

## Dean for Undergraduate Education

The [Office of the Dean for Undergraduate Education](#) (DUE) supports and enhances the educational experience of MIT students inside and outside the classroom, with explicit responsibility for undergraduate education. The organization provides mission-critical functions for the Institute, creates new services and capabilities, and supports educational innovation at MIT. DUE's scope includes:

- Delivering the essential capabilities of admissions, financial services, and registration
- Partnering with faculty to enhance learning through educational innovation and assessment
- Encouraging hands-on experiential learning and promoting student success through advising, effective learning strategies, and other forms of support
- Increasing and supporting student diversity at all educational levels
- Providing and expanding global educational opportunities for students

DUE comprises 10 offices: Admissions, Experiential Learning, Faculty Support, Global Education and Career Development, Minority Education, Registrar, Reserve Officers' Training Corps, Student Financial Services, Teaching and Learning Laboratory, and Undergraduate Advising and Academic Programming.

This report begins by contextualizing and summarizing some of the year's highlights. Accomplishments, changes, and events of each office are described in the individual office reports, which follow the dean's introduction.

### Responding to Forces in the Higher Education Landscape

Significant issues in higher education confronted MIT last year, along with colleges and universities everywhere. DUE was integrally involved in the Institute's preparation for and response to issues catalyzed by the explosion of massive open online courses (MOOCs) and other digital learning options, rising student debt and the cost of higher education, and challenges to race-conscious college admissions.

#### Online Education

The dean, several office heads, and other DUE staff members contributed to initiatives related to the online education movement that is sweeping through academia. Dean Daniel Hastings, several DUE office heads, and others served on the Task Force on the Future of MIT Education, which president Rafael Reif set up to explore the Institute's current educational model and how new technological advancements can advance MIT's mission. Staff from the Teaching and Learning Laboratory (TLL) served on five task forces for the Office of Digital Learning. Educational technology and innovation were emphasized in DUE's 2011 strategic plan update, and last year a new educational technology theme was developed with Vijay Kumar (director of the Office of Educational Innovation and Technology) as the theme leader.

DUE focused on helping to shape the impact of edX (MIT's and Harvard University's online learning initiative) on MIT undergraduate education in ways that integrate digital

learning with traditional aspects of residential education. With the goal of providing the MIT community with the latest research needed to support enhancement of both residential and online student learning, TLL launched a lecture series in September 2012. The series, DUE's Education Talk, emphasized current research on learning, cognitive psychology, educational technology, machine learning, neuroscience, and educational assessment. Sessions drew faculty, students, and staff from across MIT.

After four years as part of DUE, the Office of Educational Innovation and Technology was moved to the Office of Digital Learning, joining OpenCourseWare to form the core of this new enterprise. Like DUE, the Office of Digital Learning reports to the chancellor. During its time in DUE, the Office of Educational Innovation and Technology helped DUE and the faculty implement many innovative educational technology approaches.

### **Rising College Tuition**

DUE provided leadership and expertise in addressing rising college tuition at a time when median income has declined, student debt has increased, and the actual cost of a residential university education has become unsustainable. These circumstances have stimulated widespread discussion about the value of college, at the same time as studies attest to the economic returns associated with a college education. While the net cost of attending MIT has remained relatively low and MIT students continue to leave with relatively low debt, DUE and committees concerned with various aspects of undergraduate education—the Committee on Undergraduate Admissions and Financial Aid, the Enrollment Management Group, and the Consortium on Financing Higher Education—focused on how MIT and other schools could tackle the problem of student debt and college tuition.

### ***Fisher v. University of Texas***

In anticipation of the Supreme Court ruling on *Fisher v. University of Texas*, a case challenging race-conscious college admissions, DUE and the Committee on Undergraduate Admissions and Financial Aid took steps to prepare MIT to respond. Dean Hastings charged the committee with undertaking a study of how racial diversity benefits MIT in meeting its educational goals. Admissions dean Stuart Schmill and director of planning and analysis Ingrid Vargas co-wrote, with MIT Sloan School of Management professor John Carroll, a final report supporting MIT's goals and efforts to achieve a racially diverse student body. The report made it clear that MIT considers multiple forms of diversity and that a diverse campus has many educational benefits. The Supreme Court's June 2013 ruling did not alter current MIT policies and practices with regard to the use of race in admissions. However, further review in the lower courts may lead to more definitive outcomes.

### **Importance of Undergraduate Student Advising and Mentoring**

Many undergraduate education efforts at MIT have stressed the importance of an advising system that helps students transition to MIT, enables them to explore the academic landscape successfully, and provides support throughout their MIT trajectory. An important goal regarding freshmen has been to ensure that their network includes faculty who can support their successful transition from high school to MIT and, more broadly, enable them to start building meaningful relationships with faculty.

In May 2013 the Faculty voted in favor of a motion that affirms and supports that goal by passing a resolution calling for every MIT freshman to be paired with a faculty mentor or advisor. DUE helped to establish the groundwork for this vote, working with the Committee on Undergraduate Performance (CUP) to define and advocate for the most valuable roles for faculty in freshman advising. Last fall, the dean for undergraduate education, the chancellor, the CUP chair, and the Faculty chair described the advising issues to department heads and faculty at school council and departmental meetings. Advocating for the CUP goal that all freshmen have a faculty/advisor/mentor, they cited the steady decline in the number of faculty freshman advisors, from a high of 120 in the mid-'90s to 83 in 2012.

The Undergraduate Advising and Academic Programming Office (UAAP) which has formal responsibility for freshman advising, is leading implementation of the Faculty resolution in consultation with the dean for undergraduate education and CUP. Thanks in large measure to UAAP's campaign to recruit faculty, the academic year has ended with 145 members of the faculty who have volunteered to advise freshmen. Thus, almost 70% of incoming freshmen will be advised by a faculty member.

Through a selection process coordinated by UAAP, MIT faculty were recognized with Institute awards for their contributions to undergraduate advising and mentoring. The three recipients of the UAAP 2013 Convocation Awards were professors Samuel Allen, Allan Adams, and Heidi Nepf.

Within the context of the overall advising system, DUE continued to review residence-based advising with the intention of adding flexibility and improving that option. UAAP completed the third and final year of a freshman pilot program to assess the impact of staff as professional advisors. Findings include greater satisfaction among pilot participants, including better understanding of the General Institute Requirement, more consistent advising information and messages, and greater accessibility and follow-up. DUE looks forward to applying lessons learned and ideas discussed in the next academic year.

### **Enhancing Students' Educational Experience**

Building on the past year's efforts, DUE expanded initiatives to understand what contributes to students' academic success and educational experience. Admissions staff focused on sharpening the predictive value of metrics on incoming students. The dean for undergraduate education commissioned a study to explore what contributes to undergraduate students thriving at MIT, what may stand in the way, and what factors—if any—vary between cohorts. The Teaching and Learning Laboratory and Institutional Research administered a survey on undergraduate thriving in January 2013, resulting in a 50% response rate. Findings will be shared this summer in a final report by TLL postdoctoral associate Dr. Frances Carter-Johnson and TLL associate director of assessment and evaluation, Dr. Glenda Stump.

TLL and the Office of Minority Education (OME) continued their collaboration to improve Interphase EDGE (Empowering Discovery / Gateway to Excellence), OME's two-year scholar enrichment program. Informed by TLL's comprehensive assessment of the original Interphase model in 2010, the program was renamed Interphase EDGE and changes were implemented for the 2012 cohort. Interphase EDGE includes an enhanced physics curriculum and a pilot of a new writing/communications curriculum.

Unlike Interphase, which took place the summer before freshman year, Interphase EDGE extends through the end of sophomore year. Seventy-eight pre-freshmen participated in summer 2012. Due to budget constraints, fewer students—70 out of 140 applicants—were selected for the 2013 cohort.

DUE contributed to development of a quality of life survey of undergraduate and graduate students with colleagues from the Division of Student Life (DSL), the Office of the Dean for Graduate Education (ODGE), and Institutional Research. The study was charged by the chancellor to assess students' well-being and their most prevalent needs. Questions addressed overall experience, campus climate, stress/health and well-being, sense of belonging and support, self-confidence, and workload. Fifty-six percent of undergraduates and 52% of graduate students responded. Results of this survey and other data will be used to strengthen efforts to enhance students' educational experience.

### **Modernizing the Student Information System**

Working together through the Student Systems Steering Committee, DUE and Information Services and Technology (IS&T) allocated resources to further evolve MIT's Student Information System (SIS.) Several high-priority projects on the Education Systems Roadmap were successfully implemented, resulting in online/paperless processes that enhance the user experience and support the educational needs of the community, including undergraduate advising.

Highlights included implementation of online document tracking and financial aid award letters (Student Financial Services), the launch of a new Independent Activities Period website and system (UAAP), the development of a paperless online application review (Admissions), enhanced intelligent messaging in online registration, progress toward a new system to support classroom and student scheduling, and digitizing the late add/drop and Humanities, Arts, and Social Sciences (HASS) concentration forms (Registrar). Progress on AY2014 SIS projects is described in several of the DUE office reports that follow and on the IS&T news site under the Business and Education Systems category.

This work benefitted from strong collaboration between DUE and IS&T, the leadership of registrar Mary Callahan and associate director for IS&T's education systems Eamon Kearns, and the use of the Education Systems Roadmap as a guide for modernizing SIS over the past three years. In the next year, an updated Education Systems Roadmap will be developed to guide and support the process for 2015–2017.

### **Record-breaking Class of 2017 Admissions Cycle**

As President Reif welcomed the Class of 2016 last fall at his first Freshman Convocation as MIT president, the Office of Admissions was looking ahead to what would be a record-breaking Class of 2017 admissions cycle. The 18,989 strong applicant pool produced a record low acceptance rate of 8.2% (1,548 students) and MIT's highest yield ever, 73% (1,125 students). 2012 and 2011 yields were 70% and 65% of admitted students, respectively.

The composition of the newest class is described in the Admissions Office section of the DUE Report to the President. As was the case with the Class of 2016, no students were taken from the waitlist.

## Delivering Effective Communications

In collaboration with ODGE, DSL, and the Office of the Chancellor, DUE continued to explore opportunities to improve student engagement and communications. The past year's focus was on improving access and visibility to student resources at MIT. In October 2012, in response to several student tragedies in the previous year, the team launched MIT Together, a communications campaign aimed at creating broad awareness of MIT's network of support resources for students. The focal point is the website [together.mit.edu](http://together.mit.edu), which is a portal to help students find and connect quickly with the office or service they need. The site also includes helpful information for concerned friends, parents, faculty, and staff, and [together.mit.edu](http://together.mit.edu) has become the go-to site during subsequent crises.

The team addressed the broad question of whether students had access to the information they needed on a regular basis. Through focus groups, it became evident that when a question or issue arose, students were not clear on where to look for specific information and felt it took more time than it should to find what they needed. They described the web presence at MIT as "massive" and "confusing." At the same time, students wanted more specific and targeted information. In response, the communications team led the design and development of a new resources site, [resources.mit.edu](http://resources.mit.edu). This site provides strong search capabilities, resources specific to graduate or undergraduate students, and context for each resource so that students can determine which may be most useful and appropriate. The site will launch in August 2013.

## Budget and Space

Pending an anticipated comprehensive review of space occupied by the three student deans' offices (DUE, DSL, and ODGE), no major space activity was planned for this year. In light of discussions regarding site selection for a new nano-research facility near or on the Building 12 footprint, the review did not occur and is unlikely to in the near future. When the site for the new facility is selected and announced later this summer, there will be a better sense of the impact on DUE offices that currently reside in Building 12: the Global Education and Career Development Office, Office of Faculty Support, Office of Minority Education's Tutorial Services Room, DUE Desktop Support, and two Registrar-controlled classrooms. Much work lies ahead in the coming year to identify suitable alternate space and relocate these units by early summer 2014.

Year two of multiyear funding commitments were received for both the Registrar's classroom technology replacement plan and D-Lab (Development through Dialogue, Design, and Dissemination), which will eventually put both programs on base funding. After many years on soft funding, two OME programs—Laureates and Leaders, and the Mentor Advocate Partnership—received base funds to regularize these important offerings. DUE also received a permanent budget and headcount in support of the General Institute Requirement, as responsibility for the HASS Requirement moved from the School of Humanities, Arts, and Social Sciences to the Office of Faculty Support.

## Affirmative Action Goals and Successes

DUE continues to be one of the most diverse organizational units at MIT, with an ongoing commitment to developing a workforce that reflects the rich diversity of



the MIT community. The DUE office heads are expected to show leadership in the area of diversity, and this effort is shared across DUE. Every DUE employee shares responsibility for fostering an inclusive work environment in which all employees may do their best work.

As a result of the efforts of the leadership team and hiring managers throughout the organization, DUE succeeded in attracting and hiring underrepresented minorities and women to fill open positions across DUE. In the past year, DUE met its placement goals for women and minorities. It also hired a Diversity Fellow in the Teaching and Learning Laboratory who has added to the diversity in that office and has helped advance research in the area of student success, with a focus on underrepresented student success.

The most recent MIT Affirmative Action Plan reported that 70.4% of all new DUE hires were women and 33.3% were minorities for November 2011–October 2012. During that period, DUE promoted 19 staff members: 13 (68.4%) were women and seven (36.8%) were minorities.

### **Closing Remarks**

This report marks the last academic year of Daniel Hastings' leadership as dean of undergraduate education. In January 2013 he announced that he would step down on June 30, 2013, after serving as dean for seven-and-a-half years.

In January, chancellor Eric Grimson established a search committee for Dean Hastings' successor. Professor of biology Graham Walker chaired the committee, which included faculty members Stephen Graves, Peko Hosoi, John Ochsendorf, Christine Ortiz, Julie Soriero, Gigliola Staffilani, Collin Stultz, and Kai von Fintel; students Chris Smith, Grace Young, and Anu Sinha; and DUE senior associate dean Elizabeth Reed. In early June, the chancellor announced the appointment of Dennis Freeman, professor of electrical engineering, as MIT's next dean for undergraduate education, effective July 1, 2013.

The outgoing dean departs from DUE on a high note, leaving behind a dynamic organization dedicated to MIT and its mission, a strong leadership team, and exciting new challenges for DUE as MIT responds to the opportunities provided by online learning and other advances in higher education. Dean Hastings notes in particular the DUE staff and its outstanding quality and commitment, which extend throughout the organization.

**Daniel E. Hastings**

**Dean for Undergraduate Education**

**Cecil and Ida Green Education Professor of Aeronautics and Astronautics  
and Engineering Systems**

**Elizabeth Reed**

**Senior Associate Dean for Undergraduate Education**

## **Global Education and Career Development**

The mission of **Global Education and Career Development** (GECD) is to empower MIT students and alumni to achieve lifelong success through seamless access to transformative global experiences, comprehensive and holistic career services, and mutually beneficial connections with employers and with graduate and professional schools.

Despite a year of staff turnover and significant changes, GECD continued to work on initiatives identified in its strategic plan, including five priorities: to champion global education, to create comprehensive career development programs, to develop collaborative partnerships, to develop a high-performing team, and to employ emergent technology and assessment tools.

### **Changes and Initiatives**

#### ***Collaborations and Partnerships***

As part of an office-wide initiative, GECD staff developed or expanded 36 sustainable collaborations to increase student preparation and student participation rates, and increase their opportunities. Highlights of these partnerships included newly developed events, programs, and resources, as well as increased visibility and strengthened relationships at MIT and beyond.

#### ***Improving Prehealth Advising***

The presidential-appointed Committee on Prehealth Advising instituted a new committee letter process to address issues of inconsistency in advising and letter writing, to better calibrate MIT applicants, and to increase program sustainability. A faculty committee member and the Prehealth Advising associate director interviewed all applicants to evaluate their candidacy. In May, the committee met to calibrate candidate ratings. Finally, letters were drafted for faculty approval and were sent to the selected schools. Recent benchmarking indicates that MIT is much more engaged in this process than is the case at its peer schools.

#### ***Expanded Study Abroad Opportunities***

Global Education has implemented or piloted several new programs. A departmental exchange was developed with Eidgenössische Technische Hochschule Zürich for Course 2 undergraduates, pending final agreement. A new spring break educational trip was conducted to the University of Pretoria with 10 undergraduates from Courses 2 and 16. In collaboration with D-Lab (Development Through Dialogue, Design, and Dissemination), a study abroad pilot was implemented, with two students working with a community partner in Brazil while taking MIT courses remotely. Also, an Imperial College London–MIT summer research exchange was piloted with four students from each institution.

#### ***Reducing Interview Conflicts***

In 2012, the Committee for Academic Performance raised concerns about the increase in students citing interview conflicts as negatively impacting their academic performance. Career Services studied the issue and conducted outreach and educational efforts with employers and students to help resolve these types of conflicts.

### ***Increasing Undergraduate Participation in Global Education***

GECD initiated a global awareness campaign effort designed to continue expanding undergraduate participation in global opportunities. Student focus groups identified barriers related to academic and research commitments, course and language requirements, and participation in athletics. Also cited was a lack of knowledge about global program choices, timing, and costs. GECD engaged a marketing strategy firm to develop messaging around these issues for implementation next year.

### ***Postdoctoral Fellow Career Services***

Career Services collaborated with the vice president for research to expand career services to postdoctoral fellows by hiring a part-time career development specialist, Robert Dolan, and opening a satellite office. A recent survey of users indicated that 95% of respondents agreed that their questions were addressed effectively, and 100% would refer this service to others.

