CornellEngineering

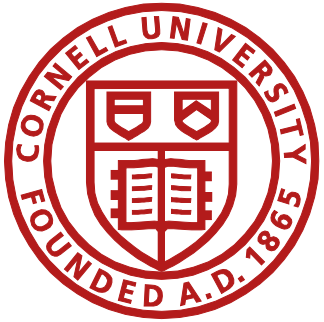
Strategic Vision: Progress Toward Goals

Lance R. Collins
Joseph Silbert Dean of Engineering
March 12, 2019

The World's Top Engineering Schools

Berkeley	Caltech	Carnegie Mellon
Cornell	Georgia Tech	U. Illinois
U. Michigan	Purdue	U. Texas-Austin

The World's Top Engineering Schools



Aspirations

Cornell Engineering will be widely recognized as among the top three engineering colleges in undergraduate and graduate studies

Enabling Goals:

1. To recruit, retain and enable a **diverse** community of exceptional faculty, students and staff
2. To educate undergraduate and graduate students to become global leaders
3. To be world leaders in important areas of research
   a. to sustain and expand our leadership role in: advanced materials; complex systems, network science and computation
   b. to be the premier research university in the emerging areas of: bioengineering; energy and the environment
4. To increase our interactions with industry; and create a fertile environment for entrepreneurial activities for faculty and students

