who was adding an M.P.H. to her M.D.; 4 and, presiding over the occasion, DMS Dean Stephen Spielberg. Among the 54 graduates who were granted M.D.'s were, 5 from the left, Kevin Desrosiers, Jennie Baek, and Scott Tobis, as well as 6 Julianne Mann, this year's winner of the Dean's Medal. 7 Noted neurosurgeon Benjamin Carson delivered the keynote address, and 8 bagpipers James Feeney, left, and Travis Matheney, right, both members of the DMS Class of 2000, lent a solemn note to the procession. But it was conviviality that ruled the day for 9 Dorothea Torti and Allen Tong, 10 M.D. class marshal Jamie Bessich, and 10 Loc Nguyen and Ted Yuo.



**ALL IN THE FAMILY:** Dr. William Boyle, a DMS pediatrician, and Peter Bartline, a Year 2 student, made a presentation this summer at an international conference on patient- and family-centered care. See the box at right for a link to Bartline's slide presentation.

**THEN & NOW**

A reminder of the pace of change, and of timeless truths, from minutes of DMS faculty meetings in 1854:

"Mr. Daniel Laing (Colored) under the patronage of the Mass. Col. Society & to go to Liberia—was examined for a degree. . . . Laing's certificates of time of study in this country & England are received and the Diploma forwarded by express today to Reverend J. Tracy. Laing's thesis on Remittent Fever." Laing was not even the first student of color to receive a degree from DMS. Samuel McGill, also of Liberia, graduated with honors in 1838.



**13**

Number of black DMS graduates in the 82 years between 1838 and 1920

**31**

Number of students of color who matriculated in DMS's M.D. program in 2007

**New medical students are shown the ropes**

The 73 members of the M.D. Class of 2011 came together for the first time on August 6 for a week of orientation. In addition, five new students began their studies in the M.D.-Ph.D. program, and 103 entered other DMS graduate programs.

Andrew Welch, the director of admissions for the M.D. program, says the class includes 41 women and 32 men. Students of color and international students account for 45% of the class, up 5% from last year.

The class's average combined MCAT score was 33.4, the highest in the school's history. The average undergraduate GPA in both science and nonscience subjects was over 3.7.

**Wellness:** The new students were welcomed by James Wright, president of the College; Dr. Stephen Spielberg, dean of DMS; and other deans, who had prepared a fact- and fun-filled week to introduce them to Dartmouth and each other. They got overviews of the curriculum, student affairs offerings, wellness and safety measures, the biomedical libraries, the computing system, the honor code, community service opportunities, and much more.

The class also enjoyed an afternoon of team-building at a local ropes course and an overnight hike up Dartmouth's own mountain, Mount Moosilauke. For most of the class, this was new terrain but not an unfamiliar activity, as outdoor sports are

big favorites among the '11s. In their admissions autobiographies, many listed biking, hiking, kayaking, and skiing as interests. But not every student comes with pedaling or paddling experience. Nisha Jambulingam, for example, wrote: "As a perpetual city-dweller, I am interested to learn about Hanover's great outdoors that I have heard so much about."

The members of the class hail from as near as Hanover, N.H. (Yukako Honda) and Norwich, Vt. (Sarah Edwards) and from as far away as Zimbabwe. Fadzai Chinyengetere described herself in these words: "I am a proud Zimbabwean woman. I did my undergrad at Smith College. . . . My dreams and ambitions include going back home and utilizing the education obtained here to assist and further the lives and goals of my community."

Honda, who moved to Hanover from Japan in fifth grade, graduated from Hanover High School and Dartmouth College. She said she is interested in Japanese cuisine and gardening and was looking forward to learning more about health and nutrition at DMS.

That learning was soon underway. By August 13, the students were in the classroom, studying hard.

**Other programs:** A total of 103 additional students entered DMS's graduate programs in the biomedical sciences and evaluative clinical sciences this fall.

The Program in Molecular and Cellular Biology, which encompasses biochemistry, genetics, and microbiology-immunology, has 27 new students. And the new Program in Experimental and Molecular Medicine (PEMM) has admitted 13 students. PEMM is based on the classical disciplines of pharmacology and physiology.

The acclaimed Center for the Evaluative Clinical Sciences, recently renamed the Dartmouth Institute for Health Policy and Clinical Practice, admitted 62 students—18 to the M.S. program and one to the Ph.D. program; about half are health-care professionals, and the others are recent college graduates. In addition, the Institute enrolled 43 new M.P.H. students.

ROSEMARY LUNARDINI



Soon enough they'd be studying anatomy, but first the DMS '11s did some team-building at a local ropes course.

