Dean for Undergraduate Education

The Office of the Dean for Undergraduate Education (DUE) is focused on assuring the quality of the educational experience of MIT students, with particular responsibility for enhancing undergraduate education and delivering mission-critical functions for both undergraduate and graduate students. DUE's scope includes:

- Delivering the essential capabilities of admissions, financial services, and registration
- Fostering student diversity at all educational levels
- Promoting student success through advising and mentoring, effective learning strategies, and other forms of support
- Partnering with faculty to enrich learning through educational innovation and online learning
- Encouraging hands-on, project-based learning both inside and outside the classroom
- Providing and expanding global educational opportunities for students
- Supporting students as they explore career options and opportunities

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

This report begins with an introduction by the Dean and is followed by individual office reports.

The Dean's Priorities

Dennis Freeman has completed his second year as dean for undergraduate education. The dean has been a strong advocate and proponent of gathering, analyzing, and synthesizing meaningful and timely data to discern trends, challenges, and opportunities of consequence for MIT undergraduate students. He has worked closely with the senior administration, the chancellor's team, the DUE leadership team, faculty committees, and faculty colleagues on several key issues and opportunities. Examples of those include the following.

Reducing barriers between students and the services and opportunities that help them succeed academically and personally. The dean dedicated an extensive amount of time to better understand the causes of student stress through data collection and analysis; close work with the Office of Undergraduate Advising and Academic Programming leadership and staff, specifically the Student Support Services and Advising teams; active involvement in an external review of current Institute-wide student support resources; and benchmarking best practices from other institutions. This continues to be of critical importance to the dean.

Making hands-on educational experiences a fundamental part of the first year learning experience. The dean convened a diverse team of faculty representing the science General Institute Requirements (GIRs), MITx, Residential Life, and MIT maker spaces in order to create a Freshman Advising Seminar that enhances the science core GIRs. The seminar provides a learning experience that gives students a chance to explore a range of abstract concepts in different contexts through authentic applications.

Increasing interaction and engagement between students and faculty. UAAP sponsored 11 faculty-freshman receptions throughout the year—nine during the fall 2014 semester and two during the spring 2015 semester. This program is one of approximately 70 faculty engagement events organized by UAAP every year. The goal of the receptions is to break down perceived barriers between students and faculty, and to "humanize" faculty in the eyes of students. Roughly 70% of the freshman class participated in 2014–2015, along with about 140 faculty advisors. Conversations at the receptions this year ran the gamut, from discussions about the Undergraduate Research Opportunities Program and options for career paths to what faculty do in their spare time. This year the two spring receptions were school-specific; one reception included only School of Science faculty and the other included only faculty from the School of Engineering.

Admitting the Class of 2019

The Office of Admissions selected an outstanding and diverse Class of 2019. Admissions received 18,306 applications and admitted 1,519 students, including 53 students from the wait list, together representing 8.3% of the applicant pool.

The composition of the Class of 2019 reflects MIT's ongoing commitment to student body diversity and excellence. Of the freshmen entering in 2015, 47% are women, 19% will be the first generation in their families to graduate from college (the highest since 2009), and 10% are international citizens. Students will be coming from all 50 US states (for the first time since 2004) and from 61 countries.

In AY2015, MIT Admissions partnered with Databank, a document imaging company, in an effort to streamline the processing of student application materials. Because of Databank's expertise in imaging and its deep roots in the financial services and healthcare industries, we felt confident about data security. The Databank partnership allowed us to decrease the document processing time during our peak application period from three weeks to three days.

This year marked the third application cycle in which the freshman application allowed students to self-identify their sexual orientation and gender identity. MIT consulted with the LGBTQ (lesbian, gay, bisexual, transgender, and queer) community on campus. The Institute is the second university in the United States to offer these questions on its application. MIT admissions officers gave a well-received presentation about best practices in this area at the National Association of College Admission Counseling conference.

Modernizing Student Information Systems

This year, the Education Systems Partnership—which includes the Office of the Dean for Undergraduate Education, the Office of the Dean for Graduate Education, the Office of the Dean for Student Life, and Information Systems and Technology—embarked on a new phase of the Education Systems Roadmap. The Roadmap will take us through the next three to five years and focuses on improving the faculty-student experience at MIT. The current technological landscape includes several factors that have a direct impact on how we developed and plan to implement the 2015–2018 Educational Roadmap:

- Ever-higher levels of interconnectedness between students, faculty, and staff in both the physical and virtual worlds
- Easier and continuous interactions through social networks and collaboration platforms
- Higher expectations for self-service tools and platforms that provide seamless access to functionality
- Greater availability of data that enables community members to innovate and operate independently
- More digital content and use of multiple sources for coursework
- The possibility of analytics about the student experience, allowing for adaptive learning and impacting curriculum design

The Roadmap will focus on modernization programs that align with the strategic goals set forth by senior administration. Each program will contain Institute-wide initiatives driven by desired outcomes. A major component of the Roadmap will be the ability of students, faculty, alumni, and staff to create innovative solutions and extend student system functionality.

The Student Systems Steering Committee approved the Education Systems Roadmap in June 2015.

Space

The final stages of the DUE Building 5 corridor project, which began last fiscal year, were completed. The Teaching and Learning Laboratory relocated from Building 5 into a much-needed bigger and better functioning space in Building E39,. A follow-on renovation of both the TLL and the International Students Office suites in Building 5 allowed us to create a satellite office for the Global Education and Career Development office, enabling them to offer drop-in appointments and referral services to students. The Office of Faculty Support moved from swing space in Building 35 to Builsing 5, allowing for closer proximity to other DUE offices and easy access for students with questions on the HASS (Humanities, Arts, and Social Sciences) and Communication Requirements. Finally, we were able to restore the Dean's Office conference room, which is frequently used by all DUE offices.

With joint funding from the Committee for Renovation and Space Planning and the Dean's Office, we were able to kick off the renovation of the Registrar's Office (which have not been renovated in at least 15 years), currently occupying two suites in Building 5. This renovation will provide for better flow and function for both staff and visitors, and support the important work that the Registrar's Office does. Relocation of staff members to swing space in Building E34 occurred in June 2015, with an expected return date of October 2015.

With approval for two new headcounts for Student Support Services in the FY2016 budget cycle, we are also planning minor renovations o the Undergraduate Advising and Academic Programming offices this coming summer.

The Kendall Square Revitalization Project will have major impacts on DUE in the coming year. We learned in spring 2015 that both the TLL and GECD will need to vacate Building E39 in June 2016; planning for their relocation to E17/E18 is under way.

Budget

DUE had a successful FY2015 budget cycle in which we received new funding and headcounts to advance a number of priorities (as well as non-recurring funds to continue an important pilot):

- Funding for UAAP to support first year students, particularly around orientation programming on sexual assault prevention training and consultation, and stress/ mental health programs
- Pilot program funding in UAAP for faculty advisors to support the faculty motion that all freshmen should have a faculty advisor
- Funding for the Office of Minority Education to continue with enhancements to Interphase EDGE, their flagship program for incoming freshmen
- Additions to headcount and funding for a shop manager for the Edgerton Center's N51 Innovation and Fabrication Facility, which serves students in the project-oriented clubs and competition teams, D-Lab, and students with individual fabrication needs
- Funding for GECD to develop a variety of online tools that will help expand student access to global, career, and pre-health resources, and will increase student learning and development in global and career management competencies
- Funding for TLL to support their successful Teaching Certificate Program for graduate students and postdoctoral associates at MIT

We also received the final installment of base funds to ramp up base budget support for D-Lab.

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 the division. In the past year, DUE met its placement goals for women and minorities. We also hired a diversity fellow in the Office of Minority Education, Timothy Robertson, who as a Native American adds to the diversity within the office and helps advance student success, with a focus on underrepresented student success, particularly Native American students.

According to the most recent MIT Affirmative Action Plan 76.3% of all new DUE hires between November 2013 and October 2014 were women and 34.2 % were minorities. During that period, DUE promoted 16 staff members, nine of whom (56.2%) were women and four of whom (25%) were minorities.

Staffing Changes

Two members of the DUE leadership team stepped down as of June 30, 2015. They are Lori Breslow, director of the Teaching and Learning Lab, and Diana Henderson, dean for curriculum and faculty support. Janet Rankin will serve as interim director of the Teaching and Learning Lab and Mary Enterline will serve as interim director of the Office of Faculty Support.

Dennis M. Freeman
Dean for Undergraduate Education
Professor of Electrical Engineering

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 graduate and professional schools.

The past year has been challenging and marked by transitions: we've opened and marketed the new Building E39 location as well as our satellite space, GECD Express, and experienced high staff turnover. Our staff's accomplishments, achieved through hard work amidst change, speak highly of their dedication to MIT and its students and alumni.

Changes and Initiatives

GECD 2020: A Five-Year Strategic Plan

Finalizing the strategic planning process that began in January 2014, we renewed our mission and vision and identified four key strategic themes: elevating GECD to become MIT's leading voice for careers and global education, developing confident and world-ready graduates, creating a work culture that maximizes staff growth and engagement, and leveraging and expanding external partnerships.

Satellite Office

In March, GECD opened a satellite office in Building 5 to serve students in a more central location. Because the office opened so late during the academic year, we were not able to fully assess its success; however, students have responded favorably to the new location. Going forward, we plan to work out the right mix of services and hours to meet demand while also maintaining a sustainable staffing plan.

Restructuring the Prehealth Advising Team

The Prehealth Advising team has been restructured and is now led by Associate Dean Malgorzata Hedderick, who also leads Global Education. There are now two assistant directors who oversee Advising and Evaluation respectively, the aim being to minimize a potential conflict of interest in the two roles while fostering greater collaboration. We have experienced the benefits of the new structure already as we embark on a major redesign of the Prehealth Advising Program.

2015 European Career Fair

Career Services stepped in to manage the European Career Fair for one year, enabling the student-led MIT European Club to rebuild its membership and leadership. The event—designed for students from MIT and colleges around the country—included a three-day conference and fair with 87 international employers and universities in attendance. Proceeds from the fair provided support to the MIT International Science and Technology Initiatives, Global Education and Career Development, and the MIT European Club.

Global Awareness Campaign and "Go Global" Website

Global Education launched a campaign for global awareness. The campaign was designed to expand undergraduate participation in global opportunities and overcome students' perceived (and real) barriers related to academic and research commitments, course and language requirements, participation in athletics, and program costs. Important campaign elements included a poster and postcard series, banners, and green screen events presented at the Go Global Fair and iFair. All campaign elements encouraged students to "picture themselves" in different world locations in order to help them consider going abroad. Global Education also reimagined MIT's "Go Global" website—the primary student portal to explore MIT's diverse range of global opportunities.

Study Abroad Program

Global Education implemented a new Independent Activities Period (IAP) course in Madrid in January: Global Literature Cultural Encounters. Developed and led by Professors Margery Resnick and Stephen Tapscott, the course's 26 students studied transatlantic literatures through readings, films, and field trips.

Career Services Technology

GECD's Career Services team implemented two innovative technology solutions to enhance employment-related experiences for MIT students and employers recruiting at MIT. Fairsey, a career fair management system and mobile application, enhanced service quality and efficiency for two career fairs. In addition, the team is in the process of implementing CareerBridgeLink, a marketing platform designed to market jobs and internship opportunities more effectively through social media, blogging, and videos, which will launch in fall 2015.

Carroll Wilson Award

The Carroll Wilson Award was successfully changed from a graduate student summer award with four to six awardees annually to a single annual award for one graduating senior. After consulting with multiple senior administrators, the committee decided that designating one award of $35,000 over a period of one year to a graduating senior would fill the need for gap-year experiences. The award is named after Carroll Wilson, a professor of management at the MIT Sloan School of Management, and the first Mitsui Professor in Problems of Contemporary Technology. Wilson devoted much of his career at MIT to seeking solutions to important global problems. The inaugural winner of the redesigned Carroll Wilson Award was chosen this past April.

Digital Communications

Last year the GECD website implemented a new content management process and underwent technical upgrades to enhance the user experience. The website had more than 625,000 pageviews and a 7% decrease in bounced sessions (users landing on one webpage and leaving the site) compared to last year. Mobile and tablet traffic increased 26.3% with 76,545 sessions, validating our decision to make the site mobile-responsive. The content was reorganized and rewritten to make it more effective, findable, and user-friendly. GECD introduced more intentional social media practices into our marketing

and branding. We maintained existing channels—Facebook, Instagram, and Twitter—that realized a higher rate of growth and more engagement. Global Education also launched a Tumblr site to showcase global photos; by the end of the year we had 182 followers.

Group Programming for Career Development

Career Services piloted three very successful industry-based employer-student meetups this year and increased the number of alumni/employer–based career panels and related events. These events have been extremely well received by both students and employers. In the years ahead, we expect to expand the program and provide more information-based, networking-rich events.

Key Accomplishments and Activities

Global Education

There were 930 undergraduate participants in global opportunities in AY2015 compared to 967 in the prior year, representing a 3.8% decrease. The breakdown of experiences included 575 internships, 90 internship/IROP (International Research Opportunities Program) collaborative opportunities, 128 in study abroad, 63 in research, and 74 public service and service learning opportunities. The 2014 Graduating Student Survey indicated that nearly 43% of graduating seniors reported completing a global experience during their studies, a nearly 5% increase from the 2013 report. Among survey respondents, 87% reported gains in understanding cultural differences, 85% reported increased adaptability, 80% reported an enhanced ability to communicate cross-culturally, and 76% reported increased self-confidence. Preliminary results from the 2015 Graduating Student Survey indicate that 45% of graduating seniors reported completion of an international experience during their studies, a 4% increase over 2014.

In AY2015, 128 MIT undergraduates participated in study abroad opportunities, a 5.8% decrease over AY2014. This decrease was primarily a result of decreased funding for programs during spring break and summer. This was due to the spend-out of the $1 million Fung Scholarship Fund, which ends this year. Participation in IAP programs increased, largely due to the newly created global literature course that attracted 26 students. There was a slight increase in Cambridge-MIT Exchange participation to 21 students and an increase from four to six students in the MIT-Madrid program. The Imperial-MIT Research Exchange grew significantly, nearly tripling to include eight MIT departments and 12 MIT students in AY2015.

In its final year, 63 Fung scholarships (down from 88 last year) were awarded, totaling just over $240,000 (down from slightly more than $300,000). Efforts to recognize these scholars and honor the donor included a dinner in Hong Kong with foundation officials as well as a dinner and reception at MIT. A proposal has been submitted for renewed funding.

During AY2015, 560 students attended 30 Global Education–sponsored group sessions and events and there were 2,485 individual appointments, drop-in visits, advising emails, and Skype or telephone conversations. This represents a significant decrease of

28.6% and 12.2%, respectively, over AY2014, and it is likely that the move to a less central location is primarily responsible for the decrease. Of the individual participants, 879 were unique contacts, an increase of 34% over AY2014, with an average of 4.3 "touches" per student.

In its fifth year, the MIT Global Fellows Program, which collaborates with the Imperial College of London in training doctoral students in professional transferable skills, was held in Dover, Massachusetts, with nine MIT and 20 Imperial College PhD and postdoctoral participants. Based upon responses to a post-course survey, 89% of MIT attendees would definitely recommend this course to another student, 100% reported improved teamwork abilities, and 67% reported more effective communication skills.

Distinguished Fellowships

The Distinguished Fellowships program had strong results this year, with three Rhodes, one Marshall, one Churchill, one Gates Cambridge, and eight Fulbright award winners, for a total of 14 scholars, slightly less than AY2014. There was a 62% increase in the number of Marshall Fellowship applicants and 25% were selected as finalists. Over 34% of United Kingdom fellowship applicants and 50% of Fulbright applicants were selected as finalists.

Prehealth Advising/ MIT Committee on Prehealth Advising

There were 96 MIT student and alumni applicants (42 undergraduates, 10 graduate students, and 44 alumni) in the 2014 medical school application cycle, down 28% from 133. Seventy-eight percent of all applicants used one or more of the prehealth advising services. The acceptance rate for undergraduate service users was 95.1%, a 12.4% increase from the prior year. The acceptance rate for all applicants who used prehealth services was 82.2%. The national acceptance rate is 46%.

There were 2,019 individual contacts, including appointments, drop-in visits, Skype sessions, and emails, a decrease of 31% in contacts over last year. These declines appear to be connected with GECD's relocation to a less central location. Of these visits, 439 unique students and alumni used the service, with an average of 4.6 "touches" per student or alumnus. There were 648 students and alumni who attended 36 workshops and events, a 17.3% decrease over the prior year, due to discontinuation of "Physician Chats" programming.

