Columbia
Egleston Scholars Program
Dear Scholar,

Congratulations on your likely admission to Columbia Engineering’s Class of 2019! As dean of Columbia’s School of Engineering and Applied Science, I am delighted to welcome you into our community of path-breaking scholars and researchers whose work is fueling the new renaissance in engineering.

This renaissance is taking place globally, but nowhere more prominently than at Columbia. Our faculty and students are confronting—and working to solve—grand challenges and are, at the same time, pushing disciplinary frontiers in order to do so. We believe that you will find that Columbia Engineering offers you the chance to join in this effort.

In recognition of your extraordinary achievements and your promise as an engineering and applied science student, researcher, and leader, you are likely to be selected as an Egleston Scholar. The Egleston Scholars Program is a comprehensive, four-year program designed to support and enrich the undergraduate experience of our most highly accomplished students through access to resources within our school, the University at large, New York City, and, indeed, throughout the world.

Our Egleston Program, now in its sixth year, is designed to foster your special interests. It makes available a $10,000 stipend to support each scholar’s academic and professional goals, numerous singular research opportunities, special faculty mentorship, and enhanced advising, as well as the opportunity to participate in the larger community that comprises the Columbia Undergraduate Scholars Program.

Read more about the amazing opportunities for Egleston Scholars in this brochure. You, too, can have the opportunity to work side by side with leading faculty scholars in original and pioneering interdisciplinary research, be part of the entrepreneurial culture at Columbia, and participate in global educational experiences.

Congratulations again on your likely admission to Columbia Engineering and on your likely selection as an Egleston Scholar. We very much hope you join our community of vibrant, brilliant, creative, and promising young men and women, and look forward to working alongside you to help you achieve your intellectual and professional goals in the exciting journey that lies ahead!

Sincerely,

Mary C. Boyce
Dean of Engineering
Morris A. and Alma Schapiro Professor
Egleston Program Overview

A $10,000 Stipend
Scholars each have access to a $10,000 stipend throughout their four years at Columbia. In the past Scholars have used this stipend to attend professional conferences, purchase research materials and fund room and board when conducting research over the summer.

Guaranteed Research Opportunities
Egleston Scholars have access to undergraduate research positions with Columbia Engineering faculty as early as their first year.

Research and Leadership in Engineering Seminar
All first-year Egleston Scholars participate in a seminar that guides them through the scientific research process. Students learn how to utilize Columbia’s vast library resources, review relevant literature and scientific readings, and develop their own research questions. The course prepares students to engage in critical thinking about their own professional interests and provides a structured opportunity to develop relationships with other Scholars, faculty, and graduate student mentors.

Faculty Mentorship
Each Scholar is paired with a faculty mentor who will provide guidance toward the Scholar’s research and academic endeavors.

Enhanced Advising
Scholars are supported by a team of advisers in addition to their faculty mentors, including representatives from Columbia Engineering, the Center for Student Advising, the Center for Career Education, the Fellowships Office within the Office of Global Programs and Columbia University Libraries.

Specialized Workshops with the Center for Career Education (CCE)
Scholars have the opportunity to meet with designated CCE advisers not only to explore career and graduate school options, but also to build networking, interviewing and presentation skills. CCE advisers furthermore assist with the process of applying for engineering internships, both globally and domestically, during the school year and summer.

Participation in the Columbia Undergraduate Scholars Program (CUSP)
Egleston Scholars are members of the Columbia Undergraduate Scholars Program. CUSP provides Scholars with enhanced academic and cultural opportunities and allows them to explore the remarkable resources of Columbia and New York City through exclusive lectures with invited guest speakers, exhibits, concerts, Broadway performances and social events.

Networking Opportunities
Scholars are invited to special events and direct conversations with Columbia deans and prominent Columbia Engineering alumni.

Enhanced Financial Aid
Scholars who have applied for and been awarded Columbia need-based aid receive an enhanced aid package that promotes access to unpaid research, study abroad and internship opportunities. These enhancements mean that:

- University grants replace work-study for all four years; and
- the summer work expectation is waived during summers in which Scholars utilize their Egleston summer stipends.

The above is in addition to Columbia’s already generous financial aid policies.
Student Research

As an Egleston Scholar, you will have unparalleled access to hundreds of research opportunities across the University and beyond; publish your own work in science journals; and present your research at academic conferences. Here are just some examples of recent projects by our current Egleston Scholars.