**PYRAMID SCHEME:** Dartmouth's Dr. Joseph O'Donnell was one of eight U.S. oncologists invited to Egypt by the National Cancer Institute of Egypt to advise the nation on its graduate medical education programs in cancer.



## Coming to grips with the money-medicine mess

The rising cost of health care in the U.S. has become a universal rallying point. Politicians, pundits, patients, and even many doctors agree that Americans spend too much on health care—and that the current payment system is largely to blame.

But no similar consensus exists on how to remedy the problem. That's why a group of 47 representatives from academia, private practice, patient advocacy groups, health plans, and large corporations gathered recently at Dartmouth to evaluate and rate the potential of alternative payment models.

**Consensus:** "We're actually not looking to say, 'Well, here's the one payment system we should move to for the entire United States,'" Robert Smoldt said at the start of the forum. Smoldt, executive director of the Mayo Clinic Health Policy Center, and the other organizers of the session were instead looking for "a consensus on some assumptions and principles about how we pay for care."

One of a series of forums organized by the Mayo Health Policy Center, this meeting was co-hosted by DMS's Dr. John Wennberg. He founded Dartmouth's Center for the Evaluative Clinical Sciences (recently renamed the Dartmouth Institute for Health Policy and Clinical Practice—see page 16 for more on that change), which co-sponsored the forum.

First, the group identified and

agreed on some major flaws of the current system: 1) physicians and other providers are paid more for performing expensive, invasive, high-tech procedures than for providing low-cost, low-tech, preventive care; 2) a huge amount of money is wasted on care at the end of life that does not extend lives and may even shorten them; 3) uncoordinated care is widespread and leads to poor outcomes and higher costs; and 4) patients are poorly informed about their health-care choices.

Then the group debated the pros and cons of several alternative payment models. Although no model received unanimous support, these three—which aren't mutually exclusive—were by far the most popular:

1) Certification of Shared Decision-Making for Major Surgery: Medical centers would be compensated for establishing formal programs that provide patients with unbiased information about their treatment options. Patients who are well informed often choose less-invasive, less-expensive options. (For more on shared decision-making, see page 38.)

2) Chronic Condition Coordination Payment: Patients with chronic conditions would belong to a "medical home" (a hospital, physician, and/or care network) that would receive a single periodic payment to cover all preventive care, management, and minor acute care associated with

their condition. The amount would be adjusted for the severity of each patient's situation.

3) Mini Capitulations: Payments to hospitals and physicians for major acute episodes would be bundled together, which would require hospitals and physicians to better coordinate their services.

**Models:** Among the payment models that received lower scores from the attendees was the pay-for-performance model that Medicare is currently evaluating. (For more on a Medicare pay-for-performance demonstration project, see page 18.) The group seemed to agree that the pay-for-performance model is better than the current fee-for-service system, but that it has major shortcomings.

In addition, DMS participants in the forum—including Dr. Elliott Fisher, a health-policy physician-researcher, and Dr. James Weinstein, an orthopaedic surgeon and the new director of the Dartmouth Institute for Health Policy and Clinical Practice—put forth several principles to guide the design of any new payment systems. They proposed that incentives be directed toward improving health outcomes, coordinating care, and supporting patient education and decision-making.

**Woes:** The small but diverse group gathered at Dartmouth wasn't able to solve all of health care's woes, but the attendees did agree on some key strategies. So perhaps there's hope for building a national consensus on health-care reform after all.

JENNIFER DURGIN

## THEN & NOW

**A reminder of the pace of change, and of timeless truths, from the 1902 DMS Circular of Information:**

Home births being common then, the obstetrics course comprised "1. A course of 48 lectures illustrated by diagrams and the use of manikins, with occasional quizzes. 2. Recitations with section work upon manikins by the student. Preparation is thus secured for a course in the out-patient department of a lying-in hospital, which the student is advised to take during the vacation at the end of the third year. . . . 3. A few maternity cases are received at [Mary Hitchcock] Hospital, and when possible they serve to illustrate to the students in small sections the teaching and methods of obstetrics."



**1,120**

Number of babies born at Dartmouth-Hitchcock Medical Center in FY2006

**SMOKE OUT:** By July 2008, DHMC will be totally free of smoking—outdoors as well as in. A small but growing cadre of medical centers is concluding that allowing any smoking is simply inconsistent with their missions to improve health.



THEN & NOW

A reminder of the pace of change, and of timeless truths, from an article about national “firsts” in the Fall 1991 issue of this magazine:

“The first continuous infusion pump to deliver drugs for the management of intractable pain was implanted in a patient at DHMC in 1981. Dr. Dennis Coombs, the Garth Professor of Anesthesiology at DMS, developed a technique by which low doses of narcotics can be continuously infused into the spinal area. . . . Such pumps are now widely used for alleviating pain in patients with cancer and other disorders.”