Prehealth Advising supports and staffs the Committee on Prehealth Advising. Throughout the year, Prehealth staff members set up meetings, help frame discussions, provide background material and data, coordinate committee communications, and facilitate the full committee process to calibrate and approve the final candidate ratings. More than 92 committee letters were produced in support of MIT medical school applicants. Feedback from medical school admissions about the letters continues to be positive. Additionally, there were 128 evaluation interviews conducted with one of 13 faculty committee members and the assistant director for prehealth evaluation.

Participation in the 2015 Physician Shadow Program decreased significantly due to our decision to drop one of the host hospitals that imposed a new background check requirement (with an accompanying fee) for all student participants. As a result, there were 65 shadow opportunities offered to undergraduates, compared with 170 in 2014. Accordingly, the number of sponsoring physicians decreased from 86 to 24. The policy will be waived for MIT students in the future. Among survey respondents, 83% reported an increased understanding of a physician's typical day, and 94% reported an increased understanding of medical specialty areas.

The Discover Prehealth Freshman Pre-Orientation Program increased student enrollments from 15 to 18. The curriculum was enhanced to include a day dedicated to global health and medical humanities and a visit to the Beth Israel Deaconess Medical Center Simulation Center Skills arcade with tools that medical residents use to strengthen their surgical skills.

Prehealth Advising has developed new resources and organized a panel to address students interested in pursuing a "gap year" prior to applying to a medical or other health-related program. Additionally, new gap-year data has contributed to better student and alumni advising.

Career Development Programs

There were 3,805 contacts for individual career counseling services via appointments, drop-in visits, Skype, and emails, a decrease of 10% from AY2014. Of these visits, 2,027 were unique users, with an average of 1.9 "touches" per student. Undergraduate participation rates decreased significantly, particularly career counseling and drop-in advising, which is likely a result of GECD's move away from central campus. There was an increase in email and phone/Skype advising services, which continues to emphasize the need to invest in more robust platforms for these services. Respondents to a survey of counseling services rated overall counseling effectiveness as 3.34 out of 4.0 and 92% would refer others to an appointment.

In response to our relocation, Career Services increased the number of workshops, panels, seminars, and events by 22%, from 118 to 144, with more than 6,464 students, postdocs, and alumni attending. This was a 19% increase in workshop attendance compared to 2014. Among the attendees, 1,784 were unique participants. A series designed to help students explore career options was expanded and more informal career meetups were successfully implemented. Of the overall participation numbers, more than 4,933 graduate and postdoctoral fellows attended. The targeted graduate programming included nationally known speakers Peter Fiske, Jean-luc Doumont, and Dan Beaudry, as well as panel presentations, employer events, and a career planning small group.

GECD continues to offer a portfolio of online career resources for students and alumni, including our newest addition, InterviewStream. In its inaugural year, InterviewStream had 47 active users. There was a significant increase in the usage of our online resources, with 10,835 visits to the international career resource, Going Global; 7,779 visits to the career videos provided by CareerSpots; and 313 users who accessed MyPlan, an online

career assessment tool. Online workshops were accessed by 4,943 users. Versatile PhD, an online resource and community for exploring non-academic careers, had 153 users.

Ninety-three freshmen were enrolled in SP.800, the Freshman/Alumni Summer Internship Program, an increase of 45% over AY2014, with nearly half of all students completing the course. Christopher Capozzola, associate professor in the History Department, continues in his role as the program's faculty advisor.

There were 25 disclosed MIT students and alumni who applied to law school during AY2015 with 68% of MIT applicants admitted, representing a 12% decline over AY2014. The average grade point average for accepted MIT applicants was 3.35/4.0 (converted from the MIT 5.0 scale) and the average LSAT score was 162.3.

Employer and Recruiting Programs

The undergraduate employment rate for the Class of 2014 within three months of graduation was 86%, and master's degree recipients had an employment rate of 84.1%, both of which reflect an increase from the prior year. The mean salary for graduating seniors increased slightly from 2013 to $74,980. This year's preliminary placement data for the Class of 2015 is favorable, indicating that 81% of undergraduates and graduate students seeking employment have already accepted a job offer. The survey period concludes in September 2015.

In AY2015, Career Services hosted 305 different employers on campus conducting 4,527 interviews, representing an increase of 23% and 6% from AY2014 respectively. The top five industries represented were computers/high tech/internet, consulting, finance, engineering and energy. There were 3,665 jobs posted through CareerBridge, representing a nearly 7% increase over AY2014. Usage of iNet, an online internship consortium among peer schools, increased by 29%, with 272 registered MIT student users accessing 3,449 internship postings. Seventy companies from diverse industries registered for the 2015 Annual Spring Career Fair with 765 student participants. Increased outreach resulted in 1,864 new employers registered who posted jobs, attended the Spring Career Fair, or conducted interviews.

Personnel and Professional Activities

Staff Transitions

During AY2015, eight staff members departed GECD: Nora Delaney, Christina Henry, Charles McClinton, Josh Nupp, Elizabeth Robbins, Erin Scott, Sarra Shubart, and Colin Smith. Scott Murray's position was revised to become GECD's Digital Communications Specialist. Additionally, the following staff members were hired: Mike Ahern, Aleshia Carlsen-Bryan, Julia Mongo, and Elizabeth Robbins. Debra Shafran was promoted to Administrative Assistant II.

Leadership

GECD hosted the regional meeting of the Graduate Career Consortium for the Eastern Region. Kimberly Benard, who graduated from MIT's Leader-to-Leader program, continues to serve on the Elections Committee for the National Association of Fellowship Advisors and is the MIT Secretary for Phi Beta Kappa. Melanie Parker was named to the CSO Software Solutions Advisory Board. Marilyn Wilson and Tamara Menghi attended the NACE (National Association of Colleges and Employers) Management Leadership Institute. Lily Zhang published three book reviews for the NACE Journal.

Awards

Kimberly Benard was selected as a representative for the US-Japan International Education Administrator Program in Japan. Tamara Bolk, Alessandra Christensen, Jennifer Earls, Christina Henry, and Marilyn Wilson received 2015 Dean for Undergraduate Education (DUE) Infinite Mile Awards.

MIT Committees and Service

Kimberly Benard serves on the joint Division of Student Life/DUE committee. Deborah Liverman continues to serve on the Dr. Martin Luther King Jr. Celebration Committee. Jennifer Earls co-taught a freshman seminar on enhancing student self-awareness via mindfulness and served as a freshman advisor. Malgorzata Hedderick co-teaches a freshman seminar on women's leadership, "Good to Great," and serves as a freshman advisor and member of the International Coordinating Committee's Policy and Procedures Coordinating Committee. Josh Nupp continues to serve on the International Emergency Project Committee, and Tamara Menghi is a member of MIT's Sophomore Year Council.

Conference Presentations and Publications

Robert Dolan presented "Branding Yourself–Developing Your Communications Strategy" at the National Postdoctoral Association Meeting. Jennifer Earls was a panelist on the "Further Education" panel for the Society of Asian Scientists and Engineers' Northeast Regional Conference. Christina Henry wrote a book review of *Lean In for Graduates* that appeared in the *Career Planning & Adult Development Journal* in the spring 2015 edition. Deborah Liverman presented "Graduate Career Outcomes Surveys: Successful Strategies and Collaborations" at the Career Resource Managers Association conference. Melanie Parker presented "Career Development Programs for First Year Students" at the European Career Conference, "Strategic Planning for Long-Term Success" at the European Foundation for Management Development Career Services Conference, and co-presented "Effectively Managing Fragmented Campus Career Services" at the NACE Conference. Josh Nupp presented "Lessons Learned in

International Travel" at the University Risk Management and Insurance Association Northeast Regional Conference. Tamara Menghi and Meredith Pepin co-presented "Beyond a Resume: Helping Students Prepare for their First Internship" at the Global Internship Conference. Lily Zhang published three book reviews for the NACE journal.

Future Plans

We will continue to work under our five-year strategic plan, prioritizing GECD visibility and developing confident and world-ready graduates, through staff growth and engagement, and expanding external partnerships.

New and Promoted Staff

With the recent turnover of 25% of GECD's staff, we will focus on searching for new staff members, as well as successfully training, mentoring, and engaging our new hires and newly promoted staff.

Relocation to Building E17/18 at Kendall Square

In June 2016, GECD will be relocated from Building E39 to Building E17/18. A major renovation of the building's second floor will be completed. The new space will be closer to central campus, which should be beneficial to students; however, two moves in three years is challenging to both staff and students.

Renewing the Fung Scholarship Gift for Study Abroad

In fall 2015, we submitted a proposal to renew the $1 million Fung Scholarship gift. The scholarship fund has provided positive and life-changing global experiences to 257 MIT undergraduates between 2011 and 2015, and has helped to increase undergraduate global participation rates from 41% (Class of 2011) to 45% (Class of 2015). Without this renewal, we will need to seek other sources of support.

Redesign of the Prehealth Advising Program

Prehealth Advising staff will redesign the Prehealth Advising Program, with a focus on early student engagement, a developmental advising model, a mentoring programs portfolio, and more intentional skill development.

Asia Career Fairs

We are sponsoring an exciting opportunity for MIT students and alumni to participate in three UK-led career fairs in Beijing, Shanghai, and Hong Kong in August 2015. The consortium of schools hosting the fairs includes Imperial College of London, London School of Economics, University of Cambridge, Columbia University, and Harvard University. The fairs represent partnerships with top international companies and Chinese agencies.

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 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 Systems and Technology, and the Committee on Undergraduate Admissions and Financial Aid. During Campus Preview Weekend, the Admissions Office coordinates with other offices in 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 18,306 applications for the freshman class in AY2015, a decrease of 0.3% over the past year. Admitted students totaled 1,519, including 53 students admitted from the wait list, together representing 8.3% of the applicant pool.

The overall yield on admitted students reached 73%. Women will make up 47% of the freshman class; the yield on women was 70% versus 75% for men.

There were 552 applications for transfer admissions; 25 were admitted and 24 are expected to enroll. Three enrolled in February 2015 and 21 will enroll in the fall.

In AY2015 the Office of Admissions received 1,100 maker portfolio submissions. The maker portfolio was created in AY2014 to evaluate students' independent projects not only in engineering, including robots and software applications, but also in paper craft and dressmaking, and more. Every submission was reviewed by a recently created Admissions Engineering Advisory Board composed of MIT faculty members and other academic staff, including Hal Abelson, Michael Bove, Gim Hom, Steven Leeb, and Patrick Winston. Out of all the students who submitted a maker portfolio, 138 were admitted and 117 will enroll, including four students who are taking a gap year. Of the 138 students with maker portfolios who were admitted, 50 were called out by the Engineering Advisory Board as having exceptional talent, and 44 of those students will enroll at MIT, including one student taking a gap year.

In AY2015, the MIT Admissions Office partnered with Databank, a document imaging company, in an effort to streamline the processing of student application materials. Because of Databank's expertise in imaging and its deep roots in the financial services and healthcare industries, the Admissions Office felt confident about the data security of this solution. The Databank partnership allowed Admissions staff to decrease the document processing time during the peak application period from three weeks to three days.

This year marked the third application cycle in which the freshman application allowed students to self-identify their sexual orientation and gender identity. MIT consulted with the lesbian, gay, bisexual, transgender, and queer community on campus and was on the leading edge of this change in the admissions process—MIT was the second university in the US to offer these questions on its application. Sexual orientation and gender questions on admission applications are becoming more widely adopted at other universities. MIT admissions officers gave a conference presentation at the National Association of College Admission Counseling conference about best practices in this area; the presentation was well received.

In AY2015, Admissions Office staff visited 42 states through 68 Central Meeting programs, of which 43 were MIT-only and 25 were group meetings in collaboration with Brown and Yale universities. Additional international recruitment travel included trips to Canada, Africa, the Caribbean, and Saudi Arabia. On campus, the office welcomed nearly 30,000 admissions visitors. The Campus Preview Weekend yield event continued to be popular, with 1,053 admitted students and approximately 1,000 parents attending.

The composition of the Class of 2019 reflects MIT's ongoing commitment to student body diversity and excellence. Of the freshmen entering in 2015, 47% are women, 19% will be the first member of their families to graduate from college (the highest percentage since 2009), and 10% are international citizens. Students will be coming from all 50 US states for the first time since 2004, and from 61 countries. Eighty-eight percent of the incoming class members have been leaders (president, captain, and so on) of an organization; nearly a third (32%) have founded an organization or business. Forty-six percent were valedictorians and 93% graduated in the top 5% of their high school class. MIT continues to partner with the QuestBridge program, a nonprofit organization that recruits high-achieving students from low-income backgrounds, and sixty-three QuestBridge students will be enrolling in the fall. The freshmen enrolling in 2015 arrive with mean SAT scores of 723 verbal and 769 math.

US students in the enrolling class have self-identified in the following racial or ethnic groups: American Indian/Alaskan Native, 2%; Asian American, 32%; Black/African American, 9%; Hispanic/Latino, 14%; Native Hawaiian/Pacific Islander, 0%; White, 51% (students may identify with more than one racial/ethnic group, and the percentages listed are percentages of the entire class, not just domestic students). Twenty-three percent of the enrolling class self-reported as a member of an underrepresented minority group.

The MIT Educational Council increased the number of alumni interviewers to 4,896. Educational counselors conducted 14,972 interviews. The pool of interviewers is 19% international and 37% female. This year's group of educational counselors includes members from the classes of 1941 to 2014, with 32% of the volunteers coming from the most recent 10 graduating classes.

Staffing

In AY2015, the staff was composed of 20 administrative staff and 10 support staff, consisting of 23 women and seven men. Thirty percent of the staff were underrepresented minorities (Hispanic, Asian, and African American).

Stuart Schmill
Dean of Admissions

Office of Experiential Learning

The Office of Experiential Learning brings together the Edgerton Center, D-Lab, Concourse, the Experimental Study Group (ESG), and Terrascope. Its director is J. Kim Vandiver, dean for undergraduate research and director of the Edgerton Center, which includes the D-Lab program. The faculty directors for Concourse, ESG, and Terrascope are, respectively, Professors Anne McCants, Leigh Royden, 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, maintaining student machine shops, upholding MIT's expertise in high-speed and scientific imaging, offering the D-Lab international development program, and offering a year-round K–12 science and engineering program.

K–12 Engagement

Nineteen years ago, the Edgerton Center began a program bringing fourth- through eighth-grade Cambridge Public School students to MIT. The goal was to enrich their studies with hands-on science and engineering activities. The program now hosts over 2,500 student visits annually from public, private, and home schools in the greater Boston area and nearby New England states. The academic field trips are organized as half-day, project-based lessons (11 unique activities) that are aligned with Massachusetts state standards. Edgerton Center instructor Amy Fitzgerald leads the lessons, with assistance from MIT students involved in Undergraduate Research Opportunities Program (UROP) projects or working as student staff. When the program began, MIT was receiving no college applications from Cambridge Rindge and Latin School (CRLS). This year four CRLS students were admitted, of whom three will enroll in the fall.

Twelve years ago, thanks to the support of a Department of Aeronautics and Astronautics project sponsored by the National Aeronautics and Space Administration (NASA), the center began working with the John D. O'Bryant School of Mathematics and Science in Roxbury, MA. The initial project on solar energy brought the O'Bryant teachers, students, and our staff together in the spirit of collaborative education. Staff member Ed Moriarty became a fixture at O'Bryant, engaging students in hands-on science and engineering projects. Today, Edgerton staff member and O'Bryant alumnus Alban Cobi '12 is on site a few times weekly at the O'Bryant School, developing and implementing the Engineering Pathways Program. Since the O'Bryant program's inception, six graduates have matriculated at MIT; this year two O'Bryant students accepted and plan to enter in fall 2015.

On Saturdays, Moriarty and Cobi host a wide-ranging, hands-on science, technology, engineering, and mathematics (STEM) project, The Saturday Thing, that has been replicated in states from Alaska to Florida. In the summer, they run a month-long engineering design workshop for local high school students. In addition, both Moriarty and Cobi have helped to initiate and propel forward plans for the John D. O'Bryant

Innovation Arena, a dynamic educational center for project-based learning to be constructed next to the school.

Amy Fitzgerald is in her fifth year of a collaboration with General Electric (GE) and its plant in Lynn, MA. The girls' summer program model created by Fitzgerald and Jessica Garrett has been disseminated to other GE sites and partner educational institutions across the nation. Garrett and Fitzgerald piloted the program, GE Girls at MIT, in 2011, with 25 rising seventh-grade girls from the Lynn public schools. Similarly, Fitzgerald's You GO Girl! summer program (in its 16th year) exposes rising ninth-grade girls to hands-on, project-based lessons in science and engineering. The eighth (and final) year of a collaboration with the Gloucester Public Schools and Gloucester Education Foundation brought 40 Gloucester students to enjoy the one-week Summer Engineering Adventure on MIT's campus, in partnership with the MIT Museum and the Scheller Teacher Education Program.