Cornell Engineering Differentiators

Creating a New Educational Paradigm

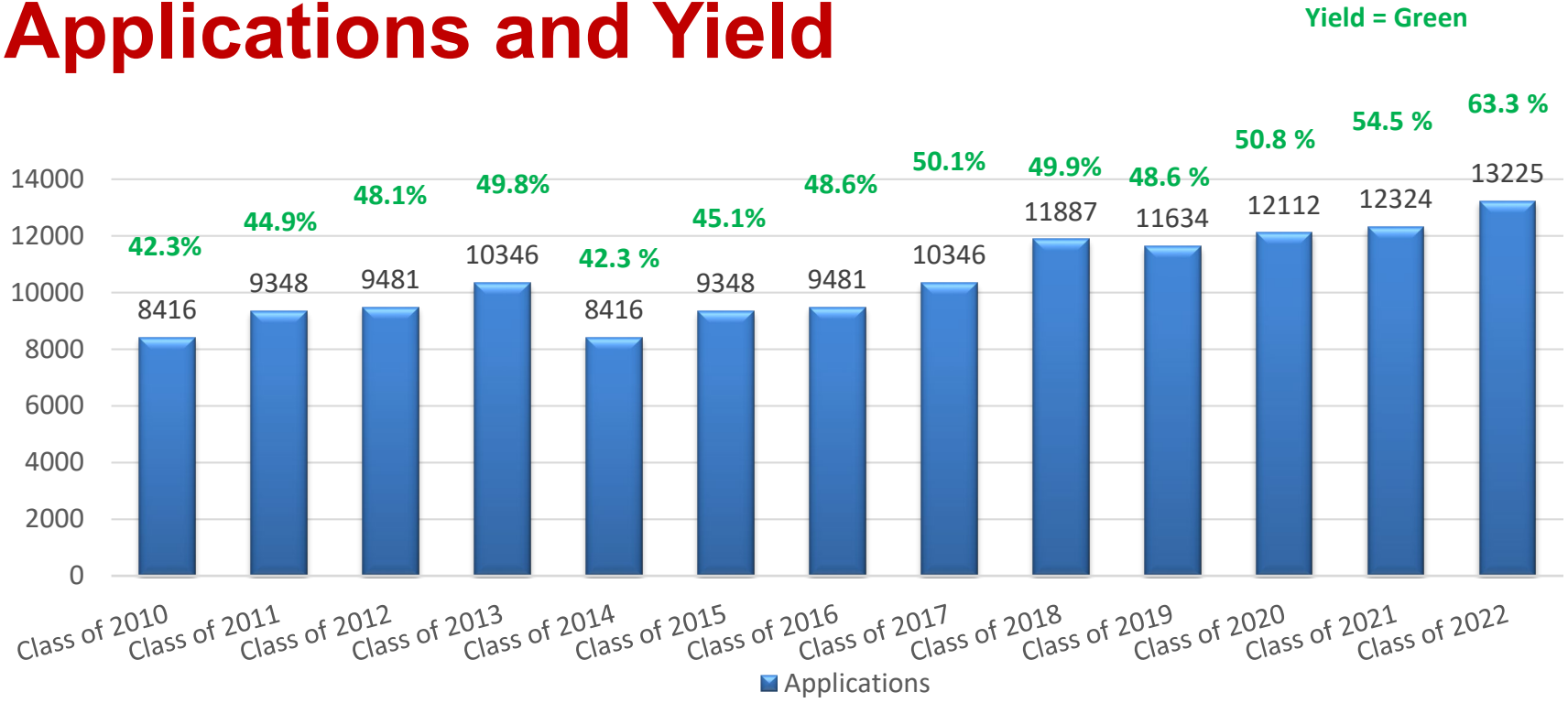
Leveraging Cornell Tech Campus

Expanding Bioengineering

Enhancing the Energy Systems Institute

BREAKING THE RULES to TEACH USING A NEW PARADIGM

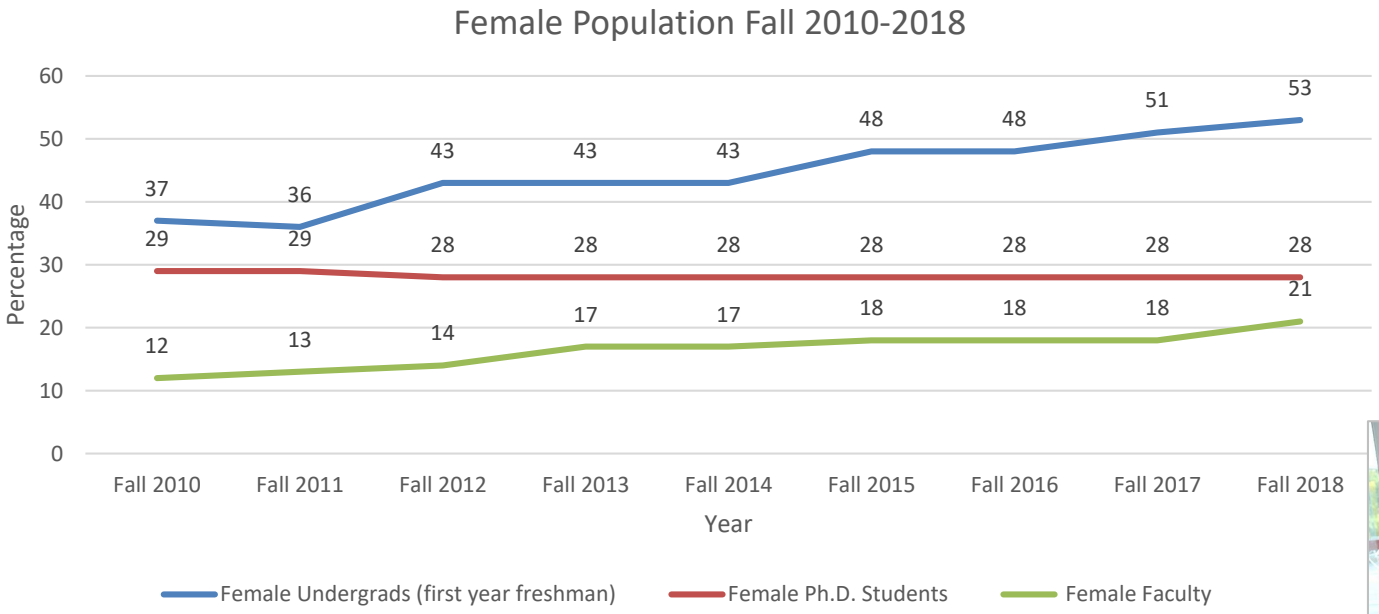
Cornell Engineering Applications and Yield