### ***Strengthening Employer Partnerships***

Career Services continues to strengthen employer partnerships and enhance employers' recruiting experiences. A new GECD and Student Activities Office collaboration has improved coordination and advisement of career fairs, creating a more seamless experience for all stakeholders. Additionally, Career Services launched the first MIT Employer Symposium, with a total of 70 recruiters representing 50 companies attending and with \$11,800 in generated revenue. Ninety-six percent of survey respondents found major elements of the program very helpful to their recruiting strategy planning.

## **Key Accomplishments and Activities**

### ***Global Education***

During academic year 2012–2013, 821 undergraduates participated in global opportunities through 10 MIT programs and offices, as compared with 707 in AY2012, an increase of 16.1%. The types of experiences include 543 internships, 89 public service and service learning opportunities, 49 research experiences, and 140 study abroad opportunities. The 2012 graduating student survey indicated that 38.8% of graduating seniors reported participation in a global experience during their studies, a 2.4% decrease from the 2011 report. Among 2012 Graduating Student Survey respondents with an MIT global experience, 91% reported gains in understanding cultural differences and 88% reported increased adaptability. Additionally, more than 75% reported increased self-confidence and an enhanced ability to communicate cross-culturally.

In AY2013, 140 MIT undergraduates participated in study abroad opportunities, a 19.7% increase over AY2012. This number includes one new non-credit educational trip to South Africa. Forty-four Li & Fung scholarships (up from 31 last year), totaling more than \$111,000, were awarded. Cambridge-MIT Exchange numbers decreased slightly, although additional funding from British Petroleum will increase the program to 21 spots.

During AY2013, 569 students attended 25 global education–sponsored group sessions and events, and 1,171 individuals participated in appointments, drop-in visits, email



advising, and Skype or telephone conversations. Of these participants, 507 were unique contacts, with an average of two “touches” per student.

Use of the Horizons system, which tracks health and safety information for participants in MIT study abroad programs, showed an increase in student completion of emergency information during Independent Activities Period (IAP) 2013.

In its third year, the Global Fellows Program, which collaborates with Imperial College London in training doctoral students in professional transferable skills, was held locally with 17 MIT PhD and 20 Imperial College PhD students participating. Surveyed MIT participants indicated that 87% would recommend this program, and 64% reported that the course had a high to very high impact.

### ***Distinguished Fellowships***

Distinguished Fellowships efforts resulted in two Gates Cambridge Scholarships and six Fulbright Scholarship winners. These results represented a decrease in awards compared with the prior year. However, nearly 37% of the Gates Cambridge fellowship applicants and 53% of Fulbright Scholarship applicants were selected for interviews.

### ***Prehealth Advising***

There were 112 MIT student and alumni applicants (53 undergraduates, nine graduate students, and 50 alumni) in the 2012 medical school application cycle, down from 151. Seventy-eight percent of all applicants used one or more Prehealth Advising services, up 2% from last year. There was a 15% increase in the acceptance rate for undergraduate service users over the prior year. Among 2012 MIT applicants, 36 were accepted to primary care medical schools, and 40 were accepted to research medical schools that are ranked among the top 15 nationally.

#### **Medical School Acceptance Data, 2012 Application Cycle**

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Acceptance rate for undergraduate applicants using Prehealth Advising services	96%
Acceptance rate for all applicants using Prehealth Advising services	86%
Acceptance rate for all applicants who did not use Prehealth Advising services	44%
National acceptance rate	46%

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Despite significant staff turnover, there were 2,520 contacts, including appointments, drop-in visits, Skype, and emails, a 16.4% increase in contacts from last year. Of these visits, 423 unique students and alumni used the service, with an average of five “touches” per student or alumnus. There were 542 students and alumni who attended 43 workshops and events, a decrease over the prior year.

In its seventh year, participation in the 2013 Physician Shadow Program declined by 16.2%, with 114 shadow opportunities offered to undergraduates as compared with 136 in AY2012. A survey of program participants is still under way.

## **Career Development Programs**

There were 3,662 contacts for individual career counseling services via appointments, drop-in visits, Skype, and emails, an increase of 17% from AY2012. Of these visits, 2,434 were unique users, a 17% increase, with an average of 1.5 “touches” per student. Respondents to a survey about drop-in advising effectiveness rated it with an overall average of 3.82 out of 4.0.

There were 110 live, in-person career workshops, panel discussions, and seminars presented to more than 3,420 students and alumni. Data was not collected for many programs during the spring term due to staff turnover, so comparisons with the prior year are not possible. Of these numbers, more than 1,949 graduate and postdoctoral fellows attended. The targeted graduate programming included nationally known speakers (such as Peter Fiske, president and chief executive officer of PAX Water Technologies, Inc.), panel presentations, and a career planning small group.

GECD continues to enhance its portfolio of online resources by introducing Versatile PhD, an online resource and community for exploring non-academic careers. Among other online resources, there were 17,568 hits to the international career resource Going Global; 9,335 hits to the online career video subscription Career Spots; and 628 users accessed MyPlan, an online assessment tool. The online workshops webpage had 18,252 views.

Delivery of half the 2013 Freshmen/Alumni Summer Internship Program SP.800 course was conducted in IAP, in January, to alleviate academic conflicts experienced in 2012, resulting in increased or maintained student participation in six out of nine sessions. Academic conflicts served as a challenge for the remainder of SP.800, resulting in only 40 out of 75 enrolled students completing the course. In the class survey, nearly all respondents reported that their participation had increased their confidence in networking and their understanding of the career development process. Christopher Capozzola, an associate professor in the History Section, agreed to serve as the program’s new faculty advisor.

There were 29 disclosed MIT students and alumni who applied to law school during AY2013, and 86% were admitted, representing a 4% increase over AY2012. The average grade point average for accepted MIT applicants was 3.25/4.0, and the average Law School Admission Test score was 163.

## **Employer and Recruiting Programs**

The undergraduate employment rate for the Class of 2012 within three months of graduation was 80.7%, and master’s degree recipients had an employment rate of 75.8%. The average salary for graduating seniors was \$66,874, a 3.6% increase, and \$106,558 for master’s degree recipients, a 1.0% increase over the prior year. This year’s preliminary placement data for the Class of 2013 is favorable, indicating that 82% of undergraduates and 73% of graduate students seeking employment have already accepted a job offer. The survey period concludes in September 2013.

The 2012 Summer Experience Survey found that 55.7% of all undergraduate respondents had completed an internship during summer 2012, with 78% indicating that this

experience helped them to clarify future career goals and 71% indicating it helped them to identify their skills and abilities. Nearly 79% of graduating seniors reported completing an internship during their undergraduate years.

Career Services hosted 296 employers on campus, conducting 4,746 interviews in AY2013, representing a 3.6% and a 2.4% decrease over AY2012, respectively. The top five industries represented were computers/high tech/internet, consulting, finance, engineering, and energy. There were 3,147 jobs posted through the CareerBridge career management system, representing a nearly 14% decrease over AY2012. Through iNet, an online internship consortium among peer schools, 300 registered MIT student users had access to 4,820 internship postings. The fifth annual Spring Career Fair had 800 student participants, an increase of 40%, with 42 diverse companies represented.

GECD registered 1,542 new employers, who posted jobs, attended career fairs, or conducted interviews. New companies included Space Exploration Technologies, Robotex, Under Armour, Joint US-China Collaboration on Clean Energy, and The Mind Company.

## **Personnel and Professional Activities**

### ***Staff Transitions***

During AY2013, three staff members departed GECD: Camille Cottrell, Heather Law, and Amanda Peters. The following staff members were hired: Alessandra Rober Christensen, Nora Delaney, Natalie Lundsteen, Charles McClinton, Nyasha Toyloy, and Lily Zhang. GECD received approval for two new positions: a staff writer and advisor, and a social media specialist/GECD advisor, effective July 1, 2013.

### ***Leadership***

Assistant director Kim Benard served on the elections committee for the National Association of Fellowship Advisors. Executive director Melanie Parker served on the First Destinations Survey team for the National Association of Colleges and Employers (NACE). Prehealth advisor Jennifer Earls and career development specialist Ellen Stahl served as advisory board members for the Career Counselors Consortium for New England. Assistant director Natalie Lundsteen served on the award review committee of the American Educational Research Association's workplace learning special interest group and was elected to the board of 85 Broads, Boston chapter.

### ***Awards***

Administrative assistant Jordan Siegel received the 2013 MIT Excellence Award for "Serving the Client." Assistant dean Josh Nupp received a 2013 DUE Infinite Mile Award for "Community," and assistant director Erin Scott received a 2013 DUE Infinite Mile Award for "Leadership." GECD was selected as a 2013 Innovation Excellence Award finalist for "Marketing and Branding" by the National Association of Colleges and Employers for its rebranding efforts.

### **MIT Committees and Service**

Ms. Benard serves on the joint Division of Student Life/DUE committee. Career services director Deborah Liverman served on the Dr. Martin Luther King Jr. Celebration Committee. Associate dean Malgorzata Hedderick cotaught a freshman seminar on women's leadership, "Good to Great," and also served as a freshman advisor. Associate director Tamara Menghi served as an Office of Minority Education mentor and in the First Generation College Student program, and is a member of the Sophomore Year Council. Associate director Marilyn Wilson participated on the Office of the Dean for Graduate Education task force on professional skill development in graduate students.

### **Conference Presentations**

At the 2013 NACE conference, Ms. Parker presented "Strategic Planning for Career Services," and Ms. Menghi and career development specialist Christina Henry copresented "Classroom to Internship: Making the Connection." Dean Nupp presented "Destination Europe: New Approaches for Preparing Students to Study in the Old World" at the Forum on Education Abroad European Conference. Ms. Liverman presented "MIT's Freshmen/Alumni Summer Internship Program" at the Global Internship Conference; was a panelist for "Working Effectively with Career Services and Other Campus Partners" at the Eastern Association of Colleges and Employers conference; and will present "How PhD Students Make Career Decisions" at the 2013 National Career Development Association (NCDA) conference, to be held in July 2013. Ms. Wilson will present "Intern Training and Supervision: Optimizing Outcomes as a Mentoring Supervisor" at the 2013 NCDA conference.

### **Future Plans/Issues**

GECD will be developing a new strategic plan for the next three- to five-year period. The office will be relocated within the next year due to the demolition of Building 12. The office will be engaged in planning for the temporary relocation, as well as for a permanent facility and location. There are concerns about a potential relocation to less central space and its impact on delivering service to students and employers.

Ms. Parker will continue work across the Institute on DUE's Developing Empowered, Global-ready Leaders engagement initiative, providing a report during AY2014 on the comprehensive study of the MIT experience and its impact on student confidence; implementing strategies to reduce barriers to global education participation; and expanding faculty engagement opportunities.

Global Education will implement the global marketing awareness campaign to further increase undergraduate participation in MIT global experiences.

Prehealth Advising will launch a mentoring program to help students explore their healthcare interests, develop course recommendations for the newly revised Medical College Admission Test requirements, and implement GECD's first freshmen preorientation program.

**Melanie Parker**  
Executive Director

## Office of Admissions

The MIT [Office of Admissions](#) enrolls a diverse and talented undergraduate student body composed of some of the world's most intelligent and creative individuals interested in an education centered on science and technology. The office also coordinates and supports the graduate admissions process across the Institute's 24 graduate departments. The enrolled students add to a vibrant campus community and go on to become leaders and innovators in our global society. The Institute upholds a commitment to meritocracy and fair access to the admissions process for students from all backgrounds.

The Admissions office works closely with the offices of Student Financial Services, Undergraduate Advising and Academic Programming, Minority Education, and the Registrar, as well as the Office of the President, the Alumni Association, Information Services and Technology, and the Committee on Undergraduate Admissions and Financial Aid (CUAFA). During Campus Preview Weekend (CPW), it coordinates with other groups within the Office of the Dean for Undergraduate Education, the Division of Student Life, the Department of Facilities, and academic departments. It also supports the admissions process for the Minority Introduction to Engineering and Science program, run by the Office of Engineering Outreach Programs in the School of Engineering.

## Review and Accomplishments

The Office of Admissions received 18,989 applications for the freshman class in AY2013, an increase of 5% over last year, for growth of 42% over the last five years. Admitted students totaled 1,548, which represented 8.2% of the applicant pool. The yield on admitted students rose from 70% last year to 73%, the highest yield ever.

This year's record yield could not be entirely explained by the recent changes to early admissions programs at peer institutions. The proportion of students admitted to both MIT and one or more of its primary peer schools (Harvard, Princeton, Yale, and Stanford universities) remained at about one-third of the admitted class, but MIT's yield on those students increased from 36% to 40%. In fact, the increase in yield of students cross-admitted to a peer school was higher than the one point increase for non-cross-admitted students (from 91% to 92% yield). Cross-admitted students most frequently cite cultural fit with MIT and social affinity with its students as the primary reason for choosing to enroll at MIT over one of its peer schools. The financial cost of attending MIT versus one of its peer schools is the primary reason given by cross-admitted students who choose not to enroll at MIT.

MIT achieved its target enrollment of 1,125 freshmen for fall 2013 without admitting anyone from the waitlist. While some students are expected to cancel their enrollment before September, the Institute was unable to admit anyone from the waitlist due to the unexpected closing of Bexley Hall for repairs, which will reduce the number of beds available on campus for new students entering in the fall. Applications for transfer admissions were down 5%, to 537, and of those applicants 24 were admitted and 21 are expected to enroll.



MIT continues to partner with QuestBridge, a nonprofit organization that recruits high-achieving students from low-income backgrounds. This year MIT will be welcoming 66 QuestBridge students as part of the Class of 2017.

In AY2013, MIT completed the development of a paperless, online application review and workflow system. This project resulted in a more secure admissions process due to the elimination of paper application components, and also resulted in increased efficiencies in the reading and selection process.

In an effort to identify and encourage the brightest mathematics and science students in the country, the responsibilities of one Admissions officer were redirected to focus completely on outreach to students participating in domestic and international selective mathematics, science, and engineering programs. In addition, a new application guide was developed and mailed to select targeted students to encourage them to apply.

In AY2013, admissions staff visited 26 states through 52 central meetings programs, of which 37 were MIT-only and 15 were group meetings with Yale University and Brown University. These meetings attracted more than 6,100 people. On campus, admissions staff welcomed nearly 30,000 visitors. The CPW yield event continued to be popular, with nearly 1,100 admitted students and approximately 700 parents attending.

The affirmative action case *Fisher v. the University of Texas* was argued before the Supreme Court in October 2012. Leading up to the Supreme Court's ruling on the case in June 2013, the Office of Admissions and CUAFA engaged in an exploration and review of MIT's educational commitment to diversity and affirmative action in undergraduate admissions. The CUAFA study detailed MIT's longstanding commitment to a diverse student body and examined the many educational benefits of a diverse campus. The Supreme Court's ruling, which returned the case to the lower courts for further review, confirmed that a diverse class is a compelling state interest, and the ruling did not necessitate any policy changes to MIT's admissions processes. The case will be reviewed again by the appellate court, and a more final outcome is awaited.

The composition of the Class of 2017 reflects the ongoing commitment to student body diversity and excellence. Of the freshmen entering in 2013, 45% are women, 22% are underrepresented minorities, 16% are the first generation in their families to attend college, and 8% are international citizens. Students will be coming from 48 states and 52 countries. Ninety percent of the incoming class members have been leaders (president, captain, etc.) of an organization, and nearly a third have founded an organization or business. Forty-one percent were valedictorians and 92% graduated in the top 5% of their high school class. The freshmen enrolling in 2013 arrive with mean Scholastic Aptitude Test scores of 723 verbal and 769 mathematics, compared with 716 verbal and 765 mathematics last year.

The MIT Educational Council increased the number of alumni interviewers to 4,169. Educational counselors conducted 15,022 interviews. The admission rate for students who had an interview (or did not have access to one) was 10.8% but only 1.0% for those who chose not to interview. The pool of interviewers is 19% international and 35%

female. This year's group of educational counselors includes members from the Class of 1941 through the Class of 2012, with 73% of the volunteers hailing from the last 30 graduating classes.

### **Staffing**

In AY2013, the Office of Admissions was composed of 19 administrative staff and 11 support staff, consisting of 23 women and seven men. Twenty-seven percent of the staff were underrepresented minorities.

**Stuart Schmill**

Dean of Admissions

## **Office of Experiential Learning**

### **Highlights and New Directions**

The [Office of Experiential Learning](#) brings together the Edgerton Center, Concourse, the Experimental Study Group (ESG), and Terrascope. Its director is J. Kim Vandiver, dean for undergraduate research and director of the Edgerton Center. The faculty directors for Concourse, ESG, and Terrascope are, respectively, professors Anne McCants, Alexander Slocum, and Samuel Bowring. Each director has provided separate annual reports, which follow this brief introduction.

### ***Edgerton Center***

The mission of the [Edgerton Center](#) is to uphold the legacy of Harold "Doc" Edgerton—inventor, entrepreneur, explorer, and longtime MIT professor—by promoting hands-on and project-based learning, offering subjects in engineering and imaging, supporting student clubs and teams, involving students in international development projects, supporting individual student inventors, maintaining MIT's expertise in high-speed and scientific imaging, and improving K–12 education at local, state, and national levels.