Classroom science teachers seek out our "Atoms and Molecules" sets made from basic LEGO® bricks, which enable educators to teach concepts in biology, chemistry, and earth science. Over the past year, we have fulfilled 98 requests from schools across the nation. We have produced our first set of 100 DNA kits, and they will be distributed in fall 2015. We are nearing completion of new prototypes for protein kits.

Our partnership with i2 Camps—a network of middle school STEM camps—is now in the third year of a five-year grant to develop a curriculum for the camps. With other MIT groups, we have developed and implemented additional science and engineering curricula that are in place at 19 locations nationwide and three international locations. Edgerton Center curricula have been used to support other programs as well, including a one-week vacation camp at the Skidompha Library in Wiscassett, ME.

The Edgerton Center entered into a multiyear collaboration with the Meadowbrook School of Weston to develop integrated, interdisciplinary design thinking curricula and advise on the school's "maker space." Meadowbrook will be a testing site for the Edgerton Center for developing K–8 curricula and will serve as a potential model program for future independent school collaborations.

This was the second and final year (due to funding cuts from co-sponsor Draper Laboratory in April) of our Science on Saturday program. The program, overseen by MIT alumnus Todd Rider and facilitated by MIT students, took place six times per year and introduced the K–12 community to demonstrations in areas such as optics, robots, and underwater vehicles.

Hands-On Learning for MIT Students

Student Clubs and Teams

For over 20 years, the Edgerton Center has supported student clubs and teams with seed funds, safety and administrative oversight, and provision of workspace, equipment, and mentorship. The center is home to more than a dozen student teams (over 150 students) such as the Solar Electric Vehicle Team, the Electric Vehicle Team, and the Formula SAE

team. Formula SAE traveled in June to the Society of Automotive Engineers race in Lincoln, NE, and the MIT Robotics Team competed in the RASC-AL NASA competition at the Johnson Space Center in Texas. This is our second year of sponsoring Spokes, a team of MIT and Harvard students cycling across the country holding learning festivals in which young students do hands-on projects such as building robots and computer coding. The team was featured in *The New York Times* and in other publications.

In October the Edgerton Center, together with the DreaMIT student group, screened *Underwater Dreams*, a film about four Mexican American teenagers from Arizona who challenged and beat the MIT Remotely Operated Vehicle Team in a 2004 national contest. Close to 400 members of the MIT community attended the screening and panel discussion, moderated by Professor Phillip L. Clay and featuring Professor Junot Díaz; the film's director, Mary Mazzio; DreaMIT cofounders Sofía Campos G '15 and Jose Gomez '17; and Renata Teodoro, DreaMIT peer advisor.

Hands-On Academic Offerings

The Edgerton Center offers 20 to 25 subjects for credit each year, including 13 subjects associated with D-Lab, and 6.163 Strobe Project Lab, taught by Dr. James Bales, the center's associate director. Staff instructor Alban Cobi assisted in STS.035 Exhibiting Science.

Professional Short Program

Once again, we offered the 6.51s High-Speed Imaging for Motion Analysis summer short course to 20 students from industry, government research labs, and academia. This program allows the center to strengthen its ties to a dozen manufacturers of high-speed imaging equipment and related software.

Student Machine Shops

Well-equipped workshop space for students is a vital component of the center. Essentially, it is the stage upon which students can put their education into practice.

We completed the transformation of the N51 space into a state-of-the-art fabrication lab. Acquired in 2007, the renovated 6,000-square-foot space gives individual students, clubs and teams, staff, and faculty access to CNC Shop tools and equipment—bed mills, lathes, and a machining center, a water-jet cutter, a mini mill, 3D printers, and an injection molding machine. The space, affectionately named Area 51 by the students, was featured in the *Boston Globe* on May 3 as "being among the most interesting places at the Massachusetts Institute of Technology."

Now in its 18th year, the Edgerton Center Student Shop in 44-022 continues to draw students, and our free machine training (12 hours in duration) is booked months in advance. Students spend nearly 6,000 cumulative hours annually in the Student Shop.

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 in 2002 by Amy Smith, senior lecturer in the Department of Mechanical Engineering (and a MacArthur Fellow), D-Lab has developed 21 MIT courses and 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 cleaner-burning cooking fuels made from agricultural waste.

Student Engagement

D-Lab courses continue to be popular among MIT students. This past year 189 students, predominantly undergraduates, enrolled in 10 D-Lab subjects and three independent studies. In keeping with trends from prior years, 72% of undergraduates enrolled in D-Lab classes were women. D-Lab also oversaw more than 40 undergraduate research projects during 2014–2015.

Over the course of the year, through Independent Activities Period trips as well as spring break and summer fieldwork, 48 D-Lab students traveled to Botswana, El Salvador, Ghana, India, Malaysia, Nicaragua, Peru, Rwanda, Tanzania, and Uganda to work intensively with D-Lab community partners.

D-Lab Scale-Ups

The D-Lab Scale-Ups social entrepreneur fellowship program was created in mid-2011 to identify and support technology ventures with potential for wide-scale poverty alleviation. To date, the program has sponsored 23 fellows (five during 2014–2015) working on four continents in sectors including health care, agriculture, clean water, waste, energy, and mobile financial services. The fellows have been awarded $400,000 from Scale-Ups and have subsequently gone on to raise more than $2.3 million in equity and debt. The cumulative impact of the Scale-Ups ventures continues to grow, with 271 jobs created, 377,000 end users reached, and $731,000 in revenue generated.

The second full year of Scale-Ups' Harvest Fuel Initiative, which provides technical assistance to bio-waste charcoal enterprises in East Africa, saw those enterprises surge forward in production and efficiency; two of the enterprises achieved profitability this year. During 2014–2015, the four producers generated 1,224 tons of cleaner-burning charcoal, reducing deforestation by 55,700 tons. D-Lab biomass fuel research scientist Daniel Sweeney, who works closely with these enterprises in the field, also established a unique charcoal and cook stove testing lab at D-Lab, created a mobile lab for in situ testing, and devised a remote sensing system allowing partners to send him real-time data when he is not on location. In addition to work in East Africa, Sweeney conducted research programs with partners in Haiti and Guatemala. At the end of this reporting period, D-Lab received a grant of $120,000 from the Global Alliance for Clean Cook Stoves to synthesize and disseminate recent cook stove research and development and work to innovate product lines for several medium-scale improved cook stove producers.

Research and development efforts in other sectors and geographic areas included continued work in Morocco on the suitability of solar lanterns in rural areas. Following

a 2014 suitability evaluation conducted by D-Lab, the Scale-Ups team examined solar lantern distribution and financing strategies. In March, the team conducted an additional study to evaluate rural Moroccans' willingness to pay for the lanterns. In partnership with French energy company Total and Morocco microfinance agency al Amana, the team will begin a distribution pilot in fall 2015.

At MIT, the Scale-Ups program continues to bring together the international development ecosystem to work toward a more comprehensive vision for the way the Institute addresses global poverty issues through technology and business innovation. In April 2015, Scale-Ups organized the third annual MIT Scaling Development Ventures conference, a daylong event with well over 275 attendees from around the world. Conference collaborators this year included the Public Service Center (PSC), the Media Lab, the International Development Innovation Network, the Comprehensive Initiative on Technology Evaluation, and the MIT Legatum Center.

Practical Impact Alliance

In the fall of 2014, D-Lab launched the Practical Impact Alliance (PIA), an initiative designed to foster shared learning and collaborative action among a network of corporations, nongovernmental organizations, and social enterprises with a demonstrated commitment to scaling solutions to global poverty. Thirteen organizations signed on for the PIA pilot, contributing a total of $130,000 to D-Lab and the alliance's projects. The founding members include corporations Ajinomoto, Danone, Greif, Johnson and Johnson, Mars, Philips, and Unilever; foundations such as the Grameen Foundation and the Melton Foundation; international nongovernmental organizations Community Enterprise Solutions and World Vision International; and social enterprises Greenlight Planet and Living Goods. Representatives from each of these organizations have joined a PIA working group on one of the following topics: Base of the Pyramid distribution challenges, mobile phones and behavior change, food loss and waste, or fostering local innovation and co-creation. Lessons learned, practical tools, best practices, decision-making frameworks, and other resources produced by the working groups are made available to the public at the end of each year.

International Development Innovation Network

Initiated in 2013, the International Development Innovation Network (IDIN) is a five-year program funded by the Global Development Lab of the US Agency for International Development (USAID). IDIN empowers a diverse, global network of innovators to design, develop, and disseminate low-cost, practical solutions to alleviate poverty.

In its third year, IDIN fostered and supported its growing network of 524 inventors, technologists, and social entrepreneurs from 53 countries. IDIN Innovation Centers have now been established in Uganda, Brazil, and Tanzania, and new centers are under development in India, Kenya, Nepal, Sierra Leone, and Zambia. Over the course of the year, IDIN awarded 21 micro-grants of $500 to $2,000 for promising prototypes and ventures and helped connect its network members to other funding opportunities. IDIN also awarded 22 pico-grants—a new category of grants of $50 to $300—to network members. There are currently 87 prototypes and ventures in the IDIN pipeline. In addition, IDIN trained 126 innovators at three International Development Design

Summits this year: one month-long summit in Arusha, Tanzania; a two-week-long waste summit in Cali, Colombia; and the 10-day-long Rethink Relief Summit, which took place in Pader, Uganda. Along with the long-format summits, IDIN offered creative capacity building training to groups in Ghana, Singapore, and the Philippines.

IDIN's work is led by D-Lab and a consortium of universities and institutional partners in the United States and abroad, including Colorado State University, the Kwame Nkrumah University of Science and Technology in Ghana, the National Technology Business Centre in Zambia, the Olin College of Engineering, Singapore Polytechnic International Learning Express, the ECHO East Africa Impact Center in Tanzania, and the University of California, Davis.

Comprehensive Initiative on Technology Evaluation

The five-year Comprehensive Initiative on Technology Evaluation (CITE), also funded by USAID's Global Development Lab and created in 2013, is headquartered at the MIT Department of Urban Studies and Planning with D-Lab as a partner. CITE has developed a methodology for evaluating technology solutions intended for use in global development work to help donors and implementing organizations identify the best solution for their work. The main product of each of CITE's evaluations is a comparative rating chart that graphically displays how each technology solution stacks up to its competition along one or more of the three axes of evaluation.

Having piloted its methodology with a study of solar lanterns in Uganda, during the past year CITE went on to complete a report on over 100 models of water filters in Ahmedabad, India. D-Lab instructor Susan Murcott led the water filter study. Additional studies initiated this year were a malaria rapid diagnostic test evaluation in Uganda, a water test kit evaluation in India, a harvest storage evaluation in Uganda, and an evaluation of educational technologies in India.

D-Lab Youth

D-Lab's new youth outreach coordinator, Pedro Reynolds-Cuéllar, came on board during the summer of 2014. Reynolds-Cuéllar has worked to consolidate D-Lab's youth offerings into three central activities: youth tours of the D-Lab space and exhibits, a weekly open workshop program for middle school and high school students that provides hands-on experience of D-Lab's approach to building technology, and D-Lab design reviews, which offer the opportunity for educators and high school students to bring their projects to D-Lab and share them with experts at MIT. Fifteen youth tours and five tours for educators were conducted over the course of the year. The youth outreach team, which also includes MIT undergraduate Tachmajal Corrales Sanchez and D-Lab instructor Libby Hsu, offered 17 workshops (seven for international students). A total of 330 youth attended these events. Forty-three high school student designers attended design reviews with 16 guest reviewers from the MIT Energy Initiative, the Media Lab, the Edgerton Center, and the International Development Innovation Network along with staff and instructors from D-Lab.

Personnel

Seven staff members departed: Jessica Garrett, our K–12 outreach project coordinator; Roberto Melendez SB ’12, SM ’14; Sharmarke Osman, IDIN finance and program administrator; Derek Brine, CITE associate director; Jessica Huang, youth program director and instructor; Benji Monivaiz, field coordinator; and Sue St. Croix, administrative officer. Also, MIT alumnus and Belmont Public Schools educator Diane Brancazio has joined our K–12 team for her sabbatical year.

Several hires have been made this past year to build D-Lab’s capacity, including Pedro Reynolds-Cuéllar, youth outreach coordinator and instructor; Matt McCambridge, instructor; Peggy Eysenbach, development officer for D-Lab; Richard Brewer, administrative officer; Megha Hegde, research staff member; and Asif Obaidee, IDIN finance and program administrator.

Concourse Program

Concourse is a freshman learning community of students and instructors dedicated to exploring foundational questions at the heart of humanistic inquiry and the relationship of these questions to science and engineering. Our curriculum covers the standard science core curriculum (mathematics, physics, and chemistry), offers its own core humanities classes, and integrates both the sciences and humanities into a larger context in the program’s weekly freshman advising seminar. Concourse math 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. Their small size (maximum of 55 students) permits the class to focus on careful reading, cogent analysis, thoughtful discussion, and good writing. It also allows for an intimate atmosphere in which a passion for learning and thinking beyond the traditionally strict disciplinary boundaries is fostered and flourishes.

Personnel

Members of the Concourse faculty and staff during AY2015 were Paula Cogliano, program administrator; Linda Rabieh, Robert Winters, Jolyon Bloomfield, Lee Perlman, and Beth Vogel, lecturers; and Professor Anne E.C. McCants, program director. In addition, 15 undergraduates were employed as tutors and graders. We also employed two graduate students this year, one from physics and one from math, to assist with recitations.

Enrollment

Concourse had 52 students registered for the fall term. Spring enrollment was 28.

Teaching and Curriculum

Two sections of CC.110 Becoming Human: Ancient Greek Perspectives on the Best Life were offered as CI-H subjects in the fall term. In math and science, we offered CC.80 Physics I, CC.1802 Calculus II, and 18.01A/18.02A Calculus. In the spring, there were two humanities offerings: CC.116 How to Rule the World, which was also a CI-H course,

and CC.112 The Philosophy of Love. In math and science, we offered CC.802 Physics II, CC.1803 Differential Equations, and CC.5111 Principles of Chemical Science. For the first time in the spring, we also offered our own version of organic chemistry. CC.A10/CC.010 The Concourse of Core Questions and Ideas was our freshman advising seminar in the fall, and it continued with CC.011 Thinking Across the Disciplines in the spring. We also offered two seminars during the year: CC.S11 Concourse Special Topic in the fall and CC.S20 Liberalism and Conservatism in the spring.

Accomplishments

This year Concourse has continued to flourish under the direction of Professor McCants. Our enrollments remain robust, and we continue to develop and strengthen the unique interdisciplinary aspect of our program that permits students to learn deeply in each course as well as to reflect upon and discuss the connections among their courses and between science and the broader world.

To advance our goals, we continue to expand the options available for our first-year and alumni students to engage in conversation between the sciences and humanities. This year we received an extension of our first $25,000 award from the T.W. Smith Foundation for an additional year. We have used these funds to support two goals. First, the award supports the increased involvement of Concourse alums, both as mentors and tutors for freshmen but also as participants in our developing series of upperclass seminars, which allow our alums to continue the interdisciplinary thinking they began as freshmen. Our upperclass seminar this spring offering a balanced review of a number of critical public policy issues attracted two current Concourse students and five alums. Second, the award helped support a two-day retreat for the entire Concourse staff where we continued to refine a truly integrated fall advising seminar in which staff from all disciplines lead seminars that explore the larger issues raised by each field. The progress we made in devising a more integrated syllabus was aided substantially by the generous participation of two invited guests, Professors Arthur Bahr and Diana Henderson.

We continued to use our spring seminar, CC.011 Thinking Across the Disciplines, to expose our freshmen to other faculty at MIT. Most importantly, our guest speakers offered students insights into how their own research and discipline touch on the core questions that are at the heart of Concourse's focus. Concourse also served as a home for piloting creative, new classes. In an effort to address our students' physical as well as their intellectual well-being, we offered a fall yoga class and a spring fitness and nutrition class, both of which counted toward the physical education requirement.

We have continued our commitment to robust and supportive advising. All staff members serve as advisors, with upperclassmen as associate advisors. Because the staff meets weekly, we soon learn about any student who is struggling academically, emotionally, or socially, and we are able to offer support in a timely way. Developing supportive relationships with students and among the students themselves is a crucial part of our mission. To promote community and stimulate conversation, we organized regular outings to plays, concerts, and films.

This spring, the student leadership mantle was passed to a new group of rising sophomores who were voted in to run various Concourse student and student/faculty activities. Our excellent group from last year once again helped us recruit our incoming class during Campus Preview Weekend.