**Jason Kang**  
North Andover, Massachusetts  
Biomedical Engineering

Deciphering the roles of mechanotaxis and chemotaxis in the formation of capillary-like structures with Professor Sam Sia, Biomedical Engineering.

**Edward Ko**  
McLean, Virginia  
Chemical Engineering

Developing systems of electrochemical cells and bioreactors in order to use reduction of iron as the source of fuel production with Professor Alan C. West, Chemical Engineering.

**Jenny Lee**  
Naperville, Illinois  
Chemical Engineering

Researching the efficacy of tantalum carbide compounds in hydrogen evolution reactions with Professor Jingguang Chen, Chemical Engineering.

**Antón Baleato Lizancos**  
A Coruña, Spain  
Applied Physics and Applied Mathematics

Investigating wind turbulence using wavelet analysis and data with Professor Pierre Gentine of the Department of Earth and Environmental Engineering.

**Neel Rakholia**  
Rajkot, India  
Applied Mathematics

Developing a 2-D and 3-D model for drug diffusion from coated bone implants with Tobias Klepsch in Lübeck, Germany.

**Jay Shim**  
Flushing, New York  
Mechanical Engineering

Studying a protein, transforming growth factor-beta (TGF-B), which is important for cartilage mechanical properties, with Professor Gerard Ateshian, Mechanical Engineering.

**Sharon Shu**  
Marietta, Georgia  
Undecided

Studying electrospin polymer scaffolds for complex tissue regeneration with Professor Helen Lu, Biomedical Engineering.

**SonYong (Sonny) Song**  
Port Washington, New York  
Computer Science

Investigating hardware security vulnerability in the Computer Architecture and Security Technologies Lab with Professor Simha Sethumadhavan, Computer Science.
Egleston Scholars have access not only to one of the oldest and most distinguished engineering programs in the country, but also to leadership opportunities, a culture of entrepreneurial innovation, global experiences and socially responsible engineering.

**Socially Responsible Engineering**
A key part of the mission of Columbia Engineering is to educate socially responsible leaders who strive to improve the human condition locally, nationally and globally. An example of these values in action is Columbia’s Engineers Without Borders (EWB), one of the nation’s most active chapters of this group. Cohorts of students travel each year to design and implement sustainable engineering solutions in Ghana, Morocco and Uganda. Egleston Scholars across all four classes are active in EWB, taking leadership roles and participating in on-site work on engineering innovations. Egleston Scholars also engage with current global challenges, like the Ebola Crisis Challenge project, where students developed low-cost, technology-driven solutions to address the Ebola crisis.

**Startup Culture at Columbia**
In addition to a minor in Entrepreneurship, sponsored jointly by Columbia Engineering and Columbia Business School, numerous student groups and initiatives, such as the Columbia Organization of Rising Entrepreneurs and Startup Columbia, offer competitions and start-up experiences. Our annual FastPitch, hosted by Columbia’s Society for Entrepreneurship and Technological Innovation, gives students the opportunity to pitch new business ideas to faculty and alumni, area business leaders and venture capitalists. Columbia Engineering also provides extensive mentoring to undergraduate students via Entrepreneurs in Residence, the Entrepreneur Advisory Board and Entrepreneurship Alumni Mentors. Several Egleston Scholars are in leadership positions in various entrepreneurship ventures, both on campus (the Application Development Initiative, for one example), and off campus (the Dorm Room Fund, for another).

**Data Science Institute**
Columbia has joined with the City of New York to create the Data Science Institute, a partnership that will lead to a whole host of new research projects addressing the challenges posed by our data-rich society. The Institute will also have a profound impact on the City’s capacity for engineering and applied sciences and is projected both to generate $3.9 billion in economic activity and to lead to the creation of more than 100 spin-off companies.

**Engineering Clubs, Competitions and Preprofessional Organizations**
There are 500+ clubs and organizations at Columbia, including more than 30 specific to Columbia Engineering, such as the American Institute of Aeronautics and Astronautics (Design/Build/Fly competition), American Society of Civil Engineers (National Student Steel Bridge Competition) and the Society of Automotive Engineers (Formula SAE Series).

**Columbia Experience Overseas**
The globe comes to Columbia with series like the World Leaders Forum, and Columbia students go abroad for transformative internship experiences. Egleston Scholars have the opportunity to work overseas in the summer and connect with Columbia alumni in cities like Amman, Beijing, Hong Kong, Istanbul, London, Shanghai and Singapore.