### ***K–12 Outreach***

Seventeen years ago, the Edgerton Center began a program bringing fourth- through eighth-grade Cambridge Public Schools students to MIT. The goal was to enrich their studies with hands-on science and engineering activities. The program now hosts approximately 3,000 student visits annually, from public, private, and home schools in the Greater Boston area. The trips are organized as half-day, project-based lessons that are aligned with Massachusetts state standards. In September and October, all Cambridge Public Schools sixth-grade students came to the center to participate in a workshop on understanding how light works, a new addition to the Cambridge Public Schools sixth-grade curriculum. Edgerton Center instructors Amy Fitzgerald and Jessica Garrett led the lessons, with assistance from MIT students working through Undergraduate Research Opportunities Program (UROP) projects. When the program began in 1996, MIT was receiving no college applications from the Cambridge Rindge and Latin School. Today, the Institute receives eight to 14 applicants per year, and one to three Rindge and Latin students enroll at MIT annually.

At the request of Susan Hockfield and Boston mayor Thomas Menino, the Edgerton Center began working ten years ago with the John D. O’Bryant School of Mathematics and Science, in Roxbury, MA. From 2006 to 2012, Edward Moriarty, Edgerton Center instructor, was on-site at the O’Bryant School and in the classroom on a daily basis. That role has been taken over by 2012 MIT graduate and O’Bryant alumnus Alban Cobi, of the Edgerton Center staff. Six O’Bryant graduates have matriculated to MIT since the inception of the program; the center actively helps them maintain ties with their high school, with the goal of fostering a self-sustaining science, technology, engineering, and mathematics (STEM)–centric culture. On Saturdays, Moriarty and Mr. Cobi host a wide-ranging, hands-on STEM project known as The Saturday Thing, which is being replicated in states from Alaska to Florida. In summers, they run the month-long Engineering Design Workshop for local high school students.

Jessica Garrett and Amy Fitzgerald are in the third year of collaboration with General Electric (GE), particularly the GE plant in Lynn, MA. They are creating a girls’ summer program model for dissemination to GE plants across the nation. The program was piloted in July 2011, with 25 rising seventh-grade girls from the Lynn public schools. Members of the GE Women’s Network shared stories of their careers and assisted in engaging the girls in hands-on engineering activities. Garrett and Fitzgerald consulted with the first follow-on programs, at Rensselaer Polytechnic Institute, the Milwaukee School of Engineering, and the Georgia Institute of Technology, and continue leading the MIT program.

Jessica Garrett continues the fifth year of collaboration with the Gloucester Public Schools and the Gloucester Education Foundation, developing teacher professional development, such as training in Edgerton Center hands-on curriculum, and the Telling Your Story workshop that connects MIT graduate students, scientists, and engineers with classroom teachers and — through classroom visits — helps to demystify STEM subjects and excite the next generation of learners. In summer 2013, another 40 Gloucester Public Schools students enjoyed a one-week Summer Engineering Adventure on campus, in collaboration with the MIT Museum and the Scheller Teacher Education Program.

This year, the Edgerton Center began a long-term relationship with [i2 camp](#), a new private STEM summer camp, with offerings in Boston and New York City. The camp used four weeks of curriculum in electronics, engineering design, and sciences that were developed for middle school–aged students. On-site support was provided for the first offerings of these modules away from MIT. This collaboration will deepen next year, as the implementation of additional curriculum is developed and supported.

### ***International Development Initiative***

This year marked the conclusion of the International Development Initiative (IDI). IDI supported students through programs such as the Technology Dissemination Fellowship and the Yunus Innovation Challenge. The initiative also supported students conducting research as part of the Design for the Developing World program within the International Design Center, a collaboration with the Singapore University for Technology and Design (SUTD). With the departure of IDI program manager Laura Sampath, these programs have been transferred to D-Lab or the Public Service Center.

## **D-Lab**

**D-Lab** (Development Through Dialogue, Design, and Dissemination) is building a global network of innovators to design and disseminate technologies that meaningfully improve the lives of people living in poverty. The program's mission is pursued through interdisciplinary courses, technology development, and community initiatives, all of which emphasize experiential learning, real-world projects, community-led development, and scalability. Founded by Amy Smith, senior lecturer in the Department of Mechanical Engineering (and a MacArthur Fellow), D-Lab has developed a range of technologies and processes, including community water testing and treatment systems, human powered agricultural processing machines, medical and assistive devices for global health, and clean-burning cooking fuels made from waste.

D-Lab courses continue to be popular among MIT students. This past year, over 250 students, predominantly undergraduates, enrolled in 13 D-Lab subjects. A new class, D-Lab: Education, explored how to nurture creativity in youth and develop interactive lessons around STEM subjects in the context of international development. Over the Independent Activities Period, in January, and spring break 2013, more than 65 students traveled to Brazil, El Salvador, Ghana, India, Nicaragua, Tanzania, and Zambia to work intensively in the field with community partners. D-Lab also piloted its own study abroad program, with two MIT students spending the spring semester in a favela community outside of São Paulo, Brazil.

D-Lab Scale-Ups was created in mid-2011 to identify and support technology ventures with potential for wide-scale poverty alleviation. Less than two years later, Scale-Ups boasts an active accelerator for MIT-affiliated social entrepreneurs, a technical assistance program for social enterprises in the developing world, as well as a program working with corporations working in Base of the Pyramid markets to identify, develop, and disseminate poverty alleviating technologies. To date, the program has sponsored 11 fellowships, established the Harvest Fuel Initiative, providing assistance to biowaste charcoal enterprises in East Africa, and is engaged in projects with three major corporations. At the same time, Scale-Ups has rallied the international development ecosystem within MIT to work toward a more comprehensive vision for the way the Institute addresses global poverty issues through technology and business innovation. In February 2013, Scale-Ups worked with an MIT team to bring together some of the most brilliant social entrepreneurs in this sector at the first annual Scaling Development Ventures conference held at MIT. The conference was co-sponsored by the Media Lab, the IDEAS (Innovation, Development, Enterprise, Action, and Service) Global Challenge of the Public Service Center, and the International Development Initiative.

MIT received \$25 million in funding from the US Agency for International Development (USAID) for two different programs spearheaded by D-Lab. The Comprehensive Initiative on Technology Evaluation will assess technologies intended to alleviate poverty and determine which will have the most impact; and D-Lab will lead a consortium of higher education institutions in creating the International Development Innovation Network (IDIN), which aims to foster and provide structure for technological innovation in developing countries. MIT is one of seven founding partners of USAID's new Higher Education Solutions Network, a venture of international academic

institutions to catalyze the development and application of new science, technology, and engineering approaches and tools to solve some of the world's most challenging development problems.

D-Lab has been piloting a youth outreach program since summer 2012, engaging over 1,500 K–12 students through hands-on STEM and creative design activities at D-Lab, at schools in the greater Boston area, and at public events aimed at youth. Through international fieldwork, D-Lab has also worked with more than 100 primary and secondary school-age youth in the past year. Additionally, D-Lab has been trialing programs to support the development of teacher creative capacity, reaching around 10 US educators and 20 international educators since January 2013. Partner groups include The Advent School, in Boston; the Putnam Avenue Upper School, in Cambridge; the Science Club for Girls; and the Kasiisi Primary School, in Uganda.

## **Hands-on Learning for MIT Students**

### ***Student Clubs and Teams***

The Edgerton Center is home to eight hands-on student clubs and teams, including the Solar Electric Vehicle Team (SEVT) and the Formula SAE team. In July 2012, SEVT raced in the 2012 American Solar Challenge. Members of the Marine Robotics Team (MRT) and Edgerton Center instructor Edward Moriarty traveled to Ketchikan, Alaska, in August 2012 for the first sea trials of their autonomous robot to seek offshore oil plumes. MRT members participated in an outreach program—run by the Naval Surface Warfare Center, Carderock, and the Juneau Economic Development Council—leading middle and high school students in building small underwater gliders. In July 2012, leaders from the teams that participated in the Gordon Engineering Leadership Program (GEL) UROP projects met for a regular lunch series with GEL and Edgerton Center staff, which provided opportunities for members to debrief on the past year. Discussion centered on team organization and leadership issues common to each team. In July 2013, the Robocup team will travel to Eindhoven, the Netherlands, to compete in the Robocup Eindhoven 2013.

### ***Hands-on Academic Offerings***

The Edgerton Center offers 20 to 25 subjects for credit each year, including 12 subjects associated with D-Lab, and 6.163 Strobe Project Lab, taught by James Bales, assistant director. Nineteen people traveled from Europe, Africa, and both Americas to attend the 2013 offering of the professional short course 6.51s High-speed Imaging for Motion Analysis. Edgerton Center staff also taught in subjects 2.007 and 2.00b.

### **Personnel**

As a result of the USAID award, several hires have been made this past year to build D-Lab's capacity to pursue the International Development Innovators network, including Nai Kalema as administrative assistant, Sharmarke Osman as financial and program administrator, Jona Repishti as network coordinator, and Sher Vogel as Summit coordinator. Additionally, Jack Whipple joined the D-Lab staff as workshop manager.



IDI program manager Laura Sampath left MIT to join the National Collegiate Inventors and Innovators Alliance, where she is senior program officer for global programs. Clubs and teams liaison Stephen Banzaert moved to the Department of Mechanical Engineering, where he is continuing as a technical instructor.

### **Awards**

Senior lecturer Amy Smith, founder and codirector of D-Lab, was honored as one of “Boston’s Most Influential Women” by the Women of Harvard Club Committee.

### **Concourse Program**

**Concourse** is a structured freshman learning community of students and instructors who together explore foundational questions at the heart of humanistic inquiry, and the relationship of these questions to science and engineering. The curriculum covers the standard science core curriculum (mathematics, physics, and chemistry), offers its own core humanities class, and integrates both the sciences and humanities into a larger human context in the program’s weekly freshman-advising seminar. Concourse mathematics and science classes follow the standard curriculum, with scheduled lectures, recitations, problem sets, and quizzes. The humanities classes are Communication Intensive in the Humanities, Arts, and Social Sciences (CI-H) classes, and students participate in small group discussions, give presentations on reading material, and receive extensive comments on and help with numerous writing assignments. Small group size (maximum of 60) allows for an intimate atmosphere in which a passion for learning and thinking beyond the traditional disciplinary boundaries is fostered and flourishes.

### **Personnel**

Members of the Concourse faculty and staff for AY2013 were Paula Cogliano, program administrator; Linda Rabieh, lecturer; Robert Winters, lecturer; Saif Rayyan, lecturer; Lee Perlman, senior lecturer; John Pope, instructor; and professor Anne McCants, program director. In addition, nine undergraduates were employed as tutors and graders.

### **Enrollment**

Concourse had 30 students registered for the fall term. In the spring, enrollment was set at 15.

### **Teaching and Curriculum**

CC.110 *Becoming Human: Ancient Greek Perspectives on the Best Life* was offered as a CI-H subject in the fall term, as well as CC.801 *Physics I*, CC.1802 *Calculus II*, and, for the first time, 18.01A/18.02A was offered wholly within Concourse. In the spring term, there were two humanities offerings: CC.S10 *How to Rule the World* was piloted and subsequently received a permanent course number, and CC.116, complete with CI-H status, will now be a regular offering in the spring roster of humanities courses. CC.112 *The Philosophy of Love* was also offered this past spring, as well as CC.802 *Physics II*, and CC.1803 *Differential Equations*. In the fall, the Concourse seminar was CC.A10/

CC.010, offered as a freshman-advising seminar. The spring seminar, Thinking Across the Disciplines, was CC.011.

### **Accomplishments**

This year, Concourse obtained a new director and moved forward as a stronger, more coherent program that exposes students to the great questions about human nature and human purpose, connects these questions to the many disciplines at MIT, and prepares students to succeed wisely and well both at MIT and beyond.

To accomplish these goals, a number of changes were made in Concourse. The readings and activities in the fall freshman-advising seminar were closely coordinated with the themes raised in the humanities classes so that the seminar offered the opportunity for a true "concourse" of the humanities and sciences. Because of this coordination, all Concourse faculty now attend and participate in the seminar along with the students. In the spring, debates were enlarged by inviting MIT faculty from a range of humanities and social science disciplines to visit and speak with students about some aspect of their work that addresses a broader human concern. In addition to vigorous discussion, this format introduced Concourse students to the wide range of excellent courses offered within the School of Humanities, Arts, and Social Sciences (SHASS) at MIT.

The advising role was reinvigorated with regular advising outings to local theaters and restaurants, where students and instructors can get to know each other better and continue their debates outside of class. The sense of community was restored in Concourse with monthly brunches in the lounge and other regular activities where students, alumni, and instructors come together for both physical and intellectual nourishment. As a result, there was a significant involvement of upper-level students, 14 of whom are now active in the newly formed student leadership committee. These students have taken upon themselves the role of organizing a variety of community events and were deeply involved in recruitment during Campus Preview Weekend.

### **Experimental Study Group**

The [Experimental Study Group](#) (ESG) is dedicated to offering MIT undergraduates an experience in small group learning in a community-based setting that fosters opportunities to teach and learn in a collaborative environment. ESG has a rich history of educational accomplishment, including the ESG seminar series and the publication of books, videos, and online instruction based on materials developed in ESG. In the coming year, ESG looks forward to continuing to develop and promote successful educational innovations, both at MIT and in educational settings outside MIT.

### **Personnel**

ESG's administration was headed by mechanical engineering professor Alexander Slocum, and included associate director Holly Sweet and program coordinator Graham Ramsay. As of June 1, 2013, Professor Slocum is on a one-year leave of absence, taking a post as assistant director for Advanced Manufacturing at the White House's Office of Science and Technology Policy. Professor Leigh Royden will act as ESG's interim director. On June 1, 2013, Mr. Ramsay moved into a full-time staff position.

Postdoctoral fellow Analia Barrantes headed the ESG physics staff, joined by Professor Royden, lecturer Paola Rebusco, and lecturer Dave Custer, with additional help from postdoctoral fellow Paul Hand and research scientist Andreas Mershin. Lecturers Jeremy Orloff and Gabrielle Stoy headed the mathematics staff. Chemistry and biology offerings were taught by lecturer Patricia Christie. In addition, 42 undergraduates were employed as teaching assistants, over half of whom were women.

### **Enrollment**

ESG had 55 students enrolled for one or more terms, with 39 students waitlisted. Fifty-one percent of the students were female and 33 percent were underrepresented minorities. Thirteen percent were international students from a diverse group of countries, including Ghana, Indonesia, Jamaica, Kazakhstan, Nepal, Rwanda, and Zambia. Seventy-one students (93 percent of whom were not in ESG as freshmen) enrolled in five pass/fail undergraduate seminars sponsored by ESG in spring 2013.

### **Educational initiatives**

#### ***Teaching and Curriculum***

In fall 2012, ESG offered ES.200 ESG Teaching Seminar to 22 undergraduates who were new teaching assistants in ESG. In spring 2013, ESG sponsored five undergraduate pass/fail seminars. These seminars included ES.010 Chemistry of Sports, taught by Ms. Christie and visiting lecturer Stephen Lyons. Other seminars included ES.S10 Introduction to Psychopharmacology, taught by Zachary Fallows '09; ES.S60 Art and Science of Happiness, taught by Ms. Sweet; ES.S61 Introduction to Trading, run by undergraduates majoring in Course 15 under the supervision of Professor Slocum; and ES.S71 Producing Educational Videos, taught by Mr. Custer and Mr. Ramsay.

In the fall term, Mr. Custer taught ES.033J Science Writing and the New Media. In spring 2013, Mr. Custer taught a section of 8.02 and collaborated with Mr. Ramsay in offering ES.S71 Producing Educational Videos. This seminar was a prototype for a new humanities, arts, and social sciences (HASS) class (ES.333 Production of Educational Videos) that has been given HASS CI-H credit and will be offered by ESG in the coming year.

#### ***Making the Mind-Body Connection***

Professor Slocum and professor Alan Edelman, along with former head men's gymnastics coach and physical education instructor Noah Riskin, have received seed grant funding from the Simons Center for the Social Brain for a one-year project to explore a cognitive-physical means of intervention for adolescents with autism spectrum disorders. The proposed pilot study involves the development and teaching of a unique methodology that appears to lead to improved integration between mind and body.

#### ***ESGx Video Projects***

ESG continued with ESGx, an experimental project that teaches undergraduates the skills required to conceive, design, create, and evaluate educational videos based on content taken directly from the MIT core curriculum. In spring 2013, Mr. Ramsay and Mr. Custer taught ES.S71 Producing Educational Video, in which they taught students

the video and communication skills for explaining the General Institute Requirements. Educational video from ESGx has also been incorporated into MITx 8.01.

### ***Singapore University of Technology and Design***

During summer 2012, Ms. Christie helped to implement the chemistry course she designed for the Singapore University of Technology and Design (SUTD) and assumed the role of the main lecturer. Mr. Custer continued his work with the MIT/SUTD Collaboration to help visiting SUTD faculty identify the fundamental aspects of an MIT education for possible uses in their own university.

### ***Public Service Projects***

Through a gift from ESG alumnus Allen Baum '74 and Donya White, ESG sponsored two ESG international students to create and run public service projects in their home countries. Chandan Sharma Subedi '15 worked to create a library in Nepal, his hometown, and Larissa Senatus '15 ran a four-week seminar in Haiti on astronomy and helped Haitian high school students prepare for the Scholastic Aptitude Test.

### ***Mathematics and Physics Initiatives***

This past year, Ms. Stoy supervised a mathematics teaching UROP project for Joel Schneider '15, who produced instructional videos for use in 18.02. The project will be completed in fall 2013. Mr. Orloff worked closely with the Department of Mathematics to revise 18.05 to be an active learning class, and this class was hosted on MITx. Lecturer Rayyan, from Concourse, and Ms. Barrantes, from ESG, implemented the "blended model" of education that combines traditional classroom activities in 8.01 with online content. The Concourse and ESG versions of 8.01 were the MIT courses that used the edX software more extensively in fall 2012. This format was used with success in 8.011 in spring 2013.