Experimental Study Group

Student Statistics

Fifty-five first-year students were enrolled for one or more terms in the Experimental Study Group this year. Sixty-six percent of our students were female, and 30% were underrepresented minorities. Twenty-one percent were international students from a diverse group of countries including Bolivia, Canada, China, Egypt, India, Israel, Macedonia, Mauritius, Nigeria, and Vietnam. Twenty-five students (68% of whom were not in ESG as freshmen) enrolled in three pass/fail undergraduate seminars sponsored by ESG in the spring of 2015.

Staff and Faculty

ESG's administration was headed by director Leigh Royden and included associate director Graham Ramsay and academic administrator Paola Rebusco. Ramsay and Rebusco began their new respective roles effective July 1, 2014. After 37 years of service to ESG, Holly Sweet retired on December 31, 2014. She continued through the end of FY2015 in a part-time capacity. Bettina McGimsey joined the ESG administration in mid-May 2015 to overlap with Holly Sweet in preparation for taking over the fundraising and alumni relations roles beginning in July 2015.

Analia Barrantes continued to head the ESG physics staff, joined by Rebusco. Research scientist Zahid Yaqoob provided additional help with the 8.012 Physics I and 8.022 Physics II offerings during fall 2014. The mathematics staff was headed by Jeremy Orloff and included Gabrielle Stoy. The chemistry and biology offerings at ESG were taught by Patricia Christie. In the fall term, Dave Custer taught ES.033J Science Writing and the New Media. For the second time, Custer and Ramsay co-taught (in spring 2015) the humanities CI-H credit subject ES.333 Production of Educational Videos: Skills for Communicating Academic and Professional Content. The subject will be the focus of a three-year assessment headed by members of MIT's Teaching and Learning Laboratory.

ESG staff were assisted by 49 undergraduate teaching assistants (TAs), over half of whom were women. These TAs provided excellent service to our freshmen, learned valuable teaching and leadership skills, and maintained an impressive overall median grade point average of 4.8 while doing so.

The ESG faculty advisory committee, composed of faculty representatives from the Departments of Biology, Chemistry, Mathematics, and Physics and the School of Science, continued to advise ESG staff on educational policy, staffing, and educational initiatives.

Educational Initiatives

Faculty Mentoring Pilot Program

Beginning in fall 2015, ESG director Leigh Royden reached out to members of the MIT faculty, inviting them to take part in a faculty mentoring program. The program was designed to engage ESG freshmen and faculty in meaningful discussions on topics ranging from creating UROP projects to exploring possible majors, and faculty were invited to participate in activities such as informal talks with small groups of students, hiking trips, and ESG's Friday lunch conversations. Faculty participants included John Belcher (Physics), Michel DeGraff (Linguistics and Philosophy), John Essigman (Chemistry), Taylor Perron (Earth, Atmospheric, and Planetary Sciences), David Vogan (Mathematics), and Karen Wilcox (Aeronautics and Astronautics).

Undergraduate Seminars

In fall 2014, ESG offered two seminars, ES.200 ESG Teaching Seminar (taught by Dr. Christie, Ramsay, and Dr. Stoy) and ES.S10 Introduction to Psychopharmacology (taught by ESG alumnus Zachary Fallows '09). In the spring, ESG sponsored three undergraduate seminars: ES.010 Chemistry of Sports (taught by Dr. Christie and Steve Lyons), ES.S40 Law and Technology Seminar (taught by Lyons), and ES.S70 Programming Physics: E&M with Python (taught by Barrantes, Rebusco, and ESG undergraduate Joseph Griffin '16). The latter two seminars were new offerings and received high ratings from students. Peter Dourmashkin from the Department of Physics has expressed interest in running ES.S70 in mainstream in spring 2016, and negotiations are now under way. All ESG seminars were funded by gifts from ESG alumni.

Singapore University of Technology and Design

ESG continued its ongoing relationship with the Singapore University of Technology and Design. Patti Christie continued her mentoring relationship by making a trip to Singapore in January and again in June 2015 to help with the organization of the next cohort chemistry class.

Fellowships

In fall 2014, ESG partnered with the MIT Public Service Center to create the ESG/PSC Fellowships. These fellowships, funded by generous gifts by ESG alumnus Allen Baum '74 and Donya White, support summer ESG student projects that serve communities in need outside the confines of the Institute. This year's ESG/PSC Fellowship recipient is Sofia Essayan-Perez '15, who will be doing educational outreach to elementary and high school students in rural Nicaragua that incorporates educational video components pioneered at ESG.

Awards

Winners of the annual Peter and Sharon Fiekowsky Community Service Award (for outstanding contributions to the ESG community) included Christian Cardozo-Aviles '17, Francesca Cicileo '17, Quan Nguyen '18, and Paul Twijukye '18. Winners of the annual Peter and Sharon Fiekowsky Excellence in Teaching Award (given to graduating seniors who have demonstrated excellence in teaching at ESG over a sustained period of time) were Joel Schneider and Troy Welton. In addition, due to the number of

graduating TAs who performed at a high level during their undergraduate careers, ESG awarded distinguished teaching certificates to Sofia Essayan-Perez, Steven Fine, Natnael Getahun, Hikaru Miyazaki, Ernesto Ramirez, Robert Sloan, and Felix Sun.

Fundraising

By the end of FY2015, ESG had raised over $500,000 in a combination of gifts and pledges in an ongoing effort to raise a $1 million endowment before ESG turns 50 in AY2020. This endowment will be used to fund ESG educational initiatives such as seminars, educational video projects, and community activities not covered under ESG's base budget.

Conclusion

ESG's dedicated staff continues to offer MIT undergraduates a small group learning experience in a community-based setting that fosters opportunities to teach and learn in a collaborative environment. With an eye toward its 50th anniversary, the program is carrying on with its core mission while working to innovate through new educational experiments and forging new collaborations within the Institute.

Terrascope

The Terrascope Program is designed to encourage first-year students 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. In the fall, freshmen are presented a complex problem focused on issues of sustainability and the environment in the credit-bearing subject 12.000 Solving Complex Problems (known as Mission 20xx, where xx is their graduation year). Although the problem, which forms the focus for the year's curriculum, typically involves aspects of the Earth system, Terrascope is intended to be a valuable experience for all students, no matter their ultimate 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 future employment. In Terrascope, first-year students are considered scientists and engineers from the first day of class and are empowered to think about—and propose solutions to—major issues facing the planet. They may opt to continue work begun in the fall by enrolling in one or both of a pair of Terrascope subjects offered in the spring. In addition, each year students can participate in a weeklong field project 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. Terrascope provides facilities for the students, including workshop and classroom space, a lounge, and a kitchen.

Personnel

Samuel Bowring, Robert R. Shrock Professor of Geology and MacVicar Faculty Fellow, directs Terrascope. In fall 2014, he taught 12.000 Solving Complex Problems with the help of teaching assistant Michael Eddy and a dedicated group of undergraduate teaching fellows (all graduates of Terrascope) and MIT alumni mentors. In the spring Charles Harvey, professor of civil and environmental engineering, was lead faculty

member for 1.016 Communicating Complex Environmental Issues, assisted by lecturer Ari Epstein. Research supervision for spring projects was generously provided by Professor John Hernandez and research scientist Phebe Dudek of the Department of Architecture; Maja Haji and David Taylor, graduate students in mechanical engineering; Eric Reynolds, D-Lab program coordinator; and Eric Verploegen, D-Lab research engineer. Epstein also taught SP.360 Terrascope Radio in the spring. Debra Aczel was the program administrator.

Enrollment

In the fall term, 59 students enrolled in 12.000 Solving Complex Problems. In the spring term, 11 students enrolled in 1.016 Communicating Complex Environmental Issues, and 12 students enrolled in SP.360 Terrascope Radio.

Program Highlights

In the fall, freshmen in 12.000 were tasked with proposing a global energy portfolio for the next 50 years that will reduce the rate of increase in human-produced greenhouse gases while maintaining a constant atmospheric concentration. They were further challenged with deciding whether our energy future will be dominated by continued consumption of carbon fuels or involve a transition to nuclear power and/or alternative energy sources. At the end of the semester, they presented their comprehensive plan before a panel of experts as well as the general public. The presentation was also available as a live webcast to a remote audience.

In Terrascope's spring subject, 1.016, small teams of students built on their fall experience by developing prototypes, models, and demonstrations of the technologies they had been working on to solve energy-related problems globally. 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 a device for extracting heat from the wastewater stream of an ordinary shower and using it to heat up incoming cold water; a small-scale vertical wind turbine that can be built partially from urban trash for use in poor neighborhoods of Cairo; a system for exposing a uranium-binding polymer to seawater and retrieving it from the ocean, making it possible to "mine" uranium from ocean waters surrounding wind turbines; and a mechanism that increases the efficiency of using solar panels to charge 12-volt batteries, for use in off-grid areas of developing countries.

In SP360, students produced a radio segment called "Power from the People." In this piece, students offered a glimpse into the lives and challenges of energy workers "behind the light switch."

In the spring, Terrascope hosted a successful dinner for 80 program alumni and current students, with attendees from nearly every class of Terrascope graduates. Priya Sundareshan, an alumna of Terrascope's first year, was the guest speaker. Sundareshan discussed her work in environmental and energy law as an associate with Pillsbury Winthrop Shaw Pittman. This event also included a celebration of Debra Aczel's retirement from Terrascope and MIT. Kip Hodges, a founding director of Terrascope and currently a foundation professor at Arizona State University's School of Earth and Space Exploration, was a special guest for the occasion.

Fundraising

Terrascope ran a very successful crowd-funding event in the spring to generate support for our annual field trip. The event raised $8,127, or 162% of the original goal of $5,000. Even more impressive was the number of participants. With 117 donors, ours was one of the largest crowd-funding campaigns MIT has conducted to date. We hope to use this beginning to encourage the ongoing commitment of our alumni to support Terrascope.

Terrascope Field Trip to Central and Northern California

Thirty-five Terrascope students, faculty, and staff spent spring break visiting sites related to power production and distribution in California. An alumni mentor, Hal Gustin, working with the Pacific Gas and Electric Company (PG&E), played a key role in arranging the visits, which included a top-to-bottom tour of the Drum-Spaulding hydropower system, a visit to the Vaca-Dixon solar station, and a tour of the Diablo Canyon nuclear power plant. The group also visited PG&E headquarters in San Francisco to hear about, among other topics, renewable energy sources, regulation, pricing, and power generation, transmission, and distribution.

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

Leigh Royden
Director, Experimental Study Group
Professor of Geology and Geophysics

Samuel Bowring
Director, Terrascope
Robert R. Schrock Professor of Geology
MacVicar Faculty Fellow

Office of Faculty Support

In AY2015, 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. OFS staff continued the essential work of supporting the Committee on the Undergraduate Program (CUP) and its standing Subcommittees on the Communication Requirement (SOCR) and the Humanities, Arts, and Social Sciences (HASS) Requirement (SHR); supporting the Undergraduate Officers Group; administering the MacVicar Faculty Fellows Program; overseeing the central budget for the Communication Requirement (CR); 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 administer and strengthen the MacVicar Faculty Fellows Program, which honors MIT's best undergraduate teachers. Four new MacVicar Faculty Fellows were announced on MacVicar Day, March 13, 2015: Associate Professor Arthur Bahr (Literature) and Professors Lorna Gibson (Materials Science and Engineering), Cathy Drennan (Chemistry), and Hazel Sive (Biology).

MacVicar Faculty Fellows and senior administration gather on MacVicar Day 2015: Provost Martin Schmidt, Professors Linda Griffith, William Broadhead, Emma Teng, Larry Vale, Heather Paxson, Margery Resnick, George Verghese, Charles Leiserson, Tomás Lozano-Pérez, Diana Henderson, Sanjay Sarma, Alan Oppenheim, Patrick Winston, Dennis Freeman, Rick Danheiser, Rohan Abeyaratne, Chancellor Cynthia Barnhart, Professors Chris Kaiser, James Orlin (standing l-r); Professors Havel Sive, Arthur Bahr, Lorna Gibson, Cathy Drennan (seated l-r) in the Silverman Skyline Room.
Photo: Dominick Reuter

The new fellows were introduced publicly by Dean Dennis Freeman before a symposium titled "Undergraduate Education Goes Global: Learning from the MIT-SUTD Collaboration." Symposium speakers included Professors John Brisson (Mechanical Engineering), John Fernandez (Architecture), Diana Henderson (Literature), Chris Kaiser (Biology), and Lawrence Sass (Architecture); Professor Samson Lim of the Singapore University of Technology and Design (SUTD); and Karen Hao '15 (mechanical engineering).

Speakers Chris Kaiser, Lawrence Sass, Diana Henderson, Karen Hao, Samson Lim, John Fernandez, John Brisson, with moderator Dennis Freeman at the MacVicar Day symposium. Photo: Dominick Reuter

MacVicar Day concluded with a dinner hosted by Provost Martin Schmidt and Chancellor Cynthia Barnhart at the Silverman Skyline Room. A 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.

2015 MacVicar Faculty Fellows Cathy Drennan, Lorna Gibson; joined by Dean for Undergraduate Education Dennis Freeman; Arthur Bahr, and Hazel Sive in the Silverman Skyline Room. Photo: Dominick Reuter

OFS organized three other events and three luncheons for the fellows, including a reception with newly tenured faculty and a reception with new faculty.

The MacVicar Program team includes Associate Dean Mary Enterline, administrative assistant Deborah Boldin, and administrative assistant Brian Nelson.

Enrollment Tools

During the fall and spring terms, an important set of enrollment tools was successfully piloted in limited-enrollment subjects designated as Communication Intensive in the Humanities, Arts, and Social Sciences (CI-H/HW). These subjects make up half of the Communication Requirement.

At the beginning of the fall term, incoming freshmen, transfer students, and students returning from leaves entered their choices for CI-H/HW subjects using the subject selector introduced in spring 2014 for continuing students. For the first time, class scheduling for all students was done once, at the end of orientation. During this year's scheduling, a new algorithm optimized student choices and placed students into their CI-H/HW subject preferences while maintaining enrollment caps, giving priority to students who were beginning or were furthest behind in their Communication Requirement. Before classes began, students and their advisors knew which students were enrolled in which CI-H/HW subjects. More than 90% of the 1,990 students who used the selector received one of their choices.

After scheduling, waitlists sorted according to priority groups set by SOCR became available. Students no longer had to physically visit multiple classes to find out where spaces existed; instead, they could see which subjects had openings, check their priority groups, and place themselves on waitlists. Instructors could view the lists and, if places were available, make enrollment offers. More than twothirds of waitlisted students received offers.

Based on feedback from users, the project team implemented enhancements to the enrollment tools, which were piloted for the spring term and during May's preregistration for the fall term.
On behalf of the project team, OFS assessed the pilot, analyzing data on use of the enrollment tools and surveying students in and instructors of CI-H/HW subjects. As in the fall term, more than 90% of the 1,085 students who used the selector in the spring term received one of their choices.

In the spring survey of instructors, a majority of respondents reported spending less or the same amount of time and effort in establishing the final roster of enrolled students as compared to their last time teaching a CI-H/HW subject. Two-thirds of respondents agreed that this term's enrollment tools process was an improvement from the process in place before the AY2015 fall term.

This project is jointly sponsored by Dean Henderson, Registrar Mary Callahan, and Eamon Kearns of Information Services and Technology (IS&T), with business leadership provided by Dean Henderson and staff from OFS (Associate Deans Mary Enterline

and Kathleen MacArthur and communications/data specialist Rosanne Santucci). Staff associate Jason Donath joined the OFS project team members in carrying out the assessments.

Subject Evaluation

During AY2015, the Subject Evaluation Advisory Committee (SEAC) examined the possibility of extending the evaluation window as a means of raising response rates. After speaking with colleagues and looking at MIT and peer data, SEAC has recommended moving the two-week evaluation period one week later, beginning the Friday before the final week of class and ending at 5 pm on the Friday of final exam week. Grades would need to be withheld in order for students to complete their evaluations without causing a conflict of interest. There would be several advantages to this change; for example, students would have time to complete evaluations after final exams and projects are finished, and subjects could be evaluated as a whole, regardless of whether or not they involve final exams, presentations, or papers. SEAC's recommendation has been proposed to the registrar, the incoming chair of the faculty, and the director of emerging solutions in IS&T and is currently under review.

During the end-of-term evaluation period for spring 2015, 993 subjects in 38 departments and programs were evaluated online. A total of 16,131 evaluations were completed by 5,914 students, including ratings and comments for 2,040 instructors. The average response rate for subjects evaluated online was 57%, excluding registered listeners. The average overall rating of subjects was 5.9, and the average overall rating of instructors was 6.1 (1 = very poor, 7 = excellent).