**2007**

Year the American Pain Society established national pain management awards

**2007**

Year DHMC was chosen for honorable mention in those awards

**Getting to the root of stem cell science**

If it weren't for limitations on human embryonic stem cell research, “I think that there could be children being cured of type 1 diabetes today,” says Dartmouth's Ronald M. Green, Ph.D. “I think that there could be cardiac patients being brought back to functioning. And I think Christopher Reeve may not have had to die.”

Many scientists and physicians hope that human embryonic stem cells (hESCs)—which can develop into any of the 200-plus types of cells that make up the body—may one day be used to treat such diseases as Parkinson's, Alzheimer's, heart disease, and type 1 diabetes, as well as spinal-cord injuries like Reeve's. Some even hope they could be grown into new organs. But the political and ethical controversy swirling around hESCs has led to limits on federal funding for such research and thus the amount of it being conducted in the U.S. So scientists have begun exploring alternative approaches to deriving hESCs.

**Panel:** Green, the director of Dartmouth's Ethics Institute and an adjunct professor at DMS, served on a 1994 National Institutes of Health panel on human embryo research and has studied stem cell ethics for many years. In the June issue of *Nature Reviews Genetics*, he explored the ethical and scientific aspects of six current alternatives—single-blastomere biopsy, parthenogenesis, somatic-cell dedifferentia-

tion, altered nuclear transfer, dead embryos, and chromosomally abnormal embryos.

The source of hESCs is typically eggs discarded or unused after *in vitro* fertilization. When an egg is allowed to develop, by day three it's an 8- to 16-cell ball called a morula. By day five or six it's a blastocyst, which is about the size of a period. Embryonic stem cells form the inner cell layer of a blastocyst, which becomes an embryo only if it implants in the uterine wall 7 to 10 days after fertilization.

**Lines:** While hESC research is not prohibited in the U.S., federal funding is allowed only for studies on cell lines in existence prior to August 2001. But the 21 approved lines have been contaminated with nonhuman molecules. So scientists have been seeking expanded federal funding—as well as corporate, foundation, and state monies—to support the development of new stem cell lines and to explore alternatives.

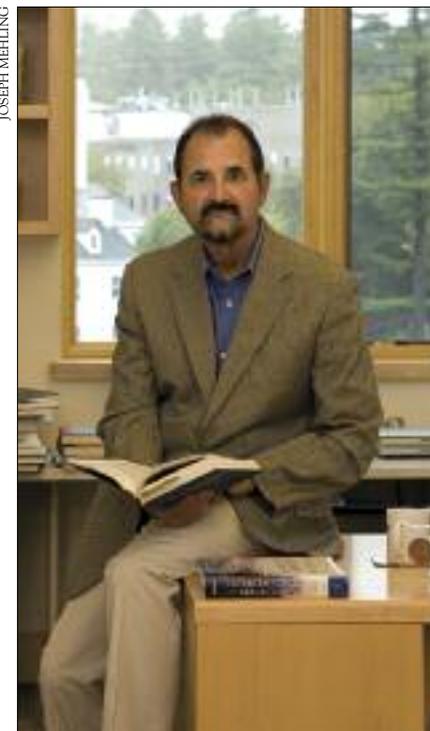
The most promising alternative, Green says, is single-cell blastomere biopsy (SBB). SBB is an adaptation of preimplantation genetic diagnosis (PGD), in which a single blastomere is removed from the morula and allowed to divide into two cells. One cell can be used for genetic diagnosis and the other for the creation of the hESC line. Scientists at a biotech firm called Advanced Cell Technologies (ACT) reported in *Nature* in

2006 that they had successfully derived hESCs from SBBs using donated human embryos. Green chairs ACT's ethics advisory board but has no financial interest in nor is paid by ACT.

**Embryo:** SBB and PGD do not harm embryos, says Green, citing a 2004 report indicating that more than 1,000 children born as a result of PGD had suffered no ill effects. But there is debate on the matter; others point to studies showing an embryo survival rate after PGD of only around 3%. With SBB, “you just can't know that you're not bringing harm to the embryo,” feels Father Thomas Berg, executive director of the Westchester Institute for Ethics and the Human Person, a Catholic think tank.

**“I think Christopher Reeve may not have had to die,” says Ron Green.**

JOSEPH MEHLING



**Dartmouth ethicist Ron Green has a high profile on the issue of stem cells.**