### ***Awards***

Winners of the Peter and Sharon Fiekowsky Community Service Award for outstanding contributions to the ESG community included Amy Ishiguro '16, Xochitl Mellor '15, Rachel Reed '16, Joel Schneider '15, and Larissa Senatus '15. Winners of the Peter and Sharon Fiekowsky Excellence in Teaching Award included Jiyeon Baek, Nathan Benjamin, Jason Gross, and Judy Rodriguez. Mr. Custer was a recipient of this year's James A. and Ruth Levitan Award for Excellence in Teaching in SHASS.

### ***Fundraising***

Ms. Sweet continues to work closely with staff from the Alumni Association and the Office of Resource Development to develop a strategy to raise a \$1 million endowment within the next few years. This endowment will be used to fund ESG educational initiatives such as seminars, books, and educational videos, as well as community activities such as freshman trips not covered under ESG's base budget. This year, two new endowments were created for ESG use, including gifts from Allen Baum '74 and Donya White for ESG public service projects, and from Peter Fiekowsky '77 and Sharon Fiekowsky for weekly luncheons for the ESG community.

## Terrascope

The goal of [Terrascope](#) is to encourage freshmen to develop the skills to analyze and solve complex problems, work effectively as part of a multidisciplinary team, and communicate in a variety of formats, including formal presentations, web pages, interactive displays, and radio broadcast segments. Each year, freshmen are challenged with a complex problem focused on issues of sustainability and the environment in a fall, credit-bearing subject (12.000 called Mission 20xx, where xx is their graduation year). While the problem, which forms the focus for the year's curriculum, typically involves aspects of the Earth system, Terrascope is designed to be a valuable experience for all students, no matter what their chosen field of study; it is unlike any other class they will take at MIT, and many students find that the skills they learn can be applied to the rest of their academic studies and in employment. Students may continue work begun in the fall by enrolling in one or both of a pair of Terrascope subjects offered in the spring. Each year students may participate in a week-long field experience to gain firsthand experience of issues they have studied from a distance during the year. Core science and mathematics subjects are taken outside the program. Program faculty and staff advise all students who initially join the program each fall.

## Personnel

Samuel Bowring, Robert R. Shrock professor of geology and MacVicar Faculty Fellow, directs Terrascope; he teaches 12.000 Solving Complex Problems with help from teaching assistants Erin Shea and Ann Bauer, along with a dedicated group of undergraduate teaching fellows and alumni mentors. Charles Harvey, professor of civil and environmental engineering, was lead faculty member for 1.016 Communicating Complex Environmental Issues and was assisted by lecturer Ari Epstein. Research supervision was provided by Gwyndaf Jones, D-Lab; Eric Alm, Department of Biological Engineering; Sarah Jayne White, the Harvard School of Public Health; Miling Li, Harvard School of Public Health (graduate student); and Philip Tan, MIT's Game Lab. Lecturer Epstein also taught SP.360 Terrascope Radio. Debra Aczel was the program administrator.

## Program Highlights

In AY2013, students in [12.000 Solving Complex Problems](#) were tasked with devising a strategy to ensure that all nations, including those that are developing, have access to diminishing supplies of strategic natural resources by implementing recycling technologies, searching for non-traditional sources, and developing an environmentally sensitive global management plan. They presented their comprehensive plan before a panel of experts as well as the general public at the end of the semester. Students also developed a website with details of their solution.

In Terrascope's spring subject, [1.016 Communicating Complex Environmental Issues](#), small teams of students built on their fall experience by developing prototypes, models, and demonstrations of ideas and technologies related to the year's focus on strategic natural resources. Teams presented their work to the public and a panel of experts in an end-of-semester Bazaar of Ideas. This year's projects included use of red worms to break down phosphorus-rich algae for use as fertilizer; experiments to test genetically



engineered phage to see if they can be designed to bind to indium (a rare-metal), with the ultimate goal of extracting and recycling indium; and development of a game to teach players about tradeoffs in mining, using and recycling strategic minerals.

In SP.360 Terrascope Radio, students produced a radio segment called [“Digging Deeper: Miner Details of a Major Industry”](#) about mines and the mining industry, using sound gathered during a field trip to California and Nevada.

In spring, Terrascope hosted a very successful dinner for program alumni and current students, with attendees from nearly every class of Terrascope graduates. Marion Dumas, a member of Terrascope’s first class (2002–2003) and now a PhD student at Columbia University, spoke on “Mineral Scarcity: The Case of Phosphorus.” The Terrascope community congratulated Lisa Song, a member of Terrascope for five years as a student, an undergraduate teaching fellow, and a teaching assistant, on her recent Pulitzer Prize for reporting on potential ecological dangers of diluted bitumen.

### **Terrascope Field Trip to California and Nevada**

Thirty-four Terrascope students, faculty, and staff visited active mines in California and Nevada to expand their understanding of sustainable extraction and use of strategic minerals. Two MIT alumni, who had worked with freshmen as mentors during the fall semester subject, participated in this trip. To learn more about the experience, visit [Mission 2016 Field Trip](#), the blog the students wrote during their week. This year’s trip was funded in part by the Baruch Family Fund.

**J. Kim Vandiver**

Director, Office of Experiential Learning and the Edgerton Center

Dean for Undergraduate Research

Professor of Mechanical and Ocean Engineering

**Anne McCants**

Director, Concourse

Professor of History

MacVicar Faculty Fellow

**Alexander Slocum**

Director, Experimental Study Group

Neil and Jane Pappalardo Professor of Mechanical Engineering

**Samuel Bowring**

Director, Terrascope

Robert R. Schrock Professor of Geology

MacVicar Faculty Fellow

### **Office of Faculty Support**

In AY2013, the [Office of Faculty Support](#) (OFS) focused on its mission of helping faculty develop and coordinate the undergraduate curriculum and educational programming, supporting faculty governance, and providing information and infrastructure related

to undergraduate education. Special activities included assessing and supporting innovative Humanities, Arts, and Social Sciences Exploration (HEX) subjects within the Humanities, Arts, and Social Sciences (HASS) Requirement; piloting a shorter set of questions and adding Course 15 within the Institute-wide subject evaluation system; and leading the enrollment management project. OFS staff continued the essential work of supporting the Committee on Undergraduate Programs (CUP), the Subcommittee on the Communication Requirement (SOCR) and the Subcommittee on the HASS Requirement (SHR), as well as the Undergraduate Officers Group; administering the MacVicar Faculty Fellows Program; overseeing the central budget for the Communication Requirement; managing the selection process for curriculum development funds; administering the online subject evaluation system; and supporting faculty innovation in education.

### MacVicar Faculty Fellows Program

Diana Henderson, dean for curriculum and faculty support, and her OFS team continue to raise awareness throughout MIT about the [MacVicar Faculty Fellows Program](#), which honors MIT's best undergraduate teachers. Four new MacVicar Faculty Fellows, three of them women, were announced on MacVicar Day, March 15, 2013: professor Linda Griffith, Department of Biological Engineering; associate professor Robert Miller, Department of Electrical Engineering and Computer Science (EECS); associate professor Laura Schulz, he Department of Brain and Cognitive Sciences; and associate professor Emma Teng, Foreign Languages and Literatures Section (FL&L). They were welcomed by other Fellows at a luncheon.



*MacVicar Faculty Fellows gather on MacVicar Day 2013: professors Robert Miller, Linda Griffith, Laura Schulz, Emma Teng (front row l-r); Wit Busza, Kim Vandiver, Anne McCants, Lawrence Vale (second row l-r); Alan Guth, Daniel Jackson, Jesus del Alamo (third row l-r); Nancy Rose, Lowell Lindgren, Diana Henderson, George Verghese, William Broadhead (fourth row l-r). Photo: Dominick Reuter*

The new Fellows were introduced publicly by DUE dean Daniel Hastings before a symposium titled Re-imagining the MIT Classrooms: Experiments with Digital Learning. Symposium speakers included professor Jesus del Alamo, EECS; associate professor Anette Hosoi, the Department of Mechanical Engineering; professor Anne McCants, the History Section; Professor Teng, FL&L; and professor Troy Van Voorhis, the Department of Chemistry.



*Speakers Emma Teng, Anette Hosoi, Troy Van Voorhis, Anne McCants, and Jesus del Alamo, with moderator Daniel Hastings at the MacVicar Day symposium. Photo: Dominick Reuter*

MacVicar Day concluded with a dinner hosted by president and Mrs. Rafael Reif at Gray House, where the new Fellows received awards from provost Chris Kaiser. Special guest throughout the day was Victoria MacVicar, sister of the late Margaret MacVicar, professor of physical science and dean for undergraduate education, for whom the program is named.



*2013 MacVicar Faculty Fellows Laura Schulz, Linda Griffith, Robert Miller, Emma Teng (seated l-r) join provost Chris Kaiser, dean for undergraduate education Daniel Hastings, president Rafael Reif, Victoria MacVicar, and chancellor Eric Grimson (standing l-r) at Gray House. Photo: Dominick Reuter*

For the Fellows, OFS organized two other events and three luncheons, including one at which Provost Kaiser, a MacVicar Fellow emeritus, was lauded for his new role. Provost Kaiser addressed the Fellows regarding plans for digital learning at MIT, and welcomed their insights. Professor Daniel Jackson, EECS, shared his photographs of MIT laboratories with Fellows and friends, who then gathered for a reception.

The MacVicar Program team includes associate dean Mary Enterline and administrative assistants Deborah Boldin and Brian Nelson, all from OFS; and administrative analyst Judy Leonard, from the Office of Educational Innovation and Technology.

### **Enrollment Management**

As part of the Online Registration Phase Two initiative, a project team was formed in spring 2012 to explore, analyze, and provide solutions to MIT's enrollment management issues, especially pertaining to limited enrollment subjects. In AY2013, after surveying all faculty and instructors and interviewing faculty and staff from eight departments, the team determined the scope of the entire project and completed business requirements for the first phase.

The project's scope encompasses:

- Tools for adding, removing, approving, and denying student enrollment throughout the term
- Capacity to enforce limited enrollment caps
- Tools to set priorities for enrollment
- Support for waitlists
- Capacity to track and enforce pre/corequisites
- Tools for managing and enforcing permission of instructor
- Tools for section management
- Tracking and management of conflicts within an individual student's schedule

Given the wide scope and the concurrent work on related online registration projects, it was decided that the first phase of the enrollment management project will focus on developing tools to prioritize enrollment, set subject and section caps, allow registration at the section level, and maintain waitlists. Planning began for a pilot with undergraduate Communication Intensive in the Humanities, Arts, and Social Sciences (CI-H) subjects, and CI-HW subjects, a subset of CI-H subjects focused on writing, beginning in April 2014. The CI-H/HW subjects were chosen for the pilot because they have limited, prioritized enrollment in subjects and sections, and because the HASS Distribution (HASS-D) lottery, their primary means for restricting CI-H enrollment, will no longer exist after AY2014.

This project is jointly overseen by the Registrar and Information Services and Technology (IS&T), with business leadership provided by Dean Henderson and staff from OFS (Dean Enterline and associate dean Anna Frazer, and communications/data specialist Rosanne Santucci).



## Subject Evaluation

In spring 2013, the MIT Sloan School of Management successfully transitioned to the Institute's [Online Subject Evaluation](#) system so that all departments at MIT are now fully participating. At the same time, most departments piloted a new, shorter set of questions, which had been developed by the Subject Evaluation Advisory Committee (SEAC) and vetted by CUP, the Committee on Graduate Programs, the Faculty Policy Committee, and the Undergraduate Officers Group.

During the end-of-term evaluation period for spring 2013, 1,023 subjects in 38 departments and programs were evaluated online. There were 16,039 evaluations completed by 5,852 students, including ratings and comments for 2,109 instructors. The average response rate of subjects evaluated online was 57%, excluding registered listeners. The average overall rating of subjects was 5.8, and the average overall rating of instructors was 6.0 (where 1=very poor, 7=excellent).

SEAC, which comprises faculty from all five schools and two student representatives and is chaired by Dean Henderson, also established policies on the use of teaching and evaluation data, discouraging cross-subject or cross-department comparisons, as they can be misleading without understanding sufficient context and the voluntary nature of MIT's subject evaluations. Department heads must approve release of data beyond the summary reports posted on the web. Anonymity of student respondents is to be preserved.

The OFS subject evaluation team includes Dean Enterline, Ms. Santucci, Ms. Boldin (coordinator for subject evaluations), and Mr. Nelson.

## Support of Faculty Governance

OFS staffs and supports [CUP](#) and the subcommittees SOCR and SHR, providing a valuable link between the work of DUE and the faculty committees responsible for MIT's undergraduate program. OFS staff helped frame discussions, provide background material and data, and draft policy statements, reports, presentations, and other communications from the committees and their faculty chairs. The work of these committees is discussed in more detail in the section submitted by the chair of the faculty. The CUP, SHR, and SOCR chairs expressed appreciation of OFS staff who helped to manage the committees' activities: Dean Frazer (CUP), administrative assistant Lauren Reemsnyder (CUP and SOCR), assistant dean Kathleen MacArthur (SOCR), and staff associates Genevieve Filiault (SHR) and Jason Donath (SHR).

Staff to CUP, SOCR, and SHR joined staff from a number of other standing faculty committees at regular meetings to coordinate work and agendas for committee and Institute faculty meetings.

## Administration of the Communication Requirement

In addition to supporting the work of SOCR, OFS coordinates the administration of the [Communication Requirement](#) in collaboration with the School of Humanities, Arts, and Social Sciences, other DUE offices, and those involved in instructional delivery.



In AY2012, SOCR agreed that the CI-HW instructors workshop held at the start of the fall term should be administered through the Office of the Communication Requirement, in coordination with instructors in the Program in Writing and Humanistic Studies, the Literature Section, and Foreign Languages and Literatures. This shift was intended to allow for better overall coordination between the units. Fall 2012 marked the first time that Dean MacArthur organized this meeting. The workshop was well attended and its agenda, developed after broad consultation, provided opportunity for robust discussion.

Patricia Fernandes, advisor for the Communication and HASS Requirements, continued efforts to send targeted messages reminding students to register for communication intensive subjects, providing early alerts to students projected to be out of compliance with the CR at the end of term, and encouraging students to contact the CR office for individual advising about pacing progress toward completion of the requirement. These messages streamline the work of SOCR, provide better information to the academic units, and give students the information they need to plan their registration. Ms. Fernandes also worked with the Office of Undergraduate Advising and Academic Programming (UAAP) and Dean Henderson to write the script for a video describing the Communication Requirement to incoming students.

### **Administration of the Humanities, Arts, and Social Sciences Requirement**

In the third year of the transition from the HASS-D to the revised distribution system within the [HASS Requirement](#), one class of students remained under the HASS-D system, while three classes of students (entering in fall 2010 and later) were under the revised system. Ms. Fernandes helped all students work to complete the requirement, including evaluation of readmissions cases in conjunction with Student Support Services and SHR. Ms. Fernandes, Mr. Donath, and Ms. Filiault worked with UAAP to improve advising efforts for first-year students, including the scripting of a video explaining the full HASS Requirement.

Students submitted 1,135 HASS concentration proposals and 1,023 concentration completion forms. Members of the Class of 2013 completed the highest numbers of concentrations in Economics (230); Music (104); Spanish (59); Science, Technology, and Society (54); and Chinese (49). They completed a total of 215 concentrations in foreign languages (including Spanish and Chinese). Comparative Media Studies, History, Literature, Philosophy, Political Science, and Psychology remain popular, each with approximately 40 or more students.

Members of OFS (Ms. Filiault, Ms. Fernandes, Ms. Santucci, and Dean Enterline) and IS&T continued their efforts to finalize the functional specifications for the project to move the concentration forms online during AY2014.

Support to SHR, provided by Ms. Filiault and Mr. Donath, included managing the SHR subject approval process for over 100 subjects, overseeing student petitions, and working to provide consistency and context for issues related to the requirement. The staff also supported SHR's efforts to assess the HASS Exploration Program. They administered surveys of students and of HASS department/unit heads, curriculum committee chairs, and undergraduate officers, and analyzed responses; scheduled and documented

student focus groups facilitated by SHR members; and added questions to the end-of-term subject evaluations. OFS also organized a meeting of HEX instructors during Independent Activities Period and administered funds supporting their joint activities.

### **Curriculum Development Funds**

Twelve faculty groups developing new curricula received approximately \$419,500 from the [d'Arbeloff Fund for Excellence in Education](#), and from the [Alumni Class Funds](#) supported by the Classes of 1951, 1955, 1972, and 1999. Five projects received d'Arbeloff Fund awards, while seven grants were made from the Alumni Class Funds. Both funds aim to enhance undergraduate education and are administered by OFS.

The d'Arbeloff Fund was established through a gift from Brit SM '61 and Alex '49 d'Arbeloff. With the advent of MITx, the call for proposals focused on initiatives to explore how online learning can help faculty teach in the residential educational system. Also welcomed were enhancements of subjects in the first-year curriculum and within the General Institute Requirements, and projects beyond the classroom, such as mentoring and advising, especially of freshmen.

Dean Enterline, Mr. Nelson, and Ms. Boldin administered the funds, with Ms. Santucci supporting a database of projects.