SEAC is composed of faculty from all five schools and two student representatives and is chaired by Dean Henderson. The OFS subject evaluation team includes Dean Enterline, Rosanne Santucci, Deborah Boldin (coordinator for subject evaluations), and Brian Nelson.

Support of Faculty Governance

OFS staffs and supports the Committee on the Undergraduate Program (CUP) and its subcommittees (SOCR and SHR), providing a valuable link between the work of the Office of the Dean for Undergraduate Education (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. OFS staff who helped to manage the committees' activities include Assistant Dean Genevre Filiault (CUP), administrative assistant Eileen Milligan (CUP), Dean MacArthur (SHR and SOCR), and staff associates Jason Donath (SHR and SOCR) and Lauren Weitkamp (SOCR and SHR).

The CUP, SOCR, and SHR executive officers 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.

Deans Henderson and MacArthur collaborated with the Department of Biological Engineering (BE) in developing a funding proposal for a change in the staffing of the department's communicationintensive subjects in the major. Dean MacArthur has been part of the search committee for a new BE communication instructor.

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 the term, and encouraging students to contact the CR office for individual advice about pace and 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.

Support to SOCR, provided by Dean MacArthur and Lauren Weitkamp, included managing the subcommittee's review of proposals for 20 new CI subjects and relicensing proposals for 12 CIH subjects, supporting SOCR's project to share good practices in communication instruction, and providing feedback to the group developing the enrollment tools pilot in CIH/HW subjects in AY2015. Dean MacArthur organized and facilitated the fall workshop for CI-H/HW instructors. The workshop was well attended by faculty and lecturers, and its agenda provided ample opportunity for robust discussion and exchange of good pedagogical practices.

Administration of the Humanities, Arts, and Social Sciences Requirement

The second cohort of students to complete the revised distribution system within the HASS Requirement graduated this year. Patricia Fernandes continued her exemplary work in advising students, providing general advising and reminders to students as they progressed through the requirement and evaluating student petitions and readmissions cases in conjunction with Student Support Services and SHR.

Students submitted 1,271 HASS concentration proposals and 1,145 completion forms. Members of the Class of 2015 completed the highest numbers of concentrations in economics (219), music (102), Spanish (75), comparative media studies (69), and Chinese (53). They completed a total of 247 concentrations in foreign languages (including Spanish and Chinese). Literature, philosophy, political science, and theater arts remain popular, each with around 40 to 50 students.

Support to SHR, provided by Dean MacArthur and Jason Donath, included managing the subcommittee's subject approval process and providing context for discussions. Also, Dean Henderson and Donath held the yearly Independent Activities Period (IAP) meeting of HASS Exploration (HEX) Program instructors and administered funds supporting their joint activities.

The online HASS concentration form was successfully implemented in the fall of AY2015 for students who plan to graduate after June 2015. The online form replaced the paper, two-form (proposal and completion) process. Students still need to submit the form twice—once to propose and once to confirm completion—but no longer need to carry paper forms from office to office. In preparation for this transition, the project team concluded the forms' development and testing and the migration of existing forms. Patricia Fernandes developed a communication plan for the project and, along with Rosanne Santucci, provided a number of demonstrations to academic units. Dean MacArthur joined the project team this fall as the new form was made available to students.

Student HASS concentration form deadlines are in the spring term for most students; the team anticipated light use of the form in the fall and much heavier use over IAP and early spring. Following the student deadlines in February, the project team surveyed students, advisors, and administrators. Overall, students and advisors found the online form easy to use and an improvement over the paper form. By the end of the spring term, more than 1,200 online HASS concentration forms were in the new system.

As a result of their outstanding efforts over the past few years, the project team's members (Patricia Fernandes, Rosanne Santucci, Deans Enterline and Filiault, and representatives from IS&T) were part of the Forms and Petitions Team that received a 2015 Institute Excellence Award for Serving the Client.

Curriculum Development Funds

Faculty groups developing new curricula received $381,000 from the d'Arbeloff Fund for Excellence in Education (three awards) and from the Alumni Class Funds (11 awards), supported by the Classes of 1951, 1955, 1972, and 1999. 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. The call for proposals focused on projects aimed at introducing online components to MIT classes that enhance faculty-student interactions as well as development of subjects offered in the first year and as General Institute Requirements (GIRs).

Dean Enterline, Brian Nelson, and Deborah Boldin administered the funds, with Rosanne 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 Committee on Academic Performance, distinguished fellowships, MITx grants, final exam scheduling, information technology (IT) accessibility, student well-being, enrollment tools, and Title IX. The officers also met with the community and equity officer, the IS&T vice president, the director of the MIT Libraries, the dean for undergraduate education, and the chancellor.

Dean Filiault and Martha Janus (administrative assistant in the Office of the Registrar) provided staffing for the group.

Staff Changes and Notes

In August, OFS was pleased to welcome back Lauren Weitkamp in the position of staff associate, curriculum and faculty support.

In June 2015, Deborah Boldin, Eileen Milligan, and Brian Nelson (the OFS Move Squad) received a DUE Infinite Mile Award for Communication and Collaboration.

At the end of June, Dean Henderson returned to her position as professor of literature full time.

Even amid a March relocation from Building 35 to Building 5, the OFS staff remained profoundly capable, knowledgeable, dedicated, and helpful to students, faculty, and staff alike. We are deeply indebted to them all.

As the office's outgoing director, I cannot express forcefully enough my gratitude to and appreciation of the OFS staff. This is a remarkable and talented team that helps to maintain MIT's standards of excellence and lead us forward with intelligence and integrity. I will miss working with them on a daily basis but feel confident that our curriculum, faculty support, and educational infrastructure will continue to be sustained and improved by their extraordinary efforts.

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 (URM) groups, with the ultimate goal of developing leaders in the academy, industry, and society. The 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.

The vision of the OME is to "imagine an MIT experience where all students are connected, happy, excelling, expanding their boundaries, and inspired to follow and achieve their passions." The Office of Minority Education plays an integral role in shaping the college experience of students from under-represented groups through our array of programs and services. In so doing, OME impacts the experience and overall success of all MIT students and moves MIT closer to fulfilling this vision.

OME Signature Programs

Interphase EDGE

Interphase EDGE (Empowering Discovery | Gateway to Excellence) is a two-year scholar enrichment program which includes a seven-week summer session as well as programming during the academic year (through the end of sophomore 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 (IP) curriculum is uniquely designed to impart pivotal concepts that increase long-term academic success. The program is designed to not only give students an "edge" on their MIT experience, but also to catalyze their success beyond MIT. During the summer and academic year, scholars participated in a range of personal and educational seminars and activities designed to ensure their smooth transition into college life. Throughout the academic year, scholars continued to build upon the relationships created during the summer by attending monthly meetings with EDGE advisors and monthly professional and academic enhancement events, including programs that exposed them to various career pathways.

Since the implementation of Interphase EDGE in 2012, an MIT faculty resolution was passed that requires all first-year students to be advised or mentored by a faculty member. As a result, Interphase EDGE staff served as first-year advisors to only about half of the 2013 (IP13) cohort, and did not advise any of the 70 scholars who made up the 2014 Interphase EDGE (IP14) cohort. The Interphase EDGE advising component is a critical aspect of the Interphase model. The program's advising philosophy is one of increased access, personalized attention or high touch, and proactive engagement, and we believe it has yielded notable—although preliminary—results. For example, for the 2012 and 2013 first-year scholars advised by Interphase EDGE staff, fall fifth-week flag rates declined to 18.2% and 13.5%, respectively. For the IP14 cohort, the fall fifth-week flag rate rose to 24.3%, which is higher than any fall semester since Interphase EDGE was implemented, and it is also higher than the fall semester prior to the implementation of Interphase EDGE. In fact, prior to implementing the new Interphase EDGE model,

the fifth-week flag rates for Interphasers were significantly higher (e.g., 42.9% in 2010 for 70 scholars; 20.3% in 2011 for 69 scholars). These are early indicators; however, we believe that there is a correlation that suggests that the new Interphase EDGE model can positively impact academic outcomes when all aspects align with the program's proactive engagement and advising model.

Another major component of the Interphase EDGE model is academic-year programming. Throughout the year, IP14 Interphase EDGE scholars attended faculty mixers, confidence workshops, and workshops designed to help them choose a major prior to their sophomore year. In August 2014, second-year or sophomore Interphasers (IP13 scholars) participated in a two-day retreat at the Connors Conference Center. The primary objectives of the retreat were to reconnect the cohort, to help them reflect on lessons learned during their first year at MIT, to reestablish their connection to the MIT community, and to help them begin the process of thinking about their lives or pathways post MIT. In addition to the retreat, Interphase EDGE advisors held monthly individual check-ins with the sophomores, connected the scholars to various MIT programs and resources for upperclassmen, and facilitated informal focus groups with the scholars to discuss program outputs (plus-deltas).

Seminar XL/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 during the semester for 90 minutes, twice per week 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 AY2015, a total of 191 students participated in the program, which is an increase of 10% in students from AY2014, with over 200 enrollments between Seminar XL and LE. (Note that the total number of participants describes individual participants; however, students may enroll in more than one subject.) A total of 21 students participated in Seminar XL-LE sessions. LE sessions are the same as the regular sessions, but they begin after Add Date, and students can earn partial credit for LE participation in a course in which they received a fifth-week flag. The staff of 32 facilitators delivered content in 17 different subjects, two of which are sophomore pilot courses, i.e., introductory departmental courses considered by many students to have a high level of difficulty. It is important to note that Seminar XL/LE provides an invaluable service to the Institute, as it is a program/service that is used frequently by all undergraduates, as 28.8% of the AY2015 participants were non-minority.

The Seminar XL training and evaluation plan, developed in collaboration with the MIT Teaching and Learning Laboratory (TLL) over the past two academic cycles, involves offering facilitator training to new and returning facilitators and administering five quantitative assessments with five data points via classroom observations. After analyzing these data points from participants, we found that:

- Participants rated the "quality of teaching" in Seminar XL a 4.4 out of a scale of 5, with 5 being the highest
- 93% of the participants who responded in the fall stated that they would "recommend their facilitator"
- Participants stated that they "understood concepts better" at an average of 4.2
- Participants stated that they became "better problem solvers" at an average of 3.8

In AY2013, survey data and classroom observations revealed that a key challenge for Seminar XL was the consistent delivery of weekly worksheets or problem sets—problems aligned with the course content. Starting in AY2014 and continuing in AY2015, we hired facilitators that solely focused on developing weekly worksheets/problem sets that more closely aligned with the course content. However, to successfully deliver the sophomore pilot subjects, we will need to continue to work with departments and professors who teach the sophomore courses to ensure that those worksheets also meet the needs of our students and align closely with course syllabi. If the sophomore pilot courses grow in number and interest, we will need to recruit and hire more advanced upperclassmen, graduate students, and/or postdocs to facilitate these offerings.

Laureates and Leaders

Laureates and Leaders, the OME's signature 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. This June, 22 senior laureates graduated from MIT. Of the 22, eight will go on to PhD programs, two will pursue a MD/PhD, three will enter master's programs, one will take a gap year before applying to MD/PHD programs, and seven will work in industry. There are currently 19 students enrolled in the program.

AY2015 proved to be a year for change in the OME. The program lead for Laureates and Leaders was out on maternity leave, so the program was modified. We continued to serve the 19 students enrolled in the program, but we did not accept new students in AY2015. New students will be selected and inducted into the program in fall 2015. To date, 32 students have applied to the program, proving that interest in the program remains strong.

Mentor Advocate Partnership Program

The Mentor Advocate Partnership (MAP) is a successful volunteer mentoring program for MIT freshmen. AY2015 marked its seventh year. However, staff transitions also impacted this program. The program lead was out on extended medical leave during the recruitment and enrollment cycle, so we pushed back the enrollment cycle until fall 2015. We did, however, manage to keep one of our mentoring initiatives active.

The MAP E-Mentoring Initiative (EMAP) is an extension of the traditional MAP program. The goal of the program is to help students transition from academia into the work environment. Protégés communicate with corporate and alumni mentors via phone, Skype, and email. The AY2015 program included sophomores, juniors, and seniors. The MAP E-Mentoring cohort consisted of 57 protégés and 53 mentors from BP, Cisco, Draper,

Intel, MIT Lincoln Laboratory, NASA Goddard, Raytheon, and Wells Fargo. Overall, 91% of protégés who responded to the end of year survey felt they benefited from the EMAP program. In addition, 92% of mentors who responded to the end-of-year survey felt they gained personally from these mentoring relationships, as well.

Master Your Future

Master Your Future (MYF) is funded and delivered in collaboration with the Industrial Advisory Council for Minority Education (IACME). The events and workshops are designed to help sophomores, juniors, and seniors successfully navigate the work environment. There are four MYF professional development modules: Career Paths, Job-Finding Skills, Business Etiquette, and Employability. The program lead for MAP, at the time, was also the program lead for Master Your Future. Therefore, we streamlined our programming in this area as well and only offered a spring session entitled, "Unconscious Bias: Is it Following You?" The workshop helped students explore the unconscious biases that shape perspectives and impact decision-making. Thirty-one students participated in the session.

New Initiatives

Hot Chocolate and Hugs

Last year was a difficult year for the entire MIT campus. We were all affected by the student deaths in our community. Despite being short staffed, we wanted to do something special for students, to show them that we care. On a Saturday morning conference call, we developed Hot Chocolate and Hugs, and the program was up and running two days later. Just as the name suggests, we welcomed students into the OME office for hot chocolate and hugs from staff. The student response to this simple gesture of care and compassion was overwhelming, and it reinforced the notion that even a small-scale, low-budget program like Hot Chocolate and Hugs can have a huge impact on students. The program will likely become one of the many services we provide for students each year.

Functional Enhancements

Talented Scholars Resource Room or TSR^2 (formerly the Tutorial Services Room, TSR)

This year, the Office of Minority Education's Tutorial Services Room (TSR) was renamed. The new name is the Talented Scholars Resource Room or TSR^2. The TSR^2, currently housed in Building 16-159, is a vital resource for students and for the faculty and staff who provide advice, guidance, and referrals to students.

With this new name—suggested by students—we hope that we can dispel some myths while simultaneously sending positive messages about asking for, and taking advantage of, academic resources and support. One such myth is that the OME runs the TSR^2, so only minority students need tutoring or academic support at MIT. The reality is that many students need such services. Another myth is that non-minority students are not welcomed or encouraged to take advantage of TSR^2 services. In fact, last fall, 36% of the students who used TSR^2 services were non-minorities.

In addition, we often find that some students are hesitant to use academic support services because of what they believe other people will say or think about their intelligence and academic ability; or if they use the TSR^2 or similar support services, it in some way proves that they really don't belong at MIT. Of course, a new name won't fully address or mitigate these concerns, but it is an important step in the right direction. It's essential for all students to know that seeking help doesn't make them any less talented or scholarly. In fact, it is just the opposite. Taking advantage of available resources and support can enhance their chances of excelling at MIT.

The TSR^2 offers one-on-one tutoring, group tutoring or Homework Nights, exam reviews, and a study lounge for undergraduate students. Historically, first-year students do take advantage of TSR^2 services. However, upperclassmen also use the TSR^2. In September 2014, for one-on-one requests, we piloted our automated online database, which allowed students to log in and schedule their own appointments based on tutor and subject availability. The automated system enabled students to better manage their tutoring requests/needs. Additionally, it is a streamlined process, so students can schedule an appointment, get confirmation, and receive reminders about pending appointments with a few simple clicks. As students adapted to the new system, the number of students who reported that the scheduling process was efficient increased from 3.93 in fall 2014 (out of a scale of 5) to 4.76 in spring 2015. As students continue to adapt to the new system and additional enhancements are implemented, we believe that the overall satisfaction with the scheduling process will continue to grow. The following table provides a summary for overall visits from fall 2014 to spring 2015:

Fall 2014 Semester

Visit description	Number of visits
Homework night	**92**
One-on-one tutoring (one time)	**41**
One-on-one tutoring (weekly/standing)	**31**
Small group tutorial	**40**
Exam reviews	**63**
Lounge/study on my own	**353**
Total (semester)	**620**

Spring 2015 Semester

Visit description	Number of visits
Homework night	**37**
One-on-one tutoring (one time)	**36**
One-on-one tutoring (weekly/standing)	**24**
Small group tutorial	**8**
Exam reviews	**52**
Lounge/study on my own	**504**
Total (semester)	**661**

This year, we worked with 38 tutors (upperclassmen and graduate students) who provided coverage for homework nights, assisted with on-on-one tutoring, and covered 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. Additionally, we continued to enhance our evaluation and assessment tool so that students receiving tutoring services could give us feedback. We received a total of 141 responses, and some highlights include:

- My tutor was knowledgeable in the subject material: 4.80 in fall 2014, and 4.77 in spring 2014 (out of 5)
- How would you rate the overall quality of the tutor you worked with for this session: 4.73 in fall, and 4.75 in spring
- I would request/recommend this tutor again: 95.9% in fall, and 95.3% in spring
- The scheduling process was efficient: 3.93 in fall, and 4.76 in spring

This year, we also moved the TSR^2 from Building 12 to Building 16. This major change from Room 12-124 into Room 16-159 has facilitated greater visibility for the TSR^2. We saw the overall number of visits increase significantly from 434 in fall 2013 to 620 in fall 2014; likewise, the total number of visits increased from 401 in spring 2014 to 661 in spring 2015. Therefore, this change in location has been a great opportunity for the TSR^2 to continue its rich 30+ year history of providing excellent tutoring resources to MIT students.