**Res. Inc.**
A comprehensive entrepreneurship initiative, Res. Inc., establishes an on-campus residential environment for students to collaborate, develop programs and products, identify potential markets and promote ideas as entrepreneurs. The Res. Inc. curriculum provides students with access to faculty and professionals in their fields of interest; workshops to hone and develop entrepreneurial skills; the tools necessary to establish and implement business plans; internship opportunities to help further their projects and career goals; and active engagement in the entrepreneurship community on campus and in New York City.
“The Egleston Program has been extremely helpful in guiding me academically and has enabled me to pursue my personal and professional interests. One summer, using my Egleston research stipend, I traveled to Ghana to construct source-separating latrines. It was a great opportunity to do actual work in sustainable engineering in a developing country. This past summer, I worked at an optics firm in Silicon Valley.”

Benjamin Aguilar
Fairfield, CA

“One of the best aspects of the Egleston Program for me has been how it has pushed me beyond my comfort zone in terms of research. I’ve been involved in a project at the Lenfest Center for Sustainable Energy, working on preliminary wind turbine research. I had never conducted research before coming here, but working on a project that’s really challenging and multidisciplinary is an amazing experience.”

Kaitlin Huben
Palos Verdes Estates, CA

“The enhanced academic and career advising that I’ve had access to through the Egleston Program has been extraordinary. I interned at a mergers and acquisitions firm during the summer after my freshman year and have also interned at Morgan Stanley and Société Générale for sales and trading since then. The other Egleston Scholars are some of the most intelligent people I’ve ever met, and it’s been great to be surrounded by people with such a depth of interest in engineering.”

Jesse Lou
Denton, TX

“The most valuable aspect of the Egleston Program is the network of resources I wouldn’t otherwise have, including individualized mentoring from both faculty and special advisers. My faculty mentor in the Electrical Engineering department has helped me evaluate potential research opportunities and connected me with other professors in the department. I’ve had the additional opportunity to meet with influential Columbia alumni.”

Gedion Metaferia
Addis Ababa, Ethiopia
A Legacy of Engineering and Science Leaders

John Stevens, Class of 1768, procured patents in early steamboat technology and received the first railroad charter in the U.S.

William Barclay Parsons, Class of 1882, was the chief engineer of New York City’s first subway system.

Michael Idvorsky Pupin, Class of 1883, invented the “Pupin coil,” extending the range of long-distance telephones.

Irving Langmuir, Class of 1903, invented the gas-filled tungsten lamp; his research in monolayering and surface chemistry led to a Nobel Prize in chemistry in 1932.

Edwin Howard Armstrong, Class of 1913, invented the superheterodyne circuit and developed the method of frequency modulation (FM) for radio broadcasting.

Joseph Engelberger, Class of 1946, is widely considered the “Father of Modern Robotics.”

Alvin Roth, Class of 1971, is a winner of the 2012 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, often called the “Nobel Prize in Economics.”

Ursula Burns, Class of 1981, serves as CEO of Xerox and was the first African-American female CEO to head a Standard & Poor’s Top 100 company.

Kai-Fu Lee, Class of 1983, was the founding president of Google China.

Michael Massimino, Class of 1984 and Mechanical Engineering professor of professional practice, is one of two NASA astronauts who successfully upgraded the Hubble Space Telescope and was the first astronaut to tweet from outer space.

Christine Hendon, Electrical Engineering assistant professor, won a $1.5 million New Innovator Award from the National Institutes of Health under its High Risk-High Reward program for scientists proposing highly innovative approaches to major contemporary challenges in biomedical research.

Horst Stormer, Applied Physics professor emeritus, won the Nobel Prize in Physics for his discovery of a new form of quantum fluid with fractionally charged excitations.

Xi Chen, Earth and Environmental Engineering associate professor, won the Presidential Early Career Award for Scientists and Engineers for his research involving mismatch damages in thin-film and nanoscale self-assembly.

Gordana Vunjak-Novakovic, Biomedical Engineering professor, has grown the first bone grafts in the exact shapes of human bones and was elected to the Women in Technology International Hall of Fame in 2009, to the National Academy of Engineers in 2012 and to the National Academy of Inventors in 2015.

Kristin Myers, Mechanical Engineering assistant professor, won a prestigious National Science Foundation Faculty Early Career Development Award and is planning to use her award to train the next generation of female engineers interested in improving women’s health.
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