### **Faculty Outreach**

Throughout the year, Dean Henderson facilitated monthly meetings of the Undergraduate Officers Group. Agenda topics included the development of tools and resources such as Gradebook, the Core Concept Catalog, and online forms; best practices in evaluating teaching; the shortened subject evaluation form; MIT's grading policy; opening classes to prospective students; recognizing and responding to student academic stress; distinguished fellowships; the formation of the Office of Digital Learning; classroom renovations; and using librarians as instructional partners for meeting information fluency goals in the major.

Ms. Filiault and Martha Janus, administrative assistant in the Office of the Registrar, provided staffing for the group.

### **Staff Changes**

In May 2013, administrative assistant Lauren Reemsnyder left OFS for a position at Boston University. Ms. Reemsnyder provided excellent administrative support for both CUP and SOCR, including taking and composing extensive meeting notes. Her successor, Eileen Milligan, has been hired and will begin work in July 2013.

As ever, OFS staff were thoroughly knowledgeable, professional, dedicated, and helpful to students, faculty, and staff alike, and the office is indebted to them all.

**Diana Henderson**

**Dean for Curriculum and Faculty Support**

## Office of Minority Education

The mission of the [Office of Minority Education](#) (OME) is to promote academic excellence, build strong communities, and develop professional mindsets among students of underrepresented minority groups, with the ultimate goal of developing leaders in the academy, industry, and society. OME supports MIT's academic mission to provide the best possible education for all students, while serving the nation's need to have underrepresented and underserved students in science and engineering disciplines pursue higher education and achieve success in these fields.

Over the last academic year, OME offered a rich and robust portfolio of programs and services designed to support the overall success of all MIT students, with a particular focus on students from underrepresented groups. Below are details and highlights of some of OME's AY2013 key accomplishments.

### Signature Programs

#### *Interphase EDGE*

Interphase EDGE (Empowering Discovery | Gateway to Excellence) is a two-year scholar enrichment program that includes a seven-week summer session as well as programming during the academic year. The focus of the summer program is to give scholars an introduction to the MIT experience by exposing them to the rigors of a full subject load and to life on campus. In addition, the Interphase EDGE curriculum is uniquely designed to impart pivotal concepts that will increase long-term academic success. The program will not only give students an "edge" on their MIT experience but will also catalyze their success beyond MIT. During the summer and the academic year, scholars participate in a range of personal and educational development seminars and activities designed to ensure their smooth transition into college life. Throughout the academic year, scholars continue to build upon the relationships created during the summer by attending biweekly meetings with EDGE advisors and monthly professional and academic enhancement events, including programs that expose them to various career pathways.

A comprehensive assessment of the program by the Teaching and Learning Laboratory (TLL) in 2010 led to changes to the traditional Interphase program. Beginning with the 2012 cohort, Interphase was officially rebranded as Interphase EDGE, which included enhancements to the physics and humanities curriculum as well as the addition of a two-year academic year component. The reimagined physics curriculum was piloted in summer 2011 and is currently still in place. The redesigned humanities course was piloted in summer 2012 and renamed communication/writing, where the written, oral, and professional communication components were enhanced.

The inaugural 2012 cohort of Interphase EDGE scholars consisted of 78 scholars. OME staff members, two deans, and one program coordinator, who manage the Interphase EDGE program, served as the first-year advisors for all 78 scholars. The Interphase EDGE advising model is one of high touch and proactive engagement that has yielded notable, although preliminary, results. For AY2013, the spring semester fifth-week flag rate for the 2012 cohort was 13%, vs. 14.8% for the overall first year class. The 13% flag

rate represents a 40% decrease, compared with the spring flag rate of the 2011 cohort (AY2012). This is a strong indicator that the Interphase EDGE redesign and rebrand is trending in a positive direction.

The Interphase EDGE 2013 cohort consisted of 70 scholars who they began the summer component in June 2013. Institute funding for Interphase allows about 70 students to be admitted into the program annually; however, the 2012 cohort was a little larger because supplemental one-time funds were received from external sources that year. The current cohort has benefitted immensely from lessons learned from the inaugural class, e.g., the program has added and expanded parental/legal guardian expectations, offered enhanced workshops, improved the timing of program activities, and implemented a more efficient fall registration process. It also utilized associate advisors, much like the Office of Undergraduate Advising and Academic Programming model, to assist the scholars in their transition into MIT.

Given the level of interest in the Interphase EDGE program and the commitment demonstrated by the scholars, a major priority for future years will be to secure external funding that will supplement the resources the program receives through the financial support and generosity of MIT. These external funds would allow us to provide additional support to the scholars as well as increase the number of students participating. This is a timely endeavor given that Interphase EDGE will celebrate its 45th anniversary next year.

The Interphase EDGE staff won the 2013 DUE Infinite Mile Award for Teamwork and Collaboration for their work in this area.

### ***Seminar XL and Seminar XL-Limited Edition***

Seminar XL/Seminar XL-Limited Edition (LE) is an academic enrichment seminar primarily for freshmen that uses an innovative and effective small-group learning concept. In Seminar XL, groups of four to six students meet for 90 minutes twice per week during the semester to share their understanding of course concepts and problem-solving methods. A facilitator, typically an upperclassman or graduate student, guides each group. First-year students can receive course credit provided they attend at least 80% of the group sessions. In AY2013, a total of 275 students formed 67 groups (regular and LE). The staff of 55 facilitators delivered instruction on 20 different subjects with over 292 enrollments (the total number participants for every subject; students may enroll in more than one subject). A total of 55 students participated in Seminar XL-LE sessions. LE sessions are the same as the regular sessions; however, they begin after the fifth week and after "Add Date", and students do not receive credit for the course. (Note: Beginning in fall 2013, students may receive partial credit for LE participation, per a new policy approved by the Committee on Curriculum and the Committee on Undergraduate Programs this spring.)

During AY2012, OME, in collaboration with TLL, enhanced the training and evaluation systems connected with the program by hosting initial trainings with TLL for new facilitators, monthly follow-up sessions, and conducting classroom observations. OME continued those processes in AY2013. It also bolstered the assessment and evaluation

structure by conducting classroom observations on returning facilitators and adding five quantitative assessment points throughout the year to include a brief 10-question survey that students complete at the midpoint of each semester (fall and spring) to gain feedback on how the sessions are progressing; a more comprehensive 16-question survey that students complete at the end of each semester (fall and spring) to gain feedback on facilitators and overall program satisfaction; and a 16-question survey that facilitators complete at the end of the year to gain their perspective on the sessions and programmatic processes. After analyzing these data points, it was found that:

- Participants rated the quality of teaching a 4.40 and 4.49 (scale of 5, with 5 being the highest) in the fall and spring semesters respectively
- 88.1% and 90.9% of the participants who responded in the fall and spring semesters, respectively, stated they would recommend their facilitator
- Participants stated they understood concepts better at an average of 4.37 and 4.40 (scale of 5) in the fall and spring semesters, respectively
- Participants stated they became better problem solvers at an average of 3.95 and 4.11 (scale of 5) in the fall and spring semesters, respectively
- 85.7% and 98.2% of the participants who responded in the fall and spring semesters, respectively, stated they would participate in Seminar XL again

Overall, program ratings increased as the academic year progressed. However, the survey data and classroom observations revealed that a key challenge for the program is the consistent delivery of weekly worksheets that align with the General Institute Requirements (GIR) courses. The worksheets contain problem sets that students work on during their Seminar XL sessions. In order to be effective, these worksheets must consist of problems that are similar to, but not exactly like, what the students are learning in their regular classes. They must also follow the course syllabi. In order to address this concern, a reservoir of worksheets was built for all subjects. This is a preliminary but viable solution; however, this will remain an area for close oversight. OME staff will continue to work with departments and professors who teach first-year GIRs to further develop the worksheets and implement processes that will mitigate this concern.

### ***Tutorial Services Room***

For AY2013, the Tutorial Services Room (TSR) provided the following services to undergraduate students: homework nights, one-on-one tutoring, exam reviews, and study lounge hours. Traditionally, first-year students use TSR tutoring services. However, upperclassmen use the resources as well and that number has been steadily increasing. For one-on-one requests, students can access and submit an online form, and this year great effort went into promptly responding and matching tutoring requests with available tutors. This resulted in students receiving timely and effective support. Homework nights give students the flexibility to drop in and get help with first-year GIRs. Additionally, OME expanded the number of exam reviews offered to students by collaborating with specific departments to offer exam reviews when departments were not. This worked well because it gave faculty in these departments additional support, i.e., they could encourage their students to attend TSR exam reviews.



Forty-five tutors, upperclassmen, and graduate students provided coverage for homework nights, one-on-one tutoring, and exam reviews. Many of the tutors also worked as Seminar XL facilitators and were assigned to tutor Seminar XL-LE participants who received more than one fifth-week flag. During the day and in the late evenings, the TSR space (Room 12-124) also functioned as a study lounge for students. Students could access the room with their MIT ID card.

<b>Service</b>	<b>Number of Participants</b>
Homework Nights	212
One-on-one Tutoring	118
Exam Reviews	188
Lounge Hours	180
Total	698

### ***Laureates and Leaders***

Laureates and Leaders, OME's graduate school initiative, continues to offer relevant and high quality programming to students, including faculty research talks and speakers, faculty panels, roundtable dinners, and workshops. The Fifth Annual Laureates and Leaders Induction Ceremony was held on February 22. Twenty-six new students were inducted into the program, the largest number of students inducted into the program to date. In June, 18 senior laureates graduated from MIT—five will go on to PhD programs, one will pursue a MD/PhD, four will enter master's programs, and eight will work in industry. There are currently 39 students enrolled in the program.

In order to provide information about the graduate school application process to students who were not in the Laureates and Leaders program, OME's Pathway to Graduate School program collaborated with the Global Education and Career Development (GECD) office to offer a graduate student panel on October 11. Thirty students attended.

### ***Momentum***

Twenty students participated in the January 2013 session of Momentum, an interdisciplinary project-based class held during the Independent Activities Period. Momentum is fully funded by OME's Industrial Advisory Council for Minority Education (IACME). IACME comprises 21 corporate, government, and nonprofit organizations that support OME and the students it serves. In addition, three IACME partners financially sponsored teams (over and above their annual contribution to OME), and two partner organizations provided experts for the students to reach out to during the design of their prototypes. This year's Momentum theme was "enhancing the electric vehicle charging experience." Five student teams worked to design a remodel or enhancement to the Chevrolet Volt charger. At the end of the program, they gave technical talks and presented their final prototypes to the IACME judges. The judging structure of the final presentations was modified to allow all IACME representatives to

have a contributing role; a small subset of the IACME partners served as judges, while all other representatives provided feedback to the student teams on their presentation and communication skills. Several IACME partners interviewed the Momentum students for summer internship opportunities. Sixteen students received interviews, and six received and accepted offers.

## **New Initiatives**

### ***Bring a Friend Home***

One of the goals of the OME strategic plan is to “create programs or initiatives that focus on creating a supportive environment and building self-confidence in all students.” With this charge, OME implemented a new initiative called Bring a Friend Home, in fall 2012. OME hosted two Bring a Friend Home events last year (one each semester). An “open house” format was used to encourage current students connected to the office to bring a friend who had never participated in any OME programs or who had never visited the OME suite. The inaugural events were fairly successful. During the October 12 event, 18 students attended, and 12 were new students to OME. Forty-three students attended the spring event on March 1, and 20 were new to OME. Through this small scale, cost-effective initiative, more students are now familiar with the staff and the support services that are available through OME.

### ***Distinguished Peers***

Student feedback from the 2012 OME survey, as well as feedback given directly in focus groups with OME student leaders, suggested that OME needed to do more to showcase and highlight the successes and accomplishments of its students, particularly underrepresented students. From that feedback, a recognition initiative called Distinguished Peers was birthed. In its first application cycle (fall 2012), 14 peer nominations were received and six winners were selected for the months of October, November, December, February, March, and April. The winners received a \$100 Amazon gift card and were highlighted via the OME website, posters, and on a perpetual plaque housed in the OME suite. Throughout the month of May, the six winners were profiled on the LCD screens located in the infinite corridor. Students were recognized in six key areas (with academics as a foundational criterion): entrepreneurship, public service, MIT spirit, performing arts/athletic achievements, global initiatives and experience, and prestigious fellows.

## **Functional Enhancements**

### ***Mentor Advocate Partnership Program***

The Mentor Advocate Partnership (MAP) is a successful volunteer mentoring program for freshmen and sophomores, and AY2013 marked its sixth year. MAP includes a total of 158 participants, with 92 protégés (50 freshmen and 42 sophomores) and 66 mentors, including 18 faculty, 44 staff, one PhD candidate, and three postdoctoral associates.

This year, MAP focused on giving mentors adequate support to help them develop effective relationships with protégés. During the Nexus Kick-off, Margo Murray, an experienced mentor coach, facilitated a workshop on developing relationships.

In the spring, external consultant Stacy Blake-Beard focused on the challenges and opportunities encountered in mentoring relationships. MAP also offered programs for protégés and mentors to supplement their one-on-one interactions—Meet Your Match, Ice Cream Social, Mentor Appreciation Luncheon, and the annual End-of-Year Celebration. Program surveys revealed that most protégés and mentors are satisfied with the program, with 75% of protégés reporting satisfaction with their relationships and 79% of mentors expressing similar levels of satisfaction. In addition, 71% of freshmen remained in the program after their freshman year, i.e., they chose to continue in the program during their sophomore year.

Throughout the spring and summer, MAP has been gearing up to launch its new MAP E-Mentoring Initiative. Protégés will communicate with corporate and alumni mentors via phone, Skype, and email. The goal of the program is to help sophomores, juniors, and seniors transition from academia into the work environment. To date, there are 25 mentors from British Petroleum, Cisco, Draper, Intel, and Raytheon, and 25 MIT students (protégés) signed up to participate in the first cohort.

### ***Innovations***

Initiated in fall 2010, the Innovations initiative gives students one-time individual and/or group volunteer opportunities at organizations in Cambridge, Boston, and beyond. This year, Innovations partnered with the Intel Computer Clubhouse (ICC) at the Boston Museum of Science. Moving forward, ICC will serve as the primary volunteer site for all future Innovations events. According to ICC staff, each Computer Clubhouse provides a creative and safe out-of-school learning environment where young people from underserved communities work with adult mentors to explore ideas, develop new skills, and build self-confidence through the use of technology. This new partnership allows interested students or groups affiliated with the OME Student Advisory Council (OMESAC) to volunteer by supporting various initiatives at ICC while inspiring local youth. To help facilitate this new partnership, staff from ICC presented to student group leaders at the October 2012 OMESAC meeting. In spring 2013, the first kick-off event was held on location at the Museum of Science, where eight current MIT students helped 10–15 middle and high school students work on a special project titled “Social Justice Media Workshop.” Additionally, through the Innovations Fund, OME provided financial support to MIT students doing literacy work in Jamaica. Innovations is funded through IACME.

### ***Master Your Future***

Master Your Future is funded and delivered in collaboration with IACME and GECD. The events and workshops are designed to help sophomores, juniors, and seniors navigate the work environment successfully. There are four Master Your Future professional development modules: Career Paths, Job-finding Skills, Business Etiquette, and Employability. This year, OME offered the following sessions for students: “What Recruiters Are Looking For,” “Business Etiquette,” and “Discovering Your True Career”. In total, 72 students participated in these sessions, with Business Etiquette garnering the highest number of attendees, at 56.

## Fund Development

The Center for Sensorimotor and Neural Engineering (CSNE) proposal was funded by the National Science Foundation in June 2011. CSNE is a partnership with the University of Washington (lead institution), MIT, San Diego State University, the University of British Columbia, the University of Tokyo, and several historically black colleges and universities, community colleges, K–12 schools, and industry partners. Last year, OME (in collaboration with the Office of Engineering Outreach Programs) received approximately \$40,000 to offer workshops and seminars that expose students to careers in neural engineering as well as opportunities to do undergraduate research in CSNE-related fields. CSNE also provided supplemental funding to Interphase EDGE, which enabled OME to bring three additional students to the program.

As mentioned earlier, OME continues to receive financial support from the IACME group, which now comprises 21 corporate, government, and non-profit partners (including Latino Alumni of MIT and Black Alumni of MIT). Last year, IACME provided over \$79,000 to help underwrite costs associated with current OME programs and initiatives like Momentum, Innovations, and Master Your Future, as well as new initiatives like Bring a Friend Home and Distinguished Peers. Supplemental funding from IACME partner Intel Corporation enabled OME to bring five additional students to Interphase EDGE in summer 2012.

## Staffing Changes

To date, the OME organizational structure, which includes the associate dean/director, three deans, two program coordinators, and two administrative assistants, has worked well. However, with the expansion of programs like Interphase EDGE and MAP, more logistical and administrative support was needed to coordinate all the intricate pieces of these multifaceted initiatives. With support from the General Institute Budget, over the last year and half, two new program assistants (one part-time and one full-time) were added to the OME staff. These two positions help OME better manage the many and diverse academic and professional development programs it offers. With this additional staff support, OME will continue to provide excellent service and much-needed programs to MIT students.

**DiOnetta Jones Crayton**

**Director**

**Associate Dean for Undergraduate Education**

## Office of the Registrar

The [Office of the Registrar](#) works with faculty members, Institute and faculty committees, departments, staff, and students to guide and assist development and modification of educational policies and procedures in accordance with Institute policy and local, state, and federal laws. The office continues to gather, maintain, interpret, and share information through new technologies, broadened capacities, and enhanced communications in areas the Institute has entrusted to its charge.

## Technological Highlights

The Institute relies on the Office of the Registrar in various and complex ways. In AY2013, the newly reorganized office continued to provide the highest level of service and accuracy. The education systems roadmap challenged the staff to define functional requirements, make design decisions, test, and then implement and communicate major Institute-wide improvements to core business.