Momentum

In January 2015, 34 students participated in the Momentum program, an interdisciplinary project-based class held during the Independent Activities Period (IAP). Momentum is fully funded by the OME's Industrial Advisory Council for Minority Education (IACME). IACME is comprised of 20 corporate, government, and nonprofit organizations that support the OME and the students we serve. In addition, two IACME partners, Lockheed Martin and MIT Lincoln Laboratory, provided additional funding to support the program. The IACME representatives also served as judges for the Momentum course competition, lightning talks, and poster session.

This year's Momentum theme was: "Explore the brain computer interface—control the world with your mind." The lead instructor for the course was Professor Joel Voldman in EECS. Professor Voldman is a member of the OME Faculty Advisory Committee, and he is also the MIT PI for an NSF Engineering Research Center called the Center for Sensorimotor and Neural Engineering (CSNE). This was a true partnership; Professor Voldman (and one of his graduate students) provided financial support and worked with the OME staff and the student participants throughout the entire course. In addition, a faculty member from the University of Washington, the lead institution for the CSNE grant, traveled to MIT to teach a course on ethics to the students. Momentum students also used the D-Lab and the EECS lab to build their robotic arms or prototypes.

Although January snowstorms threatened to totally disrupt the planned schedule of events for the course, the students were able to participate in all of the critical components, two of which were new enhancements for the two-day culminating events.

On day one, two students from each team gave five-minute lightning talks that allowed them to present each team's final design to the IACME judges. In years prior, entire teams presented technical talks for about 30 minutes to the judges. In this new model, the team members selected their presenters for the lightning talks, and then all team members participated in the newly added interactive poster session. At their posters, each team member had to talk about project outcomes and their specific roles and contributions.

On day two, the eight student teams used EMG sensors to control a robotic arm to successfully complete tasks as part of the final competition. With the overarching goal of creating a robotic arm that would help a patient carry out a normal day-to-day activity, the teams competed in a competition that involved hosting a dinner party. The tasks included writing invitations, calling guests, arranging place settings, making coffee, and serving hors d'oeuvres. Through this experience, students learned about assistive technologies, how to control the robotic arm, and how to program Arduinos.

Finally, five IACME partners interviewed the Momentum students for summer internship opportunities. Twenty students received interviews. Eleven students received offers and three students accepted their offers. A video of the 2015 program is available on YouTube.

Fund Development

Each year, we receive financial support from the IACME group, which now comprises 20 corporate, government, and nonprofit partners (including Black Alumni/ae of MIT and Latino/a Alumni/ae of MIT). This council is co-chaired by MIT alumnus Dr. Robert Kurtz '63. IACME provides approximately $80K annually to underwrite costs associated with current OME programs and initiatives like Momentum, Master Your Future, MAP E-Mentoring, and several networking and informational events.

We will continue our partnership with the Center for Sensorimotor and Neural Engineering (CSNE). The OME and the CSNE collaborate to further the center's diversity, education, and outreach goals. The OME and the MIT Office of Engineering Outreach Programs receive approximately $40K each year to offer workshops, seminars, and courses that expose students to careers in neural engineering as well as opportunities to do undergraduate research in Center-related fields. Through Interphase EDGE, Laureates and Leaders, and Momentum, the OME hosted three major events exposing 154 students to the CSNE's research. In addition, one MIT student will participate in an undergraduate research experience with the Center this summer at the lead institution, the University of Washington.

Finally, with the assistance of Reginald Van Lee '79, we established the Kristala L. Jones Prather (1994) Interphase Fund. This year, we partnered with the MIT Alumni Association to use their new crowd-funding platform. We were able to raise funds and engage Interphase alumni who had never given to MIT. Preliminary feedback suggests that with the right level of engagement and touch, we have an opportunity to influence underrepresented alumni to give to MIT, and to Interphase EDGE in particular. We feel we are moving closer to establishing this fund as an endowed account.

Staffing Changes

The OME organizational structure includes the associate dean/director, three OME deans (one associate and two assistants), one staff associate II, one program coordinator, two program assistants, and two administrative assistants. This year, however, was particularly challenging for the OME, because we were short-staffed; three team members were out for an extended amount of time (one was on maternity leave, another on medical leave, and the third staff member moved out of state).

To address staffing constraints, we hired a temporary staff person (a recent MIT alumnus) to help us with various efforts within the office. We were then able to maximize and leverage current funding to allow us to convert that temporary position into a regular program assistant (AA1) position. In addition, we hired David Kenton, JD, from Florida State University for the open assistant dean position.

DiOnetta Jones Crayton
Associate Dean, Office of the Dean for Undergraduate Education
Director, Office of Minority 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 the development and modification of educational policies and procedures in accordance with Institute policy and local, state, and federal laws. The Registrar's 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 Office of the Registrar, in partnership with Information Services and Technology (IS&T) and the offices of the Dean for Undergraduate Education, the Dean for Graduate Education, and the Dean for Student Life, celebrated the successful completion of the 2011–2014 Education Systems Roadmap. Key stakeholders were engaged to create the 2015–2018 roadmap while mission-critical work continued on core systems. The Registrar's Office:

- Deployed student scheduling and final examination scheduling systems.
- Enhanced the online registration and online add/drop/change features to incorporate a new system for the selection and assignment of communication-intensive humanities, arts, and social sciences (HASS) subjects, and also messaging and notifications related to athletes retaining academic eligibility.
- Deployed a vendor solution to manage MIT's catalog, the MIT Bulletin, in partnership with the Reference Publications Office.
- Assisted the Office of Undergraduate Advising and Academic Programming in developing requirements for and testing an online petition for late adds, drops, and changes in registration.
- Devised and tested the changes needed in the degree audit to accommodate the elimination of H- and G-level graduate subject credit.
- Streamlined authorization procedures for a number of systems so that customer service was increased and the risk of inappropriate authorizations decreased.
- Provided input to a cross-departmental committee charged with implementing Open Researcher and Contributor ID (ORCID), a research identification system.
- Engaged with Harvard University to develop digital cross-registration between the two institutions.

Educational Policy and Governance

The Office of the Registrar played a major role in advising senior administrators and faculty committees on several complex student issues involving tuition, registration, academic calendar, and degree programs. Highlights of the year's efforts included:

- Actively participated in discussions as a member of the newly formed Information Technology Policy Committee.

- Worked with the faculty governance system to add a representative from the Registrar's Office to the membership of the Committee on Graduate Programs.
- Advised on the implications for the graduate degree audit of eliminating the distinction between G- and H-level graduate subjects.
- Provided advice and guidance on creating course codes and degrees for the new Institute for Data, Systems, and Society.
- Advised the System Design and Management Program and the Supply Chain Management program on their options for course codes following the winding up of the Engineering Systems Division.
- Worked with Admissions, the Office of the Dean for Graduate Education, IS&T, the International Scholars Office, and the Sloan School of Management to establish program designations for several programs in which the Sloan School hosts visiting international students.
- Worked with the Office of General Counsel to develop an agreed-on procedure to follow when a student makes a request under the Family Educational Rights and Privacy Act (FERPA) to view his or her academic record.
- Developed a handout for the academic departments to remind them of their responsibilities under FERPA.
- Facilitated the review of a proposal to establish a new undergraduate degree in Theater Arts (21M-2), which was ultimately endorsed by the faculty, as well as a proposal to terminate two undergraduate programs offered by the Department of Civil and Environmental Engineering (1-C and 1-E).
- Facilitated the effort by the School of Humanities, Arts, and Social Sciences to restructure the program options available under Course 21 as an interdisciplinary degree, thus retiring the ambivalent concept of a "major departure."
- Worked in partnership with the appropriate departments and the Committee on Curricula (CoC) to define degree charts for undergraduate programs that had previously been officially documented only in narrative form (Courses 3-A, 4-B, and 10-C), and develop a template, in consultation with the Dean for Graduate Education, for master's degree programs.
- Worked proactively with undergraduate officers and faculty committees to raise awareness of issues with final examination scheduling and to develop a viable model to ease student stress and ensure equity in assigning examination periods. The new approach, which was successfully implemented in the spring 2015 term, resulted in an examination schedule that cut the number of student conflicts by more than half.
- Supported the effort by the CoC to adopt standards for maximum amount of permissible General Institute Requirement (GIR) overlap in undergraduate programs on the basis of how programs incorporate subjects that fulfill the restricted elective in science and technology (REST), Institute Laboratory, and HASS requirements.

The office provides ongoing staff support to the CoC. The CoC reviewed 198 applications for double majors, 18 petitions regarding the REST requirement, and two Institute Laboratory petitions. On behalf of CoC, the Curriculum Management Section also works with the Subcommittee on the Communication Requirement and the Subcommittee on the HASS Requirement to coordinate the complex review of GIRs for former students who apply for readmission after failing to complete their undergraduate studies within 10 years of original entry. Five such cases were reviewed during AY2015.

Curriculum and Classroom Management

The dynamic nature of MIT's curriculum was aptly illustrated by the addition of 136 subjects (59 undergraduate; 77 graduate), coupled with revisions to 2,281 existing subjects (308 undergraduate, 1,973 graduate). Represented in these totals are 4,978 revisions, with 73% emerging from the graduate curriculum driven by the redesignation of H-level subjects. In addition, 130 subjects were removed from the catalog and 12 were reinstated. MIT begins AY2016 with a regular curriculum that boasts 3,760 subjects (46.2% undergraduate, 53.9% graduate).

The scheduling of MIT's academic classes is a critical responsibility of the Registrar's Office, and a new scheduling system (UniTime) went into production in the fall of 2014. The Schedules Section made 5,141 classroom reservations for lectures, recitations, laboratories, and design sessions in support of MIT subjects. The section processed an additional 10,498 reservations for academic activities: exams (including final exams), review sessions, not-for-credit seminars, office hours, tutorials, presentations, and so on.

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 23,628 classroom reservations for 6,044 events on behalf of the MIT community for the fall and spring terms and more than 9,000 reservations for almost 700 events for the summer.

Classroom Management Highlights

The office provided leadership in the planning and execution of the following:

- Changes to classroom inventory
- Led the effort for the design phase of the renovations of lecture hall 6-120 and classrooms 4-364, 5-232, and 36-372. These projects will be completed by the start of the fall 2015 term.
- Ongoing renovations of 12 classrooms in Buildings 2 and E52 moved forward; construction on those projects began during the fall 2012 term, and these classrooms will be available for classes in spring 2016.
- Enhancements to classrooms
- Installed sliding chalkboards and motorized projection screens in 13-3101, 13-4101, and 13-5101.
- Installed new lighting control system, tile floor, and paint in lecture hall 26-100.

- Replaced the heating, ventilating, and air conditioning system in classrooms 66-144, 66-148, 66-154, 66-156, 66-160, and 66-168 to improve climate control and reduce disruptive ventilation noise.
- Replaced classroom chairs in lecture room 37-212.
- Retrofitted lecture spaces 4-231, 4-237, 32-123, 32-141, and 32-155 with energy-efficient LED lighting. Replaced acoustic wall panels and painted seven classrooms located on the first floor of Building 56.
- Upgraded lighting and whiteboard in the technology enabled active learning classroom 26-152.
- Installed new video projectors and updated code to either MediaLink or Crestron control systems for classrooms 1-115, 1-150, 3-133, 4-364, 14E-310, 26-100, 34-101, and 54-100.
- Installed new audiovisual systems, including video projector and connection points for laptops, in classrooms 26-328, 34-301, 34-302, 34-303, 36-112, 36-156 and E51-085.

Data Request and Academic Calendar Highlights

This year the Office of the Registrar provided student data to faculty committees, several deans, academic departments, and to some student thesis projects. Outcome measures for Interphase and Minority Introduction to Engineering and Science students, curriculum analysis of Course 2A, and analyses of such programs as the Technology and Policy Program and Leaders for Global Operations are examples of some of the data requests that came into the Registrar's Office this year. The Office's staff also assisted departments in auditing requirements for their majors, helped them find out how many non-major students were enrolled in their classes, and provided much-needed data for their visiting committees. Students did projects investigating how the perceived quality of instructors influences choice of major, the level of student interest in healthcare entrepreneurship, and an extensive empirical evaluation of the Experimental Study Group Program.

Several studies this year focused on student academic load and the undergraduate graduation rate. the Registrar's Office produced several longitudinal analyses of student choice of major and double majors, unit load distributions by student year and department over time, number of transfer and advanced standing units earned, and number of dropped subjects. The Registrar's Office provided data examining MIT's six-year graduation rate as well as the rates for various subsets of students and the number of units completed beyond those required. The office has begun a more in-depth look at those who do not finish within six years. These themes are of great interest to MIT's faculty and the Registrar's Office shall continue to partner with them in investigating these issues further in the coming year.

Registration

In AY2015, student enrollment was 11,319, compared with 11,301 in AY2014. There were 4,512 undergraduates (compared with 4,528 the previous year) and 6,807 graduate students (compared with 6,773 the previous year). The international student population, comprising citizens of 116 countries, was 3,302, representing 10.3% of undergraduates and 41.7% of the graduate population. (Students with permanent resident status are counted with US citizens.)

There were 4,226 women students (2,055 undergraduates and 2,171 graduates) at the Institute in AY2015, compared with 4,162 (2,041 undergraduates and 2,121 graduates) in AY2014. In September 2014, 501 first-year women enrolled at MIT, representing 47.7% of the freshman class of 1,050 students.

In AY2015, there were, as self-reported by students, 3,696 minority students (2,317 undergraduates and 1,379 graduates) at the Institute, compared with 3,644 (2,305 undergraduates and 1,339 graduates) in AY2014. Minority students included 510 African Americans (non-Hispanic), 133 Native Americans, 17 Native Hawaiians or other Pacific Islanders, 979 Hispanic Americans, and 2,057 Asian Americans. The first-year class enrolled in September 2014 included 554 minority students, representing 52.8% of the class.

Degrees Awarded

Degrees awarded by the Institute in AY 2015 included 1,099 bachelor's degrees, 1,719 master's degrees, 15 engineer's degrees, and 606 doctoral degrees—a total of 3,439 (compared with 3,479 in AY 2014).

Staff

Brian Canavan and Peter Hayes received the prestigious MIT Excellence Award for their work on the Student Forms and Petitions team. Alpha Sanneh received the DUE Infinite Mile Award for his outstanding service to the MIT community.

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 high-quality student-centered services to all undergraduates to enhance their academic success, social adjustment, and assimilation to the Institute. To achieve that vision, the UAAP provides programming, access to Institute resources, and services that recognize the many needs, diversity, and uniqueness of students at MIT. This includes coordinating freshman pre-orientation and orientation programs, facilitating academic advising and mentoring relationships, building community through the First Generation Program initiative, providing access to academic and personal support through Student Support Services (S3) and Student Disabilities Services, and promoting leadership development. UAAP responsibilities also include Undergraduate Research Opportunities Program (UROP) management, operation, and oversight; coordination of Independent Activities Period (IAP); and staff support to the Committee on Academic Performance.

New Initiatives

In spring 2013, the Faculty voted that all freshmen have a faculty advisor or mentor; UUAP continued to implement this in AY2015. To that end, 146 faculty members were recruited and 82% of the Class of 2018 were advised by faculty. This was an almost 20% gain over AY2014. Faculty mentored an additional 5% of the class. A structure of UAAP staff consultants continues to support these faculty advisors, serving not only as a resource but also backup when faculty were unavailable. Over the course of the year, 11 faculty–freshman receptions, hosted by Dean Freeman, took place to facilitate engagement among these individuals.

The UAAP organized a professional development series for its staff and campus collaborators. Attendance at each program approached 40 individuals. Programs included:

- Dr. John R. Jordan, Working Through MIT's Grief, attended by 17 people
- Jesse Begenyi, MSW, and Abigail Francis (MIT), Transgender@MIT, attended by 43 UAAP staff, undergraduate administrators, and Division of Student Life staff

From the Amgen Foundation, UAAP received approval of two four-year grants of almost $5 million. The first grant extends funding for the Amgen UROP Scholar Program and supports 20 undergraduates annually. The second establishes MIT as the Global Program Office with administrative oversight for 17 site programs in the US, five in Europe, and two in Japan.

In support of international immersion experiences for students, UAAP:

- Offered to support all faculty who engage undergraduates in research activities abroad,
- Funded 90 MIT International Science and Technology Initiatives Program UROP placements,
- Supported 55 traditional International Research Opportunities Program projects for summer 2014

These student research experiences took place in 31 countries.

The UAAP continued to participate in resource development efforts and stewardship with respect to UROP gifts and endowment, funds from the Amgen Foundation, the Lord Foundation, the Baker Foundation, the Class of 1959, and the Good Samaritan/ Mitzvah Fund. This year, we successfully secured two expendable gifts and an endowment was established to support student emergencies. Additionally, two endowments and a Charitable Remainder Unitrust were established for UROP.

The Office produced, with Academic Media Production Services, a video profiling a diverse group of first-generation students and faculty. This product will not only be a tool for admissions recruitment, but also will continue to raise the visibility of the First Generation Project and inform the MIT community.

With the intention of facilitating early engagement of first-year students in UROP, UAAP organized a Freshman Pre-Orientation Program (FPOP) called Discover Undergraduate Research. The over-subscribed program will be offered again during Orientation 2015.

Functional Enhancements

With Departmental Consulting, Analysis and Development (an Information Systems and Technology service), UAAP finalized the comprehensive database for all of the Office's functionalities, including supporting freshman advising, fifth weeks flags and academic performance, end of term review, S3, and Student Disabilities Services.

During IAP 2015, departments, administrative offices, ASA groups, and non-student groups sponsored 543 not-for-credit activities and 137 for-credit undergraduate subjects.

As part of a continued effort to engage faculty in freshman advising, UAAP hosted 11 receptions involving faculty and freshmen. Additionally, to support the academic success of first-year students, the Office also sponsored 30 learning strategy and academic programming sessions. Associate advisors offered 20 programs within their residences; this was a new focus and effort prioritized by the Associate Advisor Steering Committee. UAAP also hosted 31 additional events at which faculty discussed academic challenges, selecting majors, graduate school, first-generation student experiences, and personal stories of faculty career pathways. Finally, 11 events for returning student and 12 events for students with disabilities were offered to support those student communities.

Freshmen were advised by 146 faculty members plus 19 teaching staff and 21 administrators, including those who led 54 freshman advising seminars. In all, 435 students participated in an advising seminar, plus 60 in the Terrascope subject. Advisors were matched with 230 associate advisors who served as peer mentors to the first-year students. In addition to the new advisor training and the orientation advisor training for fall registration, two programs were offered: Sexual Misconduct at MIT: Title IX Efforts and Supporting Survivors, and End of Term Advising and Spring Planning.

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

With a new student advisory board and faculty advisor, UAAP introduced a third phase of the First Generation Program "I am" campaign. The Office organized a faculty feedback group to the faculty advisor and received approval for first-generation graduates to wear an identifiable sash with their commencement regalia. We sponsored 16 events, including a welcome dinner, faculty luncheons, an alumni dinner, study breaks, a service day at the Boston Food Bank, a Campus Preview Weekend panel, and a Boston-area dinner with first-generation students from Harvard University, Wellesley College, Brandeis University, Boston University, and MIT. Board members also attended the regional First Generation Summit held at Wellesley College in April 2015.

The three recipients of the UAAP 2014 Institute Convocation awards were Professor Rebecca Saxe (Arthur Smith Award for Contributions to Student Life and Learning); Professor Tonio Buonassisi (Baker Foundation Award for Excellence in Undergraduate Teaching); and Professor John Brisson (Earll M. Murman Award for Excellence in Undergraduate Advising).

Student Support Services

This year, the deans had 5,756 contacts, including appointments, walk-in visits, and significant telephone conversations. This represented a 9% increase from the previous year. Walk-in times continue to be heavily used, with a 39% increase over the past year. S3 processed 105 withdrawals (55% medical and 45% voluntary) compared with 99 last year; 100 of 151 applicants (66%) were readmitted.

For the Class of 2015, 66% of the graduates (723 out of 1,099) visited S3 at least once during their undergraduate experience.

Student Disabilities Services

In the same period, Student Disabilities Services had 902 scheduled appointments (an 11% increase) with students, and actively accommodated 486 undergraduate and graduate students (a 48% increase).

- The service witnessed an increase in the complexity of student needs for required accommodations and services, including students with learning disabilities and students with hearing, vision, or mobility impairments.
- One hundred students (a 35% increase) required temporary accommodations.
- Fifty-two students were employed to help support the academic accommodations for these students.
- Twelve events that provided additional support to this student population were sponsored.

Undergraduate Research Opportunities Program Activities and Funding

During the summer 2014 and the 2014–2015 fall and spring terms, 4,716 UROP projects were completed. Of the projects completed during the academic year, 68% were paid experiences and 53% of UROP students were female. Of undergraduates graduating in 2015, 89% participated in at least one UROP, and 83% of graduating underrepresented minority students (216 out of 259) participated.

UAAP provided $4,258,485 in direct funding. The direct funding budget is comprised of endowment income (41%), expendable gifts (20%), general Institute funds (38%), and foundation grants (1%). The UROP book-value endowment is $17.3 million, represented by 59 named endowed funds and 9 named gifts.

Faculty allocated $4,341,836 in support of UROP. Half of MIT faculty mentor and supervise UROP students. UROP remains the primary opportunity for students to engage with faculty outside of the classroom.

Future Plans and Initiatives

Continue to work to accomplish the goal of ensuring every freshman has either a faculty advisor or mentor.

Define programming to engage students with faculty mentors and identify a strategy to add value to the UROP experience. Survey UROP faculty supervisors to understand: (1) what they view as advantages and/or challenges in serving as research mentors to undergraduates; (2) how faculty define mentoring; and (3) how they develop relationships with students whereby they know them well enough to provide references.

As a result of the comprehensive review of the UAAP web publications and detailed recommendations for enhancing and streamlining content and navigation, we will hire an outside contractor to design a new web page presence and define new navigation for this office.

Continue to work with the Office of Leadership Giving with the intention of fully endowing MIT's Undergraduate Research Opportunities Program.

Finalize a large endowment gift to support the Student Emergency Fund within the S3 team.

Work with IS&T to identify consultants to develop online application systems for both the readmission and Freshman Pre-orientation Program (FPOP) application processes.

As a follow-up to the report of the Working Group that reviewed the International Student's Office and Support, as appropriate, partner with ISO to ensure a successful international student orientation and define additional UAAP programming that meets the needs of this cohort.

In the context of delivering more educational resources online, continue to ensure that the community addresses electronic accessibility for students with sensori-neural disabilities.

Staffing Changes

This year, one individual was hired: Evan Heisman became administrative assistant on the Student Support Services team (replacement hire).

Julie B. Norman
Senior Associate Dean for Undergraduate Education
Director, Office of Undergraduate Advising and Academic Programming

Reserve Officer Training Corps

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 academic year2015, and MIT's cadets continued to be recognized by the Air Force for their performance. During summer 2014, the juniors attended an intense field-training leadership course, where MIT Cadet Matthew Deyo earned the top 10% performer award. Each semester, AFROTC recognizes the detachment (out of 145) with the highest average grade point average and the highest average fitness score. This academic year, the cadets achieved both honors (for grade point average and fitness) for both fall and spring semesters. Also, the Congressional Medal of Honor Society and Foundation selected one AFROTC cadet nationwide, MIT's Cadet Martin York, to receive their prestigious award for leadership and dedication. He was recognized in a formal presentation during the fall semester by a Medal of Honor recipient.

Increasing the size of the cadet corps continues to be a priority. Although no AFROTC cadets were commissioned in AY2015, it is projected that approximately 10 cadets will join the program in the fall. This will significantly boost the numbers of the cadet corps. Part of this success is because of participation in MIT programs such as Campus Preview Weekend and support from MIT Admissions to identify interested ROTC candidates.

Table 1. Year-End Enrollment in Air Force ROTC (June 2015)

	Freshmen	Sophomores	Juniors	Seniors	**Total**
MIT	4	4	7	0	**15**
Harvard	0	1	1	0	**2**
Tufts	1	0	0	0	**1**
Wellesley	1	0	0	0	**1**
Salem State	0	0	0	0	**0**
Total	**6**	**5**	**8**	**0**	**19**

Highlights of the cadet training program included Air Force simulations in the new Joint ROTC Simulator; Career Day, with 15 active-duty officers; an enlisted panel with 10 noncommissioned officers; a remembrance ceremony that honored posthumously a Vietnam War Detachment 365 alumnus; and the annual Dining-In event. The Air Force, Army, and Naval ROTC programs combined to conduct a successful Pass-in-Review parade during MIT's Parent's Weekend, a sports competition, a Veteran's Day ceremony, a commissioning ceremony, and a formal joint-service military ball.

In addition to the weekly leadership training, two cadets attended the National Character and Leadership Symposium at the US Air Force Academy in Colorado

Springs, Colorado; four cadets traveled to Nellis Air Force Base in Las Vegas, Nevada, for a base visit and orientation flight in a fighter aircraft (F-16); 16 cadets traveled to Pease Air National Guard Base in Portsmouth, New Hampshire, for an orientation flight in a refueling aircraft (KC-135); and 18 cadets traveled to Fort Devens, Massachusetts, for a large field leadership exercise with three other AFROTC detachments. The cadet wing hosted more than 10 voluntary events over the course of the year, including morale and training events.

Staffing Changes

Ann Cronin, the AFROTC administrative assistant of 22 years, departed in September 2014. Eric Gibbs filled the position temporarily until the permanent hire, Camille Woods, arrived in April. There will be two military staff changes during the summer of 2015. Captain Michael Parry will depart in July and his replacement, Captain Peterson Dela Cruz, will arrive in August, after completing a deployment. Captain Robert Rivera will depart in August. His replacement has not been selected yet.

Lieutenant Colonel Karen Dillard, PhD
United States Air Force

Army Reserve Officer Training Corps

The mission of the Army Reserve Officers 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. The AROTC vision is to develop agile and adaptive leaders who utilize critical and creative thinking skills to solve complex, ambiguous problems.

Accomplishments

AROTC commissioned 14 officers this year, which met the commission goal of 11 officers assigned by Cadet Command as well as the Secretary of the Army's evaluation standards of viability. One of these 14 officers completed her PhD at MIT and was selected as one of the first 15 officers to serve in the newly developed Cyber Branch. Four cadets were selected for the ultra-competitive Educational Delay Program (only 88 out of 5,600 candidates nationwide were selected). These four cadets will attend graduate school before serving their army commitment as doctors, an attorney, and a chaplain. Six cadets, including one from MIT, earned the honor of Distinguished Military Graduate, awarded to the top 20% of all cadets nationwide.

As of May 15, 2015, 60 students were enrolled in the AROTC program, a small increase over the past year. More than $1,298,756.00 was awarded in scholarships for all students in the consortium. Army ROTC is poised to exceed its Army-directed commission mission for 2016. However, enrollment for the graduating classes of 2017 and 2018

is lower than in past years and the program will likely not meet the Army-directed commission missions in those years.

Table 2. Year-End Enrollment for Army ROTC (as of May 15, 2015)

	Freshmen	Sophomores	Juniors	Seniors	Total
MIT	0	1	1	1	**3**
Harvard	2	2	3	3	**10**
Wellesley	1	3	2	0	**6**
Tufts	1	1	1	5	**8**
Other Affiliates	9	5	11	8	**33**
Total	**13**	**12**	**18**	**17**	**60**

AROTC cadets continue to achieve excellence academically, physically, militarily, and morally and ethically. In April 2015, one of ARTOC's cadets was the recipient of the Armed Forces Communications and Electronics Association (AFCEA) Medal of Honor Scholarship in the amount of $5,000.00, and another cadet was awarded the AFCEA Edwin L. Miller award in the amount of $1,000.00. Both awards are highly competitive and awarded to only one cadet nationwide. At the annual Cadet Leader Course conducted at Fort Knox, Kentucky—attended by more than nearly 5,000 rising seniors nationwide—the AROTC cadets exceeded local, regional, and national averages in nearly all measurable areas, as they do every year. Three cadets were selected to participate in the Cultural Awareness and Language Proficiency and Project Global Officer programs over the summer, spending up to two months abroad in Estonia, Macedonia, and Chile. One cadet attended air assault school and one cadet attended airborne school. Four cadets served as congressional interns this summer. Two cadets are doing medical internships, one at Massachusetts General Hospital through Harvard Medical School. Two cadets will serve as cadet mentors and trainers at Cadet Initial Entry Training at Fort Knox. This summer, two of our cadets will serve with an active-duty unit and shadow an officer as part of the Cadet Troop Leadership Training program.

AROTC instructors continue to excel at classroom leadership instruction and hands-on training of cadets and of non-ROTC students here at MIT, continuing as a preeminent source of high-quality leadership instruction at MIT. During Independent Activities Period, the cadre participated for the 14th consecutive year, instructing a for-credit special seminar in leadership with the Sloan School.

In this past academic year, MIT's AROTC conducted the following major events: New Cadet Orientation (September and January); a Pass-In-Review in October; field-training exercises at the Fort Devens Army Reserve Forces Training Area in November and at Camp Curtis Guild in April; a formal dinner in November; a water-survival test in December; a military ball in March; and commissioning ceremonies at MIT, Harvard University, Gordon College, Tufts University, and Endicott College.

Staffing Changes

The Army assigned one new full-time instructor during the past year, Captain Emily Hannenberg (operations officer); two new part-time reserve officers and noncommissioned officers, Major Cara Salmon and Sergeant First Class Tahirin Perkins, to enhance the leadership experience and training for cadets; and two new Department of the Army civilians, John McHale (logistics technician) and Chris Bourget (human resources assistant).

Challenges and Plans for the Future

MIT AROTC's continued challenge is to remain viable by increasing the number of cadets in the program, especially cadets from MIT. Although the number of students enrolled in ROTC from the consortium has increased, low MIT enrollment is a significant issue that has been noted and is being reviewed by the US Army Cadet Command. The problem is exacerbated by the current economic downturn and the subsequent limited number of scholarships available across the nation. Admission of qualified AROTC applicants to MIT continues to be the most significant challenge; highly talented scholar-athlete-leader applicants often do not gain admission to MIT, or they accept appointments to the US Military Academy or ROTC scholarships to other schools. AROTC will continue to work with MIT Admissions to address this issue.

Lieutenant Colonel Peter F. Godfrin, Jr.
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 who aspire to become ensigns in the US Navy or second lieutenants in the Marine Corps. The mission of NROTC is to prepare 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 relevance 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.

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

Table 3. Year-End Enrollment in Naval ROTC (as of June 2015)

	Freshmen	Sophomores	Juniors	Seniors	Total
MIT	7	8	7	5	**27**
Harvard	3	4	4	1	**12**
Tufts	2	2	1	2	**7**
Total	**12**	**14**	**12**	**8**	**46**

Accomplishments

During the past summer, midshipmen dived aboard submarines, flew in maritime patrol aircraft, piloted aircraft carriers and amphibious assault ships, and landed with the Marines. A total of 35 successful midshipman summer cruises were conducted around the globe, including a high-visibility foreign exchange with the Japanese Navy. Academic year 2015 represented a period of technical innovation with the installation two new simulators in Building 53 at MIT. The Conning Officer Virtual Environment ship training simulator represents the latest immersive virtual environment technology and was installed at only five NROTC units nationwide.

By pooling resources from each ROTC program, the Institute, and alumni donations, a Joint Military Simulator Laboratory was christened by Dean for Undergraduate Education Dennis Freeman. This simulator provides operational decision-making exercises for cadets and midshipmen, which can be tailored both by service and by the subject being taught.

The academic year concluded on June 5 at MIT's Kresge Auditorium with the commissioning of five NROTC students, joined by an Army ROTC graduating senior. Rear Admiral Paul Sohl, returning for his 30-year MIT reunion, was the guest of honor and presented the oath of office to all newly commissioned officers.
During AY2015, five midshipmen were commissioned as ensigns in the Navy. Two ensigns were selected for aviation, two will begin their careers as submarine officers, and one will be a surface warfare officer.

NROTC hosted numerous high-profile visits and distinguished guests during AY2015, including:

- Admiral Harry Harris, US Navy, Commander U.S. Pacific Command
- Vice Admiral Sean Pybus, US Navy, Deputy Commander, US Special Operations Command
- Captain William Bray, Chief of Naval Operations Strategic Study Group
- Captain David Pittlekow, Naval Special Warfare Center
- Commander Steve Antcliff, commanding officer, USS Virginia
- Commander Emily Bassett, executive officer, USS Arlington

Staffing Changes

NROTC bid fond farewells to Lieutenants David Lueck and Nathan Stempel. Lieutenant Lueck will deploy aboard one of the Navy's newest warships, the *USS Freedom,* based in San Diego, California. Lieutenant Stempel will transition to the Naval Reserve to pursue a degree in supply chain management at MIT's School of Transportation and Logistics. This year, NROTC welcomes Lieutenant Charles Daniel as the junior and senior class advisor.