In partnership with Information Services and Technology (IS&T), the Registrar's Office:

- Enhanced intelligent messaging in online registration
- Deployed classroom scheduling application and began setting the foundational pillars, including converting data from legacy tables and configuring the system to meet MIT's needs
- Approved functional specifications and developed digitized forms and petitions, with the intent of deploying add/drop functionality to the community in AY2014
- Assisted its partners in IS&T with a major Oracle upgrade by ensuring that all applications and services functioned with minimal interruption
- Defined requirements for a limited enrollment selection process for communication intensive Humanities, Arts, and Social Sciences (HASS) subjects

## Educational Policy and Governance

The Office of the Registrar played a major role in advising senior administrators on several complex student issues involving tuition, registration, academic calendar, and degree programs. Highlights included working with the Office of the Provost, the Office of the Vice President for Research, the International Students Office, and Student Financial Services to define policies and implement registration fee-charging for non-Institute visiting students, and working with the Office of Undergraduate Advising and Academic Programming to identify and classify students working abroad on MIT-sponsored programs. The office officially took over certifying athletes for National Collegiate Athletic Association academic compliance.

The office also participated in the work of three subcommittees appointed by the Faculty Policy Committee: a formal review of the Independent Activities Period (IAP); the assessment of the September student holiday experiment; and the consideration of governance issues with respect to MITx, MIT's online learning initiative. A member of the office also actively participated in a rules review for the Committee on Discipline. The Office of the Registrar also engaged in policy review and development with the faculty governance system in several areas, including working with the Committee on Graduate Programs and the Department of Electrical Engineering and Computer Science to implement the new master of engineering program in computer science and molecular biology, and coordinating the restructuring of the bachelor of science programs in Courses 9, 12, 16, and 21M and of three interdisciplinary minors: Applied International Studies, Biomedical Engineering, and Energy Studies. Additionally, assistance was given in the establishment of a new interdisciplinary minor in atmospheric chemistry. The office provides ongoing staff support to the Committee



on Curricula (CoC); the committee reviewed 241 applications for double majors, 15 restricted elective in science and technology petitions, and one Institute Laboratory petition. On behalf of CoC, the Catalog Section also works with the Subcommittee on the Communication Requirement and the Subcommittee on the HASS Requirement to coordinate the complex review of General Institute Requirements for former students who apply for readmission after failing to complete their undergraduate studies within 10 years of original entry. Seventeen such cases were reviewed.

### **Curriculum and Classroom Management**

The dynamic nature of MIT's curriculum was aptly illustrated by the addition of 119 subjects (62 undergraduate; 57 graduate), coupled with revisions to 649 existing subjects (372 undergraduate, 277 graduate). Represented in these totals are 2,232 revisions, with slightly more than half (52.6%) emerging from the graduate curriculum. In addition, 171 subjects were removed from the catalog, and seven were reinstated. MIT begins AY2014 with a regular curriculum that boasts 3,667 subjects (45% undergraduate, 54% graduate).

The scheduling of MIT's academic classes is a critical responsibility of the Office of the Registrar. The Schedules Section made 5,088 classroom reservations for lectures, recitations, laboratories, and design sessions in support of MIT subjects, an increase of 1.8% from AY2012. The office processed an additional 6,310 reservations for academic activities: exams (including final exams), review sessions, not-for-credit seminars, office hours, tutorials, presentations, etc. The total number of academic reservations (11,960) increased 5.7% from AY2012.

MIT's classrooms are also in high demand as community spaces for meetings, conferences, student groups, continuing education, and registered events throughout the year. The Schedules Section made 13,019 classroom reservations on behalf of the MIT community, a 1.6% increase from AY2012. Although ad hoc reservations account for 52.1% of all classroom reservations, academic use of classrooms takes priority in scheduling.

### **Classroom Management Highlights**

The Office of the Registrar extended its engagement in the area of classroom planning during the past year, providing representation to the Task Force for Learning Environments (sponsored by the Office for Digital Learning), the Institute-wide Task Force on the Future of MIT Education, and the Working Group on MIT Education and Facilities for the Future. Moreover, the office was directly involved in the planning and execution of the following:

- Leading the effort as client for the design phase of the future renovations of 16 Registrar's office classrooms in Buildings 2, 4, and E52; construction on those projects began during the fall 2012 term
- Installing new seating and carpeting, and restoring maple woodwork, in lecture rooms 4-231 and 4-237

- Installing new conference chairs in seminar room 66-148, new chalkboards in classrooms 4-159 and 14N-325, and new flooring in classrooms 4-144, 4-145, 14N-112, and 34-101 (lecture hall)
- Providing new video projectors and updated code to MediaLink control systems for classrooms 1-190, 4-145, 4-149, 4-153, 4-253, 6-120, 8-119, 8-205, 10-250, 16-160, 24-115, 32-123 and 34-101
- Providing new audio visual systems, including video projector and connection points for laptops, in classrooms 1-242, 2-190, 4-144, 5-234, 26-168, 56-169, 56-191, and 66-156

As preparations for the fall 2013 term begin, a record 20 classrooms—including four lecture halls—will be offline due to renovation. To help offset this temporary loss of space, six new classrooms were built on the first floor of E17, a project that added 4,937 square feet of new academic space to the Registrar’s classroom inventory. The office also continued to work closely with the Office of the Provost to ensure that the overall amount of classroom space in the inventory remains stable in the long term. As a result, other rooms (35-304, 35-312, and an enlarged 24-110) will be part of the Registrar’s classroom inventory as the next academic year begins. The temporary space crunch that developed last year as construction began for the projects in Buildings 2 and 4 will ease in spring 2014, as three lecture halls (2-105, 4-270, and 4-370) and one small classroom (2-103) come back into service. Eleven classrooms in Building 2 and one lecture hall (E52-175) will remain offline for renovation through summer 2015.

### **Data Request and Academic Calendar Highlights**

This year, the Office of the Registrar introduced Mobile Stats, which allows student demographics, including 10 years of enrollment and degree data, to be accessed easily on any smartphone, at any time. Several tables also feature query capability so that the MIT community can find information it needs even faster. The Registrar’s office hopes this will be particularly useful to those needing a quick answer to common enrollment and degree data questions. Historical data, such as number of degrees awarded and enrollment since the founding of the Institute, is also available through the mobile device.

The Office of the Registrar fielded over 1,000 data requests to aid in educational decision making by Institute committees, departments, and visiting committees. The office also provided expertise to Institute committees and subcommittees examining policies of the Committee on Discipline, the September student holiday, IAP, as well as ongoing discussions regarding online education. It continues to partner with the Department of Athletics, Physical Education and Recreation as the department implements the new athletic certification system for tracking student athletes.

### **Registration**

In AY2013, student enrollment was 11,189, compared with 10,894 in AY2012. There were 4,503 undergraduates (compared with 4,384 the previous year) and 6,686 graduate students (compared with 6,510 the previous year). The international student population, comprising citizens of 117 countries, was 3,167, representing 10.4% of undergraduates

and 40.4% of the graduate population. (Students with permanent resident status are counted with US citizens.)

In AY2013, there were 4,122 women students (2,038 undergraduates and 2,084 graduates) at the Institute, compared with 4,019 (1,963 undergraduates and 2,056 graduates) in AY2012. In September 2012, 529 first-year women enrolled at MIT, representing 46.4% of the freshman class of 1,141 students.

In AY2013, there were, as self-reported by students, 3,588 minority students (2,250 undergraduates and 1,338 graduates) at the Institute, compared with 3,495 (2,178 undergraduates and 1,317 graduates) in AY2012. Minority students included 533 African Americans (non-Hispanic), 120 Native Americans, 12 Native Hawaiians or Other Pacific Islanders, 919 Hispanic Americans, and 2,004 Asian Americans. The first-year class enrolled in September 2012 included 589 minority students, representing 51.6% of the class.

### **Degrees Awarded**

Degrees awarded by the Institute in AY2013 included 1,042 bachelor's degrees, 1,749 master's degrees, 11 engineer's degrees, and 587 doctoral degrees—a total of 3,389 (compared with 3,206 in AY2012).

### **Staff**

The Office of the Registrar undertook a staffing review and defined a comprehensive office reorganization to better lead the evolving work of the 21st century Registrar's office. New teams were put together, which resulted in two promotions: registrarial assistant Jessie Combs was promoted to communications coordinator, and Christopher Di Guardia was promoted from registrarial assistant to technical support specialist.

Roberta Welch, administrator of undergraduate degree audit, retired in June 2013, after 45 years of service to MIT. She touched the lives of many students and staff throughout her tenure in the Registrar's office and performed her job with extraordinary integrity, grace, and humor.

Jessica Zdon-Smith, a registrarial assistant in the Schedules Section, was promoted to administrator of undergraduate degree audit.

**Mary Callahan**  
Registrar

### **Office of Undergraduate Advising and Academic Programming**

The [Office of Undergraduate Advising and Academic Programming](#) (UAAP) sets a standard of excellence in providing quality student-centered services to all undergraduates to enhance their academic success, social adjustment, and assimilation to the Institute. To achieve that vision, UAAP provides programming and access to

Institute resources as well as services that recognize the needs, diversity, and uniqueness of students at MIT. This includes coordinating freshman pre-orientation and orientation programs, facilitating academic advising and mentoring relationships, cultivating learning skills, providing academic and personal support through Student Support Services and Student Disabilities Services, and promoting leadership development. Additionally, the management, operation, and oversight of the Undergraduate Research Opportunities Program (UROP) are UAAP responsibilities, as are coordination of the Independent Activities Period (IAP) and staff support to the Committee on Academic Performance. UAAP plays a leading role in the DUE Empowering Students to Leverage Their Experience strategic theme.

### **New Initiatives**

In November 2012, in collaboration with the Rochester Institute of Technology and the Rensselaer Polytechnic Institute, MIT hosted a conference, Autism in Higher Education. Almost 150 professionals attended from as far away as Colorado. The conference included presentations on current best practices, MIT faculty research, and a panel with two students on the autism spectrum. These two individuals generously shared their challenges and experiences transitioning to higher education and managing their lives. The audience assessed these presentations as stellar, with an overwhelming request that MIT sponsor future conferences.

In response to the increase in the number of students with chronic disease, UAAP hosted a brunch to introduce students to MIT Medical staff and to personally acquaint them with resources available to support their health and medical needs.

UAAP completed the final year of a three-year advising experiment. Six UAAP staff advised a randomly selected cohort of 175 freshmen, and a matching control cohort was defined. The three-year assessment indicated positive results, and lessons learned will be applied to the freshman advising system moving forward.

UAAP organized and offered a professional development series for UAAP staff and its collaborators across campus; attendance at the programs approached 50 individuals. Dorise Gruber, assistant director of the Undergraduate Program Office in Boston University's School of Management, presented a program titled "Happily Ever After—Guiding Our Students Through Choice Angst." Regina Dugan, associate counsel in MIT's Office of the General Counsel, and Sergeant Cheryl Vossmer of the MIT Police presented an in-service training on the Clery Act.

The First Generation Project (FGP) increased visibility through a faculty newsletter and poster campaign featuring faculty and students. Outreach extended to MIT Medical on first-generation student issues and perceptions of medical treatment, including mental health and counseling. A mentoring program was established with upperclass students matched with first-year students. FGP is committed to building a sense of community among first-generation students, faculty, and staff and raising awareness of their unique experiences and challenges.

The Center for Academic Excellence, a virtual resource for students interested in developing and refining their skills and strategies to maximize academic potential, was launched in August 2012.

Student Disabilities Services was co-located with Student Support Services, providing a more comprehensive and effective support network for students with diverse needs.

UAAP collaborated with Academic Media Production Services to identify a diverse set of laboratories and student researchers to feature in UROP profiles. Five videos were developed, highlighting student research contributions.

In support of international immersion experiences for students, UAAP:

- offered to support all faculty who engage undergraduates in research activities abroad
- expanded International Research Opportunities Program (IROP) exchanges to four universities: the National University of Singapore, the University of Hong Kong, the Hong Kong University of Science and Technology, and Imperial College London
- funded 48 MIT International Science and Technology Initiatives UROP placements
- supported 51 traditional IROP exchanges for AY2013 and will continue support through summer 2013. These students will work in 26 countries

UAAP organized a student panel for the Institute Diversity Summit. The five students, with physical, sensory-neural, and learning disabilities, were extremely well received by the attendees and altered the perspective of many individuals about access and accommodation to higher education.

UAAP continued to participate in fund development efforts and stewardship with respect to UROP gifts and endowment, and funds from the Amgen Foundation, the Lord Foundation, the Baker Foundation, the Class of 1959, and the Good Samaritan/Mitzvah Fund. UAAP is working with the Class of 1954 gift officers with the goal that the class will endow the Good Samaritan/Mitzvah Fund for its 60th class reunion gift.

### **Functional Enhancements**

With the Course 6 department head and academic officer, UAAP defined and secured approval of the SuperUROP program, a collaboration between UROP and the Department of Electrical Engineering and Computer Science, and implemented the initiative with 80 undergraduate participants.

With the Teaching and Learning Laboratory, UAAP developed an assessment tool for UROP. All undergraduates were asked to complete a survey of their UROP experience; 42% completed the survey. The final assessment report will be available July 15, 2013.

With Information Systems and Technology (IS&T), UAAP worked to build a comprehensive database for all UAAP functionalities, replacing seven freestanding



databases supporting freshman advising, fifth-weeks flags and academic performance, Student Support Services and Student Disabilities Services. The underlying platform and all advising-related functionalities were launched in spring 2013. The SDS and S3 components will be programmed, tested, and available August 2013.

UAAP also partnered with IS&T to develop a new system that supports the publication and cataloging of non-credit IAP activities. The system offers activity organizers more functionality in scheduling and publishing activity descriptions and logistics, while offering the general community the ability to navigate IAP listings with greater ease and expedience. The new system was introduced for IAP 2013.

For IAP 2013, 535 non-credit activities and 119 for-credit subjects were sponsored by departments, interdisciplinary laboratories and centers, administrative offices, Association of Student Activities groups, and non-student groups.

As an outcome of the recommendations of the Review Committee on Orientation, the schedule for orientation 2013 was modified such that:

- The schedule was shortened by one day by eliminating City Days and reorganizing the program.
- A new program addressing mental health resources was added—By Students, for Students: Conquering MIT. This was a successful collaboration between DUE, MIT Medical, the Division of Student Life, and the leaders of Students at MIT Allied for Student Health, an organization which serves as the voice between students and administration on health-related issues.
- Faculty teaching the mathematics, physics, chemistry, biology, and humanities, arts, and social sciences General Institute Requirements subjects were videotaped describing the subject options available to students. These videos were put on the first-year website to compliment the Core Blitz orientation program.
- The schedule was adapted to accommodate online registration of first-year students.

As part of our continued effort to support the academic success of first-year students, UAAP sponsored 28 learning strategy and academic programming sessions. Additionally, UAAP hosted 18 lunches and 15 dinners with faculty to converse with students about academic challenges, selecting majors, graduate school, first-generation student experiences, and personal stories of faculty career pathways. Finally, nine choice-of-major activities were organized.

Freshmen were advised by 87 faculty plus 94 lecturers, instructors, and administrators, including those who led 44 freshman advising seminars. A total of 384 students participated in an advising seminar. Advisors were matched with 205 associate advisors who served as peer mentors to the first-year students.

UAAP continued to offer a comprehensive professional development program for freshman advisors, including special workshops for new advisors. Beyond the new advisor training and the orientation advisor training for fall registration, programs

offered included Resources for Flagged Freshmen;, Advising First Generation Freshmen, and Freshman Advising at Mid-semester: Challenges and Solutions.

Training and development of associate advisors was an articulated priority. Eight programs were strategically offered to 190 associate advisors throughout the academic year.

The three recipients of the UAAP 2013 Institute Convocation awards were professor Samuel Allen (Arthur Smith Award for Lifelong Contributions to Student Life and Learning), professor Allan Adams (Everett Moore Baker Award for Excellence in Teaching), and professor Heidi Nepf (Earll M. Murman Award for Excellence in Undergraduate Advising).

### **Student Support Services**

In AY2013, the deans in Student Support Services (S3) took 3,823 appointments, 651 significant telephone inquiries, and 1,128 walk-in visits over the academic year. This represented an 8% increase in student contacts over the previous year. Walk-in times expanded to include an additional 1.5 hours per day during critical times at the end of term.

S3 processed 113 withdrawals (72 medical and 41 voluntary), compared with 105 last year; the medical withdrawals increased from 57 to 72. S3 readmitted 90 of 139 applicants (64.7%).

For the Class of 2013, 489 (45%) of the graduates utilized S3 services sometime during their undergraduate experience.

### **Student Disabilities Services**

In AY2013, Student Disabilities Services (SDS) had 786 scheduled appointments with students, actively accommodating 232 undergraduate and graduate students.

The service witnessed an increase in the complexity of student needs for required accommodations and services, including hearing, vision, and mobility impairments, and students with learning disabilities.

Forty-three students required temporary accommodations.

Sixty-one students were employed to help support the academic accommodations for these students.

In response to student requests, SDS sponsored several group events that provided additional support to students.

### **UROP Activities**

In summer 2012 and in the fall and spring terms of AY2013, 50.2% of Undergraduate Research Opportunities Program students were female. Of undergraduates graduating in 2013, 88% participated in at least one UROP project; 84% (184 of 218) of graduating underrepresented minority students participated in UROP.

During the same summer and academic year terms, 4,342 UROP projects were completed. This is an increase of 7%; however, some of this increase can be attributed correspondingly to the increase in the size of the student body. Sixty-seven percent of the academic year projects were paid experiences, as compared with 56% last year.

UAAP provided \$3,542,528 in direct funding. Its direct funding budget comprises endowment income (41%), expendable gifts (16%), general Institute funds (37%), and foundation grants (6%). The UROP book-value endowment is \$15.5 million, represented by 54 named endowed funds and nine named gifts.

Faculty allocated \$4,200,881 in support of UROP. Faculty funding increased by 14%; much of that increase is attributed to SuperUROP. Fifty-six percent of MIT faculty mentor and supervise UROP students, and UROP remains the primary opportunity for students to engage with faculty outside the classroom.

Strategic programming and outreach has been dedicated to cultivating interest and participation among underrepresented and first-generation students.

### **Future Plans and Initiatives**

The following are currently defined UAAP initiatives for AY2014:

- Work with the dean for undergraduate education to implement the approved faculty motion that all first-year students be matched with either a faculty advisor or faculty mentor.
- Complementing the above faculty initiative, evaluate the existing advising options, including the viability of residence-based advising, and redefine the advising options available for the Class of 2018.
- Design and offer in spring 2014 a one-day symposium for faculty advisors that will include best practices in advising, advising strategies for unique populations, and case studies.
- Dovetailing on the success of SuperUROP, develop programming and resources to support student-driven entrepreneurial UROP projects.
- As the US program office for the Amgen Scholars Program, lead the publication of the book *Best Practices in Undergraduate Research*. In addition to MIT staff, contributing authors will include program directors from the other 10 universities hosting Amgen Scholars.
- As requested by the Committee on Curricula, design and execute a survey of sponsors of non-credit IAP activities to collect baseline data on student participation and use of the January IAP period.
- Produce a series of short videos of first-generation students to put on both the UAAP (first-generation) and Office of Admissions websites.
- Undertake and communicate to faculty, advisors, and administrators involved in advising and registering undergraduates a process to review and clarify the light load process.

## Staffing Changes

In AY2013, one UAAP individual resigned and left MIT. The replacement hire was Kelly Ryan, administrative assistant for the Student Disabilities Services team.

**Julie B. Norman**  
**Director**  
**Senior Associate Dean for Undergraduate Education**

## Air Force Reserve Officer Training Corps

The mission of the [Air Force Reserve Officer Training Corps](#) (AFROTC) is to develop high-quality leaders for the US Air Force (USAF).

### Accomplishments

The quality of the cadet corps and cadre remained first-class in AY 2013, and AFROTC cadets continued to be recognized by the Air Force for their performance. AFROTC annually identifies those cadets in the top 10% nationally as Distinguished Graduates. One of seven cadets who graduated in AY 2013 earned Distinguished Graduate honors—Courtney Diekema, a Harvard University cadet who was the fall semester Cadet Wing Commander.

Increasing the size of the cadet corps continues to be a priority. Seven cadets were commissioned in AY 2013, and it is projected that approximately 18 cadets will join the program in the fall. Part of this success is due to participation in a variety of MIT programs, such as Campus Preview Weekend, the Undergraduate Practice Opportunities Program, Interphase, and Minority Introduction to Engineering and Science.

### Year-end Enrollment in Air Force ROTC, as of June 2013

	Freshmen	Sophomores	Juniors	Seniors	Total
MIT	12	0	4	6	22
Harvard	1	0	1	1	3
Tufts	1	0	3	0	4
Wellesley	0	0	1	1	2
Salem State	0	1	0	0	1
<b>Total</b>	<b>14</b>	<b>1</b>	<b>9</b>	<b>8</b>	<b>32</b>

Highlights of the cadet training program included a war game, mentored by five USAF Fellows; Career Day, with 18 active duty officers; and the annual Dining-In, with a

Detachment 365 alumnus as the guest speaker. Finally, the Air Force, Army, and Naval Reserve Officer Training Corps programs combined to conduct a successful Cadet Award Ceremony, a Commissioning Ceremony, and a formal Joint-Service Military Ball.

In addition to the weekly leadership training, two cadets were sent to the National Character and Leadership Symposium at the US Air Force Academy. Four cadets were sent to the 129th Rescue Squadron at Moffett Field, CA, to shadow their operations and learn about their USAF mission. The cadet wing hosted over 20 voluntary events over the course of the year, including morale and training events.

### Staffing Changes

AFROTC staff changes are set to take place during summer/fall 2013, following a year of relative stability. Captain Daniel Sawicki departed in June, and his replacement, Captain Michael Parry, arrived in June. Captain Danny Hugh will depart in September.

**Lieutenant Colonel Theodore G. Weibel**  
United States Air Force

### Army Reserve Officer Training Corps

The mission of the [Army Reserve Officer Training Corps](#) (AROTC) is to select, retain, train, and commission cadets from MIT, Harvard University, Tufts University, Lesley University, Wellesley College, Salem State University, Gordon College, Gordon-Conwell Theological Seminary, and Endicott College in a two-, three-, or four-year program to prepare them for future leadership roles in the US Army, the nation, and the world. Its vision is to develop leaders of the highest character and values who have the foundations of leadership to lead the US Army and the nation.

#### Year-end Enrollment in Army ROTC, as of May 2013

	Freshmen	Sophomores	Juniors	Seniors	Total
MIT	2	1	3	2	8
Harvard	2	7	0	0	9
Wellesley	2	0	0	1	3
Tufts	2	5	1	1	9
Other affiliates	22	8	12	9	51
<b>Total</b>	<b>30</b>	<b>21</b>	<b>16</b>	<b>13</b>	<b>80</b>



## Accomplishments

Twelve officers were commissioned in AY2013 (meeting the program's Army-assigned viability/commission goal). One of the 12 officers was from MIT. Two graduates earned the honor of Distinguished Military Graduate, awarded to those in the top 20% of all cadets nationwide. As of May 30, 2013, 80 students were enrolled in the AROTC program, a decrease of seven cadets compared with the same time last year. Over \$950,000.00 was awarded in scholarships for all students in the consortium. AROTC is poised to meet or exceed its Army-directed commission mission for 2014.

Cadets continue to achieve excellence academically, physically, militarily, and morally/ethically. At the annual Leader Development and Assessment Course, conducted at Fort Lewis, WA—attended by more than 6,000 rising seniors nationwide—MIT's cadets exceeded local, regional, and national averages in nearly all measurable areas, as they do every year. The cadets in the program are excellent scholars-athletes-leaders.

The program's instructors continue to excel at classroom leadership instruction and hands-on training of cadets and non-ROTC students. AROTC continues to be a preeminent source of high-quality leadership instruction; the MIT cadre participated in its 16th consecutive year instructing a for-credit special seminar in leadership with the MIT Sloan School of Management during Independent Activities Period.

In AY2013, AROTC conducted the following major events: a new cadet orientation (September and January), field training exercises at the Fort Devens Army Reserve Forces Training Area (November) and at Camp Edwards (April), a formal dinner (November), a water survival test (October), a military ball (February), and commissioning ceremonies at MIT, Harvard University, Tufts University, Salem State University, Endicott College, and Wellesley College.

An overall slight dip in enrollment is expected for next year, as a continued reduction in AROTC scholarship availability occurs due to overall reduction in federal funding.

## Staffing Changes

The AROTC program has undergone a period of cadre turbulence. It welcomed Lieutenant Colonel Adam Edwards as visiting professor of military science, Master Sergeant James Myers as senior military instructor, Master Sergeant Steven Degnan as human resources sergeant, Lieutenant Colonel Deidre Perrin as the scholarship/recruiting officer, and Mr. Aaron Dombroski as the senior military science instructor. The cadre will continue to be augmented with part-time reserve officers to enhance the leadership experience and training for cadets.

## Challenges and Plans for the Future

AROTC's continued challenge is to remain viable by increasing the number of cadets in the program, especially from MIT and Harvard University. Low MIT and Harvard University cadet enrollment is a significant issue, and lack of four-year scholarship availability is a contributing factor to low forecasted enrollment. The program continues to work with the Office of Admissions and the US Army to address these issues. Despite

great efforts by the Admissions office, which offered admission to a large number of AROTC prospects, the matriculation rate of those offered admission remains low (about 20%) because other institutions offered more attractive financial aid packages. Despite this, the Army ROTC is projecting mission success in meeting its Army-directed mission through 2016.

**Lieutenant Colonel Adam Edwards**  
United States Army

### Naval Reserve Officer Training Corps

The [Naval Reserve Officer Training Corps](#) (NROTC) program hosted by MIT develops and provides full scholarship opportunities to midshipmen aspiring to become ensigns in the US Navy or second lieutenants in the US Marine Corps. The program prepares them mentally, morally, and physically – imbuing them with the highest ideals of duty and loyalty. Graduates possess a basic professional background and are motivated toward careers in the naval service. They embody the potential for future development in mind and character to assume the highest responsibilities of command, government, and citizenship.

NROTC midshipmen enroll in eight different naval science courses during their time at MIT, including naval engineering, history, doctrine, operations, and leadership. The curriculum is nationally recognized, centrally supported, and taught at many universities nationwide. Guest speakers are invited to enhance course relevancy with evolving trends in technology, national policy, and geopolitics. Coursework is further tailored by the instructors to reflect their individual operational experiences and is monitored by the visiting professor of naval science, Captain Steven Benke.

NROTC officers and staff are committed to ensuring that every midshipman balances his or her time and energy to realize the tremendous benefits of an MIT, Harvard University, or Tufts University education. Midshipmen complement their rigorous NROTC commitments with extracurricular activities such as varsity athletics, fraternity and sorority leadership positions, and other school events. Others take an active role in volunteering, counseling, and mentoring.

#### Year-end Enrollment in Naval ROTC, as of June 2013

	Freshmen	Sophomores	Juniors	Seniors	Total
MIT	7	7	6	4	24
Harvard	7	1	4	2	14
Tufts	2	2	1	0	5
<b>Total</b>	<b>16</b>	<b>10</b>	<b>11</b>	<b>6</b>	<b>43</b>

While the NROTC staff is responsible for mentoring and instructing students, midshipmen build leadership skills running the NROTC battalion. Additionally, they are involved in the planning and implementation of numerous activities and events, including the annual Beaver Cup Regatta, field-training exercises, and tri-service competitions.

### **Accomplishments**

Last summer, midshipmen dived aboard submarines, flew in maritime patrol aircraft, piloted aircraft carriers and amphibious assault ships, and landed with the Marines, providing unique and invaluable experience for future naval officers.

The academic year concluded on June 7, with the commissioning of four NROTC students, joined by Air Force and Army ROTC graduating seniors at the US Coast Guard Sector Boston. Rear Admiral John N. Christenson, president of the US Naval War College, was the guest of honor and presented the oath of office to all newly commissioned officers.

During AY2013, five midshipmen were commissioned as ensigns in the US Navy. One ensign was selected for pilot, one will join the Navy Supply Corps, and three will begin their careers as submarine officers. Two of the submarine officers will complete fifth-year master's programs at MIT prior to joining the submarine fleet.

NROTC hosted numerous high-profile visits and distinguished guests during AY2013, including:

- Commander Roger E. Meyer, Commanding Officer, USS Miami (SSN 755)
- Captain Paul X. Rinn, US Navy (Retired)
- Colonel Julian D. Alford, US Marine Corps, Commanding Officer, The Basic School, Quantico, VA
- Rear Admiral John M. Kelly, US Navy (Retired)
- Rear Admiral Dee L. Mewbourne, Commander, Naval Service Training Command
- Rear Admiral Robert O. Wray, Jr., President, Board of Inspection and Survey
- Rear Admiral John N. Christenson, President, US Naval War College
- Vice Admiral Kevin M. McCoy, Commander, Naval Sea Systems Command
- Vice Admiral John W. Miller, Commander, US Naval Forces Central Command/US Fifth Fleet/Combined Maritime Forces
- Vice Admiral Richard W. Hunt, Director, US Navy Staff

### **Staffing Changes**

NROTC bid fond farewell to Lieutenant Stephen Ford and Gunnery Sergeant Patricia Chapman. Lieutenant Ford earned a master in business administration degree from Harvard Business School and will carry that experience to his next tour at Naval Special

Warfare Group 10. NROTC congratulates Gunnery Sergeant Chapman on her recent retirement from the US Marine Corps and wishes her fair winds and following seas in her new career as a Junior Reserve Officer Training Corps instructor in Hereford, TX.

This academic year, NROTC welcomed aboard Lieutenant Stephen Smith and Gunnery Sergeant Nicholas Romer.

The NROTC program eagerly looks forward to continuing its high standards of excellence at MIT with its new family of superbly qualified individuals.

**Captain Steven M. Benke**  
United States Navy

## Student Financial Services

[Student Financial Services](#) (SFS) aspires to making the dream of attending MIT a reality by providing premier student financial information, services, and programs. The organization's mission is to help students and their families understand, choose, and obtain resources to finance an MIT education. Core responsibilities are organized around two major functional areas: billing and collecting tuition, fees, and other Institute charges; and administering student financial aid, including student and parent loans and student employment.

## Operating Activities

Tuition, fees, and other major Institute charges totaled \$608,153,971 in AY2013, a 7.3% increase over the previous year, and broke down as follows:

Tuition	\$521,324,096
Student life fee	3,014,356
Housing	55,754,503
Dining/TechCASH	8,850,206
Health plan/insurance	16,646,713
Medical/dental charges	207,330
Late payment fees	506,183
Miscellaneous charges	1,850,584

Graduate tuition was \$335.8 million, or 64% of total tuition, and undergraduate tuition \$185.5 million, or 36% of total tuition.

## Other Student Accounts Activities and Receivables

As of June 30, 2013, the student accounts receivable balance, netting out credit balances and exclusive of advance summer term billing, was \$2,330,293.

Students are eligible for refunds when the credits on their student account exceed their charges. In FY2013, 5,275 refunds, totaling \$23.5 million, were issued to students.

### ***Student and Parent Loan Activities and Receivables***

SFS administers MIT's Educational Loan Plan, which provides loans to eligible employees to help finance undergraduate or graduate education of eligible dependent children. In AY2013, \$2.4 million was loaned and \$1.9 million collected. The year-end receivables balance for this program continued to climb, rising 6.8%, to \$7.3 million.

The overall education loan notes receivables as of June 30, 2013, which comprises the Federal Perkins Loans, MIT Educational Loans, MIT Technology Loans, and MIT Parent Loans, decreased 0.6%, to \$52.5 million.

### **Undergraduate Student Financial Aid**

MIT believes that parents and students have primary responsibility, to the extent that they are able, for paying the costs of an undergraduate education. The Institute recruits and enrolls the most talented and promising students, without regard to their financial circumstances. It awards aid only for financial need and does not award undergraduate scholarships for academic or athletic achievements or any other nonfinancial criteria. MIT guarantees that each student's demonstrated financial need is fully met.

In AY2013, the annual price of an MIT education totaled \$57,510 per student—\$42,050 for tuition and fees; \$12,188 for room and board; an estimated \$2,772 for books, supplies, and personal expenses; and a per student average of \$500 for travel. With 4,477 undergraduates enrolled, the collective price for undergraduates was \$257.5 million. Of this amount, families paid \$133.8 million, or 52%, and financial aid covered the remaining 48%. Since MIT subsidizes the cost of educating undergraduates through its tuition pricing and is the largest source of financial aid to its undergraduates, families are the secondary source for paying for an MIT education.

For students with family incomes under \$75,000 a year, the Institute continues to ensure that scholarship funding will allow them to attend MIT tuition-free, a policy put in place in 2008. In AY2013, 32% of undergraduates (1,423 students) received scholarships and grants from all sources equal to or greater than tuition.

In AY 2013, 18% of undergraduates (822 students) received a Federal Pell Grant. Based on a policy the Institute put in place in 2006, the Institute in essence matches the Pell Grant dollar for dollar by allowing students to use the grant to reduce their loan and/or term-time job expectation.

Ninety percent of undergraduates (4,011 students) received \$123.7 million in need- and merit-based financial aid. This includes scholarships, grants, student loans, and employment from institutional, federal, state, and private sources. In the past five years, total aid to undergraduates has increased 17.8%. Need-based aid recipients make up 61% of MIT undergraduates.



### ***Sources of Undergraduate Student Financial Aid***

MIT was the largest source of financial aid to its undergraduates in AY2013, providing 76% of the aid undergraduates received. Ninety-three percent of the aid MIT provided was scholarships, 7% student employment, and less than 1% student loans.

The federal government was the second largest source of financial aid to MIT undergraduates in AY2013, providing 13% of the aid undergraduates received. Undergraduates received Federal Pell Grants, Federal Supplemental Educational Opportunity Grants, Robert C. Byrd Scholarships, Reserve Officer Training Corps Scholarships, Federal Direct Subsidized and Unsubsidized Stafford Loans, Federal Perkins Loans, and Federal Work-Study, including Federal Work-Study Community Service.

Private sources of financial aid—including charitable and civic organizations, corporations, foundations, banks, and other financial institutions—provided the remaining 11% of all aid undergraduates received in AY2013. This included private scholarships and alternative student loans (so called to distinguish them from federal loans). State aid is not a significant factor in financing an MIT education, even though several states, including Massachusetts, allow residents to receive a state scholarship while attending MIT.

### ***Undergraduate Scholarships and Grants***

Scholarships and grants from all sources totaled \$105.8 million, with 72% of undergraduates (3,203 students) receiving scholarships. MIT awarded \$87.1 million in need-based scholarships to 58% of undergraduates (2,584 students). The average MIT scholarship grew roughly \$800 per recipient, to \$33,697. Approximately 77% of MIT scholarships were funded from restricted sources and 23% came from the general Institute budget or unrestricted sources.