The NROTC program eagerly looks forward to maintaining its high standards of excellence at MIT with its growing family of highly qualified individuals.

Captain Steven M. Benke
United States Navy

Student Financial Services

Student Financial Services (SFS) is committed to making the dream of attending MIT a reality by providing students and their families with the resources necessary to meet their financial obligations. By helping today's students finance their education, SFS hopes to inspire them to join the infinite circle of support that allows MIT to ensure access and affordability for future generations.

The core responsibilities of SFS are organized around two major functional areas:

- Billing and collecting tuition, fees, and other Institute charges; and
- Administering student financial aid, including student loans, loans to parents, and student employment.

Billing and Collecting Tuition, Fees, and Other Institute Charges

Tuition, fees, and other major Institute charges totaled $655,353,054 in AY2015, a 2.15% increase over the previous year, and include:

Tuition: $564,011,546

Student life fee: $3,244,540

Housing: $59,363,150

Dining/TechCASH: $7,476,180

Health plan/insurance: $18,636,468

Medical/dental charges: $176,508

Late payment fees: $553,637

Miscellaneous charges: $1,891,024

Graduate tuition was $365.3 million, or 65% of total tuition, and undergraduate tuition $198.7 million, or 35%.

As of June 30, 2015, the student accounts receivable balance, netting out credit balances and exclusive of advance summer-term billing, was $2,326,419. Students are eligible for refunds when the credits on their student account exceed their charges. In FY2015, 4,001 refunds, totaling $20.3 million, were issued to students.

The overall education loan notes receivables as of June 30, 2015, comprising the federal Perkins loans, MIT Educational Loans, MIT Technology Loans, and MIT Parent Loans, decreased 4.9%, to $48.7 million.

The MIT Educational Loan Plan is a benefit program that provides loans to eligible employees to help finance the undergraduate or graduate education of eligible dependent children. SFS administers this loan program on behalf of Human Resources. In AY2015, $2.3 million was loaned and $2 million was collected. The year-end receivables balance for this program continued to climb, rising 2.6%, to $7.9M.

Administering Undergraduate Student Financial Aid

MIT believes that parents and students have primary responsibility for paying the costs of an undergraduate education to the extent that they are able. 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 AY2015, the annual price of an MIT education totaled $61,530 per student—$45,016 for tuition and fees; $13,224 for room and board; an estimated $2,790 for books, supplies, and personal expenses; and a per-student average of $500 for travel. With 4,476 undergraduates enrolled, the collective price for undergraduates was $275.4 million. Of this amount, families paid $146.1 million, or 53%. Financial aid covered $129.3 million, or 47%.

When determining the percentage of undergraduates who receive financial aid, MIT uses a broad definition by including need- and merit-based scholarships, grants, student loans, and employment from institutional, federal, state, and private sources. For AY2015, 91% of undergraduates (4,072 students) received $129.3 million in financial aid. If the definition of financial aid is narrowed to only include need-based aid, 59% of MIT undergraduates received need-based aid.

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 AY2015, 33% of undergraduates (1,458 students) received scholarships and grants from all sources equal to or greater than tuition; of those 1,458 students, 1,026 students, 23% of undergraduates, had family incomes of less than $75,000.

In AY 2015, 18% of undergraduates (797 students) received a federal Pell Grant. Following a policy the Institute put in place in 2006, the Institute matches the Pell Grant dollar for dollar by reducing a recipient's loan or term-time job expectation (or both), not the MIT scholarship.

Sources of Undergraduate Student Financial Aid

MIT was the largest source of financial aid to its undergraduates in AY2015, providing 77% of the aid undergraduates received. Ninety-two percent of the aid MIT provided was in the form of scholarships, 8% was student employment, and less than 1% was student loans.

The federal government was the second largest source of financial aid to MIT undergraduates in AY2015, providing 12% of the aid undergraduates received. Undergraduates received federal Pell grants, federal Supplemental Educational Opportunity grants, Reserve Officer Training Corps scholarships, federal direct subsidized and unsubsidized Stafford loans, federal Perkins loans, and federal work-study aid, 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 that undergraduates received in AY2015. 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.

Undergraduate Scholarships and Grants

Scholarships and grants from all sources totaled $111.0 million, with 70% of undergraduates (3,138 students) receiving scholarships. MIT awarded $91.9 million in need-based scholarships to 56% of undergraduates (2,501 students). The average MIT scholarship was $36,726. Approximately 79% of MIT scholarships were funded from restricted sources; 21% came from the general Institute budget or were funded from unrestricted sources.

Undergraduate Student Loans

During AY2015, 21% of undergraduates (941 students) borrowed $8.7 million. The average loan per borrower was $9,196, and the median was $6,432. Approximately 32% of graduating undergraduates in the Class of 2015 (352 students) borrowed money at some point during their education. Their debt ranges from $723 to $124,473, with the 90th percentile at $47,605. The average total debt per borrower is $23,537 and the median is $18,859.

Undergraduate Student Employment

Sixty-eight percent of undergraduates (3,040 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 $9.6 million, or an average of $3,166 per student worker.

Undergraduate Parent Loans

Approximately 4% of undergraduate families (161 parents) borrowed $3.9 million through an education Parent Loan Program administered by MIT. Federal direct PLUS loans accounted for 98% of the dollars borrowed. The average loan per borrower was $24,145.

Administering Graduate and Professional Student Financial Aid

Graduate and professional students receive tuition support and stipends in connection with research assistantships, teaching assistantships, and fellowship appointments. Although this support is considered financial aid, it is not included in this report, as it is not administered by SFS.

Graduate and Professional Student Loans and Federal Work-Study

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 AY2015, loans totaled $43.3 million, a decrease of approximately $1.6 million from the prior year, with 11.2% of

graduate and professional students (741 students) borrowing an average of $58,471. Graduate student employment earnings under the federal Work-Study Program, including on- and off-campus programs, totaled $0.908 million, with 0.78% of graduate and professional students (52 students) earning $17,458 on average.

Graduate and Professional Student Grants

In AY2015, 8.5% of graduate and professional students (566 students) received grants from private sources totaling $22.1 million. Eighty-five percent of this amount is received through sponsor billing—a sponsor, such as a foreign government, agrees to cover tuition and other Institute charges for a student and SFS bills that sponsor.

Staffing

Cledanor Sully, student services representative, Jason Marsala, assistant director for financial aid, and David O'Brien, senior associate director for customer service, left for new professional opportunities. New hires included Daniel Goncalves, technical support specialist, Paula Bernal, counselor for customer service, and Eric Sacca, assistant director for operations. Anna Wetterhorn was promoted to assistant director for financial aid.

As the year ends, there are 34 positions in addition to the executive director. There is one open position: associate director for customer service. Of the 33 positions filled, 70% are filled by women, 30% by men, 30% by a member of a minority group, and 24% by a member 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 the office's two functional areas: (1) teaching and learning and (2) assessment/evaluation and educational research.

We had a record enrollment in the newly renamed Kaufman Teaching Certificate Program (KTCP), formerly the Graduate Student Teaching Certificate Program. We offered eight sections of the program in the spring and seven sections in the summer, with almost 250 students "graduating." This required the training and support of four new instructors. We continue to see significant interest from postdocs. This year we celebrated the continued support of Stephen Kaufman '63 and his wife, Karen Kaufman, by renaming the program.

We developed a new series of three workshops for the 2015 Independent Activities Period, Teaching with Educational Technology, in collaboration with the Office of Digital Learning (ODL). In addition, we hosted a local learning community associated with a massive open online course (MOOC) on higher education teaching and learning created by the Center for the Integration of Research, Teaching, and Learning (University of Wisconsin, lead institution).

We completed 15 assessment studies for members of the MIT community, including studies focusing on courses (6.0001 Introduction to Computer Science and Programming in Python/6.0002 Introduction to Computational Thinking and Data Science, 5.111 Principles of Chemical Science, and 20.020 Introduction to Biological Engineering Design Using Synthetic Biology) and programs (Madrid-MIT M+ Vision Consortium and iQuISE).

Presentations on teaching and learning in higher education were given at the University of Michigan, the University of Illinois, and the University of Delaware, as well as in Stockholm, Sweden, and Dubai.

Accomplishments in Teaching and Learning

TLL provides the expertise in teaching and learning that complements the MIT faculty's domain expertise. Our signature program is the Kaufman Teaching Certificate Program; as stated above, approximately 250 students completed KTCP in AY2015. (We turned away a number of students who wished to enroll in the program.) As we forecasted in last year's report, we have increased the number of instructors who teach in the program, hiring four non-TLL instructors. This required significant training and support, which was managed superbly by Dr. Janet Rankin. TLL Assistant Director Leann Dobranski has been instrumental in providing support to KTCP as it grows and in offering strategic directions for its continued expansion. Put simply, KTCP could not function as well as it does without Dobranski's extraordinary project management skills.

Teaching with Educational Technology, a new IAP workshop series developed by Dr. Rankin jointly with ODL, offers an opportunity to explore the use of educational technologies in academic courses. Participants learn about the theoretical underpinnings of specific implementations of educational technology, identify and evaluate appropriate educational technologies/tools to advance their intended learning outcomes, evaluate various educational technology products with regard to their suitability for a given learning scenario, and describe best practices and potential pitfalls of different educational technologies.

Dr. Rankin and Dr. Dipa Shah, associate director for teaching and learning, consulted with almost three dozen faculty and graduate students on their teaching, including observing classes and meeting with instructors to provide feedback. Dr. Rankin continues her collaboration with Professor Craig Carter (Department of Materials Science and Engineering) on course design and assessment of 3.016 Mathematics for Materials Science and Engineers. We have provided additional workshops and consultations on teaching and learning to the Undergraduate Research Opportunities Program (UROP) graduate supervisors in the Office of Undergraduate Advising and Academic Programming (UAAP), the MIT Summer Research Program (MSRP), the Department of Brain and Cognitive Sciences, and the five schools.

Finally, Dr. Rankin created a supplemental video, *Strategies for Effective Office Hours*, for KTCP participants. Dr. Shah created a parallel-use video, *Motivation*, as part of the same series.

Accomplishments in Research and Assessment

Our work in research and assessment focuses on digital learning, particularly the use of blended learning on campus, although we continue to assess residentially based courses and programs as well.

At the request of Professor Deepto Chakrabarty of the Department of Physics, we undertook research to understand how students enrolled in 8.01 Physics I during the 2014 fall semester were utilizing course resources that had been put online through the MITx platform. This research, which was undertaken with Professor Jennifer DeBoer of Purdue University and her doctoral students, focused specifically on the "checkable answer feature" that allows students to check their answers to reading questions and online problem-set questions. An initial report was given to Professor Chakrabarty last winter, and a final report will be completed this summer.

We have continued to work with the data from MIT's first MOOC, 6.002x Circuits and Electronics. Specifically, a research study based on 1,200 models taking into account learner backgrounds, definitions of achievement, and resource usage has shown the efficacy of interactive resources in students' success.

Another stream of research, a four-university (MIT, Olin College, the National University of Singapore [NUS], and the Singapore University of Technology and Design [SUTD]) international project under the direction of Professor Daniel Hastings, explores best practices in the teaching and learning of communication skills. One of the research

questions underpinning the study is whether the communication skills of students educated in an analysis-centric curriculum (MIT and NUS) differ from those of students educated in a design-centric curriculum (Olin and SUTD).

Dr. Rudy Mitchell, associate director for assessment and evaluation, completed 15 assessment studies covering five different disciplines and including 10 cohorts. These studies employed quantitative or qualitative methodologies or a mix of the two. Of note is that his four-year study of 20.020 Introduction to Synthetic Biology resulted in a coauthored chapter, with instructor Natalie Kuldell, for the book *Inquiry-Based Learning for Science, Technology, Engineering, and Math (STEM) Programs: A Conceptual and Practical Resource for Educators.* Table 1 provides more details about these studies.

Table 1. TLL Assessment studies conducted by Dr. Rudy Mitchell

Subject/Study	Scope of Investigation	Faculty Lead	Status
Courses 6.0001 and 6.0002	Assessment of these two modular courses (fall 2014 and spring 20'15)	J. Guttag	Statistical reports for fall 2014 completed; report for spring 2015 ongoing
Course 5.111	Retrospective study of teaching assistant training over five years	C. Drennan	Completed
Madrid-MIT M+ Vision Consortium	2013 cohort fellow summer training	M. Gray	Completed
iQuISE doctoral training	Three-year study of PhD training program	I. Chuang	Completed
Course 20.020	Spring 2014 class; retrospective study of 2011, 2012, and 2013 cohorts and interview of 2012 and 2013 cohorts	N. Kuldell	Completed
Course CMS.333J/ ES.333J	Course evaluation design	D. Custer	Completed

Collaborations

TLL continues to provide support on teaching and learning to the Office of Minority Education, UAAP, MSRP (through the School of Engineering), and the MIT-SUTD Collaboration office through workshops for visiting faculty. In addition, we have provided support to the Office of the Dean for Graduate Education (ODGE) on the creation of online professional development material. At ODGE's request, we hosted Dean Paula Krebs of Bridgewater State University to explore ways to increase awareness among MIT graduate students and postdocs of opportunities in teaching-intensive universities, regional comprehensives, and community colleges. Dr. Lori Breslow served on the internal advisory board for a Carnegie-funded initiative on educational technology policy. Professor Michel DeGraff and ODL have invited TLL to explore

opportunities for bringing Haitian faculty to MIT under a fellowship program. We were also asked to advise Dr. Bernd Widdig, director of international affairs in the Office of the Provost, on possibilities for training Mongolian faculty in teaching and learning.

We hosted visitors from over 20 countries who wished to explore undergraduate teaching and learning at the Institute.

Publications, Conference Papers, and Invited Talks

Daniel Hastings and Lori Breslow. "Key Elements to Create and Sustain Educational Innovation at a Research-Intensive University." In Gabriela Weaver, Linda Slakey, Wilella Burgess, and Amy Childress (Eds.), *Transforming Institutions: Twenty-First Century Undergraduate STEM Education*. West Lafayette, IN: Purdue University Press, 2015.

Lori Breslow. "The Challenges of Assessing Learning." Invited talk for Action Learning in Business Education, Ross School of Business, University of Michigan, Ann Arbor, June 2015.

Christina White, Lori Breslow, and Daniel Hastings. "Understanding Curricular Approaches to Communication as a Global Competency: A Study of the Teaching and Learning of Communication Skills at Three Universities." Presentation at the American Society for Engineering Educational annual conference, Seattle, WA, June 2015.

Lori Breslow. "MOOC Research: What We Know and What We Would Like to Find Out." Invited talk for the Emerging Models of Learning and Teaching in Higher Education: From Books to MOOCs? international symposium, Stockholm, Sweden, May 2015.

Lori Breslow. "MOOCs and Graduate Education." Invited panel member, University of Illinois, Urbana-Champaign, May 2015.

Lori Breslow. "Strategic Teaching: An Approach to the Complexity of Pedagogical Design." Dean's Invited Lecture, College of Engineering, University of Delaware, Newark, February 2015.

Lori Breslow. "Strategic Teaching." Series of workshops and lectures for the South African Technology Network, January 2015.

Christina White, Lori Breslow, and Daniel Hastings. "Understanding Curricular Approaches to Communication as a Global Competency: Exploring International and Interdisciplinary Engineering Education." Presentation at the International Conference on Interactive Collaborative Learning, Dubai, United Arab Emirates, December 2014.

Teaching

Lori Breslow: 15.279 Management Communication for Undergraduates, fall 2015, and Communication/Writing, Interphase EDGE (Empowering Discovery | Gateway to Excellence), summer 2014

Janet Rankin: 5.95J Teaching College-Level Science and Engineering, fall 2014

Funding

We received $11,949 from the d'Arbeloff Fund for Excellence in Education to assess curricular and pedagogical innovations supported by the fund, $30,000 from the Madrid-MIT M+ Vision Consortium for an assessment of its postdoctoral training program, and $10,000 from the Office of Digital Learning (via the Department of Physics) for research related to the use of the MITx platform in 8.01 Physics I.

Personnel

Dr. Lori Breslow, the founding director of TLL, has resigned her position effective June 30, 2015. Dr. Janet Rankin has been appointed interim director.

Dr. Melissa Barnett has been appointed associate director of assessment and evaluation.

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

Lori Breslow
Director (through June 2015)