### ***Undergraduate Student Loans***

During AY2013, 22% of undergraduates (996 students) borrowed \$9.0 million. For those students borrowing, the average loan was \$9,008. Approximately 41% of graduating undergraduates in the Class of 2013 (431 students) borrowed at some point during their education. Their debt ranges from \$498 to \$208,000, with the 90th percentile at \$38,738. The average total debt is \$17,891, and the median debt is \$10,948.

### ***Undergraduate Student Employment***

Sixty-five percent of undergraduates (2,906 students) earned wages from on-campus employment and employment under the Federal Work-Study Program, including both on- and off-campus programs. Their wages totaled \$8.9 million, or an average of \$3,058 per student worker.

### ***Undergraduate Parent Loans***

Approximately 4% of undergraduate families (171 parents) borrowed \$3.8 million through a parent loan program administered by MIT. Federal Direct PLUS loans

accounted for 98% of the dollars borrowed. For those parents borrowing, the average loan was \$22,186.

### **Graduate and Professional Student Financial Aid**

Graduate and professional students are provided tuition support in connection with research assistantships, teaching assistantships, and fellowship appointments. Tuition revenue support from MIT funds is considered financial aid but is not included in this report, as SFS does not administer these sources of support.

Graduate and professional students are eligible for need-based financial aid, including student loans as well as student employment under the Federal Work-Study Program, both of which are administered and reported by SFS. In AY2013, loans totaled \$46.2 million, an increase of approximately \$3.0 million from the prior year, with 13.6% of graduate and professional students (888 students) borrowing an average of \$52,061. Graduate student employment earnings under the Federal Work-Study Program, including on- and off-campus programs, totaled \$2.2 million, with 2.7% of graduate and professional students (176 students) earning \$12,665 on average.

### **Other Accomplishments**

In partnership with Education Systems within Information Services and Technology, SFS continued work on two multi-year projects: the student account implementation and the PowerFAIDS (Financial Aid Information Data System) data exchange. With the launch of the sponsor billing functionality in August 2012, student account implementation proceeded to Phase Two, the charge assessment. As the 2012–2013 academic year ends, the functional requirements for the PowerFAIDS data exchange were finalized. Another PowerFAIDS accomplishment was the launching of NetPartner in December 2012, which allows students a web interface to PowerFAIDS for purposes of viewing the status of their financial aid application as well as their financial aid award letter online. All financial aid awards are now online for undergraduate, graduate, and professional students.

SFS entered into an innovative partnership with an external vendor to provide international students and their families with a less costly option for payments to student accounts through wire payments from foreign countries. At the same time, SFS partnered with the Office of the Vice President for Finance to streamline the wire payment process in general.

SFS partnered with the Office of the Provost to initiate a new Institute fee for visiting students.

SFS continued to foster a student-centered environment and supported students through its involvement in the First Generation Project, spearheaded by Student Support Services.

SFS assumed a leadership role in supporting military service members and veterans by successfully advocating for the formation of an Institute-wide steering committee to oversee services to these individuals. This paved the way for MIT to agree to the

principles of excellence formulated by the US Departments of Defense, Education, and Veterans Affairs in response to President Obama's executive order for educational institutions to increase information and support to the military.

SFS ensured the Institute's compliance with changes to the federal satisfactory academic progress rules by forming a working group that liaised directly with the Committee on Academic Performance and the Committee on Graduate Programs.

### **Staffing**

There were significant staffing changes during the past year in SFS, including internal promotions. New hires included communications manager Lori Strauss, student services representative Cleonor Sully, and student services representative Marsha Gelin (who started at the beginning of the academic year but left at the end to pursue her graduate education). Three other staff members departed: student services representative Emily Bassett, who retired after a distinguished career spanning several decades; Susan Sullivan, senior associate director of financial aid; and Aimee Yorsaner, assistant director of financial aid.

Ryan Callahan was promoted to associate director for financial aid delivery, Nicole Darvirris to assistant director of financial aid, Sonia Jones to student services representative, Gary Ryan to senior associate director of SFS, Andrea Vojtisek to counselor for customer service, and Anna Wetterhorn to counselor for customer service at the beginning of the academic year and counselor for financial aid delivery by the end of the academic year.

At the end of the academic year, there were three open positions, not including the new compliance officer position that was approved as of July 1, 2013. Of the 30 positions currently filled, 63% are held by women, 37% by men, 30% by members of a minority group, and 23% by members of an underrepresented minority group.

**Elizabeth M. Hicks**

**Executive Director, Student Financial Services**

### **Teaching and Learning Laboratory**

The [Teaching and Learning Laboratory](#) (TLL) was founded in 1997 as a resource for faculty, administrators, and students who share a desire to improve teaching and learning at MIT. Its mission is to collaborate with members of the MIT community to promote excellence and innovation in teaching and learning throughout the Institute, and to contribute to MIT's standing as a leader in science and engineering education.

This report details TLL achievements in four areas: research and assessment; contributions to educational innovation at MIT and to the teaching and learning enterprise; participation in national and international activities in science, technology, engineering, and mathematics (STEM) higher education; and collaborations with other Dean for Undergraduate Education (DUE) offices and strategic partners. Following are TLL achievements for this year:

- Publication of a sophisticated analysis of massive open online course (MOOC) learning, using data from the first iteration of 6.002x “Circuits and Electronics”. This research, supported by the National Science Foundation (NSF), was published in [Research and Practice in Assessment](#), a peer-reviewed journal. Findings were reported in the Chronicle of Higher Education, Inside Higher Education, and at a presidential panel at the American Education Research Association (AERA).
- Completion of a two-year project to produce almost fifty “concept vignettes” — short videos that help students master pivotal concepts in science and engineering — for the Singapore University of Technology and Design (SUTD). A paper submitted to the American Association of Engineering Education (ASEE) was awarded Best Paper at the 2013 conference.
- Participation in the NSF-funded faculty/research MIT-Haiti team to deliver active learning STEM materials that are translated into Kreyòl and to assess the impact of these efforts.
- Completion of over a dozen assessment studies for members of the MIT community. These studies included department-based initiatives (e.g., the new modular curriculum in Course 2), courses (e.g., 5.111), and programs (e.g., the Interdisciplinary Quantum Information Science and Engineering [iQuISE] program). The complete list of TLL assessment studies can be found on page 2 of this report.
- Collaboration with professor Eric Klopfer on the development of a proposal to begin a master’s program in educational technology. The proposal will be vetted through the faculty governance process during fall semester 2013.

### Accomplishments in Research and Assessment

This academic year saw an expansion of TLL educational research through the analysis of data generated by edX’s first MOOC, 6.002x “Circuits and Electronics”. This work was undertaken in collaboration with professor Andrew Ho, of the Harvard Graduate School of Education, and professor David Pritchard, principal investigator of MIT’s Research in Learning, Assessing, and Tutoring Effectively group. The study addressed four basic research questions: who are the 6.002x students, what behaviors and background factors predict achievement and persistence, how do students form groups and interact with one another, and what is the 6.002x experience for residential MIT students? Data sources included over 230 million interactions with the course, almost 100,000 posts on the discussion forum, and over 7,000 responses to an end-of-course survey.

The study makes use of predictive modeling to allow for sophisticated analysis of the 6.002x data. For example, the research examines the simultaneous interplay between time spent on different resources for the course (e.g., homework, the e-text), a student’s first homework score (as a proxy for “prior ability”), student background characteristics (e.g., self-reported language and country), and success—defined as both achievement and persistence—in the course. Among the more interesting findings is that time spent on certain resources (e.g., homework assignments) is positively correlated with higher

scores in the class. The study also found that students who reported working together with another student offline were predicted to do better in the course.

In addition to this basic research, TLL also remains a crucial resource for the assessment and evaluation of educational efforts throughout MIT. TLL staff contributed to over a dozen educational initiatives this year, collaborating with faculty, administrative staff, and students to provide them with data that can be used to strengthen their efforts in education. The following table provides a summary of these studies.

### Teaching and Learning Laboratory Assessment Studies

Subject/Study	Scope of Investigation	Client	Status/Findings	Researcher
Experiments in online teaching and learning	Study of use of and satisfaction with online experiments in Courses 2, 5, and 16	MIT Council on Educational Technology (MITCET)	Findings reported to MITCET	G. Stump
Mechanical Engineering (MechE) modular curriculum	Study comparing learning outcomes and satisfaction levels of Course 2A students with students taking modular curriculum	MechE (A. Hosoi)	Analysis ongoing	G. Stump J. DeBoer
Course 5.111 curriculum innovations	Study of impact of integration of interviews with MIT chemists	C. Drennan		R. Mitchell
Courses 18.05, 20.109, 20.020	Provided faculty teaching these courses with assessment of pedagogical/curricular innovations	H. Miller J. Orloff N. Kuldell	Reports currently being completed	G. Stump R. Mitchell
Madrid-MIT M+ Vision Program	Assessment of experience of an international fellowship program in medical imaging	M. Gray	Studies completed of first year of '2011 cohort and mid-year of '2012 cohort	R. Mitchell
iQuISE	Evaluation of graduate education in an interdisciplinary program	K. Berggren	Study of '2010 cohort complete	R. Mitchell
Graduate Education in Medical Science	Assessment of preceptorship experience	M. Gray	Final study completed	R. Mitchell



In addition, TLL staff designed and implemented program evaluations for the Office of Minority Education (OME) (the Interphase EDGE program), the Office of Undergraduate Advising and Academic Programming (the Undergraduate Research Opportunities Program, and Freshman Advising), and the Energy Minor.

### **Accomplishments in Teaching and Learning**

TLL provides the expertise in teaching and learning that complements MIT faculty's domain expertise. Its signature program is the Graduate Student Teaching Certificate Program (TCP), which "graduated" over 160 students in AY2013. TLL also developed and implemented a new workshop on educational technology, delivered online, as part of the program. During winter 2013, TCP "alumni" were surveyed to understand the longer-term impact the program has had on their teaching. This research has been completed, and the results are being used to strengthen TCP. Finally, TLL is working with new instructors at MIT to increase the number of sections it can offer given the high demand for the program.

Another major initiative in teaching and learning was the continued development of the SUTD curriculum map, which demonstrates the possibilities for a truly modular curriculum in engineering education. TLL undertook an assessment of the map by surveying 60 engineering education faculty and experts nationally and internationally. TLL is currently working with a designer/programmer to develop a web-based application for the map. It is believed the curriculum development process that is the basis of this work can serve as a model for the creation of curriculum that is modular, cross-disciplinary, and based on best practices in STEM teaching and learning.

TLL also completed the SUTD-funded project to produce almost 50 10-minute videos that help students to master pivotal concepts in science and engineering, and that were designed to showcase the cross-disciplinarity of these concepts. TLL will be releasing the videos publicly this fall, and it is expected that they will make a valuable contribution to teaching engineering and science at the university level.

Finally, TLL staff (Janet Rankin) consulted with over two dozen faculty and graduate students on their teaching, including observing classes and meeting with instructors to provide feedback.

### **Administrative Initiatives**

TLL staff members (Lori Breslow, Janet Rankin, and Glenda Stump) served on five task forces for the Office of Digital Learning (ODL), in spring 2013. They also wrote "An Education Research Agenda at MIT for Digital Learning" as a contribution to the ODL Task Force on Basic Research. One staff member (Jennifer DeBoer) was on the organizing committee for the Learning International Networks Consortium (LINC) conference, an initiative led by professor Richard Larson. Finally, TLL staff members acknowledge the efforts of . assistant director Leann Dobranski in designing and implementing a new TLL website with state-of-the-art search capabilities.

## National and International Efforts in STEM Higher Education

TLL staff members contribute to efforts to advance STEM education nationally and internationally. Among these contributions are:

- Participation in the NSF-supported MIT-Haiti initiative to translate active learning materials into Kreyòl and assess their impact (Stump)
- Design and implementation of workshops for new faculty from the Masdar Institute of Science and Technology (Rankin)
- Participation in the “Teach the Teachers” program, a year-long program for new SUTD faculty; effort expanded to include microteaching workshops (Rankin)
- Collaboration with professor Duane Boning on educational initiatives associated with the Skolkovo Institute of Science and Technology (Rankin and Darshita Shah)
- Codirection of International Institute for Developing Engineering Academics (DeBoer)
- Participation in NFS-supported initiative to create an engineering education taxonomy (DeBoer)
- Meeting with visitors from 15 countries

## Research Activities

### *Publications and Conference Presentations*

Lori Breslow, David Pritchard, Jennifer DeBoer, Glenda Stump, Andrew Ho, and Daniel Seaton. “Studying Learning in the Worldwide Classroom.” *Journal of Research and Practice in Assessment*, (2013), <http://www.rpajournal.com>.

Jennifer DeBoer, Glenda Stump, Frances Carter-Johnson, Gayle Allen, and Lori Breslow. “Developing Direct Measures of Global Competence.” American Society of Engineering Education (ASEE) annual conference, Atlanta, GA, 2013.

Jennifer DeBoer, Glenda Stump, Andrew Ho, Daniel Seaton, and Lori Breslow. “Bringing Student Backgrounds Online: MOOC User Demographics, Site Usage, and Online Learning.” Educational Data Mining annual conference, Memphis, TN, 2013.

Jennifer DeBoer, Glenda Stump, Daniel Seaton, and Lori Breslow. “Diversity in MOOC Students’ Backgrounds and Behaviors in Relationship to Performance in 6.002x.” Learning Networks International Consortium (LINC) annual conference, Cambridge, MA, 2013.

Tony Eng, Rudolph Mitchell, and Sylvia Barsion. “Assessment of Short-term Post-impact of Students’ Learning Experiences in an Oral Communication Course at MIT for Electrical Engineering and Computer Science Majors.” International Conference on Engineering Education: Proceedings, Turku, Finland, 2012.

Jennifer French, Darshita Shah, Janet Rankin, Aikaterini Bagiati, and Lori Breslow. “Identifying and Mapping Pivotal Concepts and Critical Skills.”

European Society for Engineering Education (SEFI) annual conference, Thessaloniki, Greece, 2012.

Angela Locknar, Rudolph Mitchell, Janet Rankin, and Donald Sadoway. "Integration of Information Literacy Components into a Large First-year Lecture-based Chemistry Subject." *Journal of Chemistry Education*, 89(4) (2012). Awarded Best Paper of 2013 by the Association of College and Research Libraries/New England Chapter.

Andrew Pawl, Analia Barrantes, David Pritchard, and Rudolph Mitchell. "What Do Seniors Remember from Freshman Physics?" *Physical Review Special Topics—Physics Education Research*, 8(2) (2012).

Darshita Shah, Jennifer French, Janet Rankin, and Lori Breslow. "Using Video to Tie Engineering Themes to Foundational Concepts." ASEE annual conference, Atlanta, GA, 2013. Awarded Best Paper of 2013 conference.

### **Invited Talks, Presentations, Workshops**

#### *Lori Breslow*

"How massive open online courses have been and could enhance student learning: A view from the US." Keynote address, Enhancement and Innovation in Higher Education Conference, Glasgow, Scotland, June 2013.

"The opportunities and challenges of 'big data' from MOOCs." Invited presidential panel, AERA annual conference, San Francisco, CA, May 2013.

"Online course, assessment, certification, and credit." Scholarly Communications Seminar, Georgetown University, Washington, DC, April 2013.

*New York Times* "Schools for Tomorrow" conference, New York, NY, September 2012.

#### *Janet Rankin*

Workshops on teaching and learning for MIT schools, departments, and administrative units:

School of Science; School of Engineering (with Darshita Shah); and School of Humanities, Arts, and Social Sciences (with Lori Breslow)

Department of Economics, Department of Chemistry, and Engineering Systems Division; CSBE; and Program in Art, Culture, and Technology

OME (Interphase EDGE instructors and facilitators), Office of the Dean for Graduate Education (MIT Summer Research Program), Global Education and Career Development (Freshman/Alumni Summer Internship Program facilitators)

Developed a graduate student acting troupe (TALE) that creates "real-world" teaching scenarios (e.g., on leading recitations) to improve the skills of novice instructors

*Darshita Shah and Jennifer DeBoer*

“Strategies for Facilitating Online Learning in Engineering Courses,” annual conference, Thessaloniki, Greece, October 2012.

“Developing the Teaching Skills of Graduate Students and Postdocs,” ICIP/ICL annual conference, Vienna, Austria, October 2012.

**Teaching**

Lori Breslow: 15.279 Management Communication for Undergraduates, Fall 2012.

Janet Rankin: 5.95J Teaching College-level Science and Engineering, Fall 2012.

Darshita Shah: Chemistry, Interphase EDGE, Summer 2012.

**Funding**

SUTD–MIT Collaboration: Curriculum development: \$500,000

NSF: “Understanding the edX MOOC: How can 6.002x Circuits and Electronics help us understand the MOOC learning experience?”: \$200,000

Assessment studies in collaboration with faculty on grant-funded projects:  
~\$75,000

**Personnel**

Jennifer French left her position as a postdoctoral associate for mathematics education and is currently an MITx Fellow in Course 18. Frances Carter-Johnson left her position as a DUE Diversity Fellow and a postdoctoral associate for educational research to accept an American Association for the Advancement of Science Fellowship.

TLL wishes to acknowledge the support of Daniel Nocivelli, administrative assistant, in all the initiatives described above.

**Lori Breslow**  
**Director**