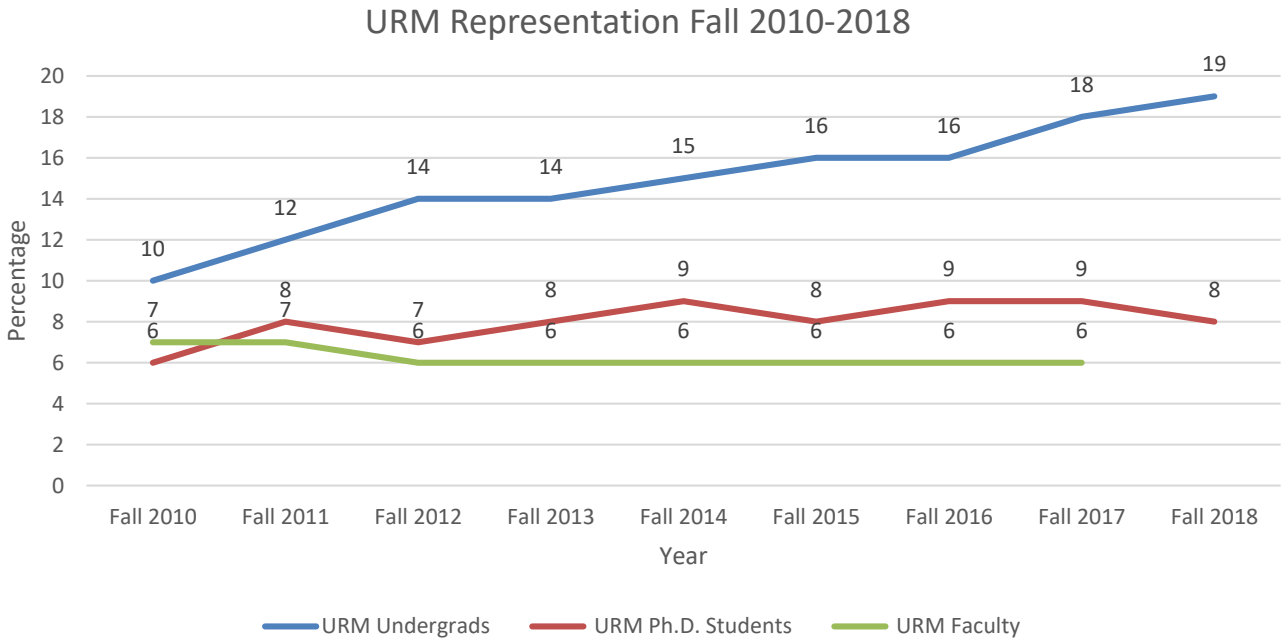
Cornell Engineering

- Brilliant…
- And diverse…

Diversity in our Female Populations



Diversity in our URM Populations

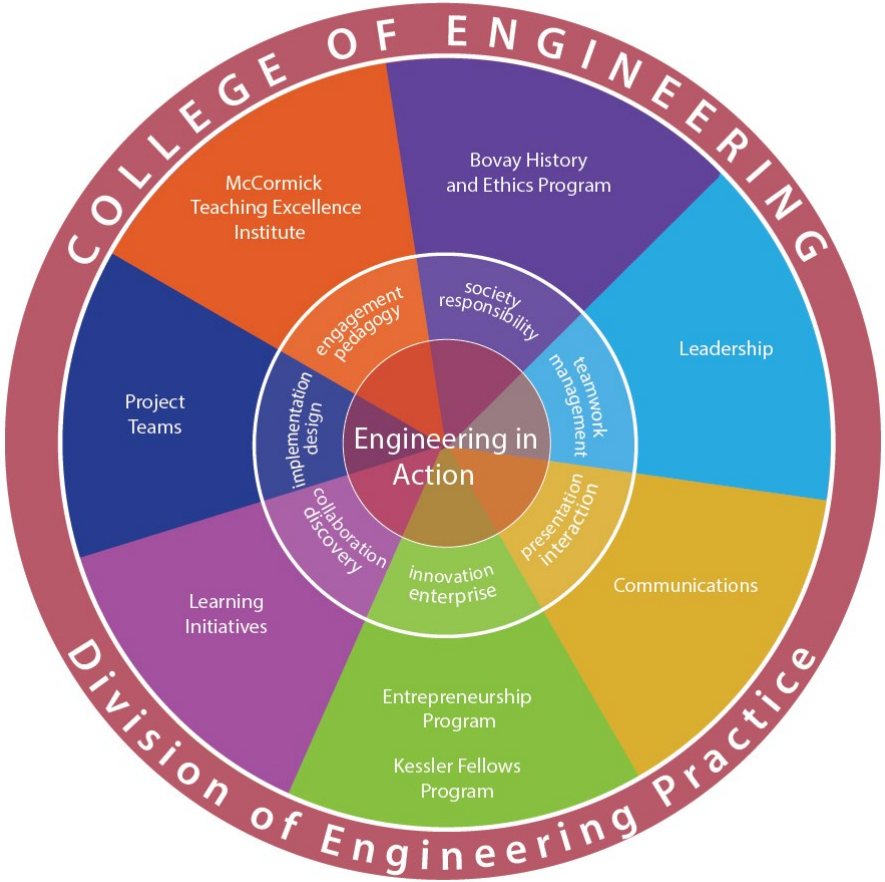


Engineering in the 21st Century

Create, Lead, Disrupt, Invent

CornellEngineering

Grounded in Rigorous Fundamentals


COLLEGE OF ENGINEERING
Division of Engineering Practice
McCormick Teaching Excellence Institute
Bovay History and Ethics Program
Leadership
Communications
Entrepreneurship Program
Kessler Fellows Program
Learning Initiatives
Project Teams
engagement pedagogy
society responsibility
teamwork management
presentation interaction
innovation enterprise
collaboration discovery
implementation design
Engineering in Action

Cornell Experiential Programs

Learning By Doing:

- Project Teams
- Engineering Leadership Program
- Product Design and Manufacturing Institute
- McCormick Teaching Excellence Institute

Cornell Entrepreneurial Programs

Learning By Doing:

- eHub/Kessler Fellows/Innovation Competition/Ph.D. Commercialization Fellows
- Engineering Business Minor with the Dyson School
- Ph.D. Entrepreneurship Minor with SC Johnson College of Business
- Entrepreneurial Roadmap for Success Website

Amanda Bares, Ph.D.
*Commercialization F*ellow
Graduate

Home

Start your Journey from Education to Enterprise

As New York's land-grant college, Cornell has long been expected to turn research into useful products and processes. This was true in 1865 and is still true today. The path from having a strong desire to learn more about entrepreneurship to successfully commercializing a technology or idea is not always clear or direct. Whether you are an undergraduate, a graduate student or a Cornell faculty member, we can help guide you on your entrepreneurial journey. There is not just one correct path to commercializing an idea. And no particular path can guarantee success. But there are things you can learn and do to increase your chances of creating a successful startup. Looking for classes you can take? Technical advice on building a prototype? Financial backing to assemble a team and start production? Not sure where to begin? Start your journey here. You'll find the resources you need no matter where you are on the path.

"I joined the Commercialization Fellowship because I wanted to get more exposure to thinking entrepreneurially about highly technical problems."

2016 Fellow Bill Bedell

Commercialization Fellows Program

- In 2016 we started a 3 year pilot of the "Commercialization Fellows" program.
- Program takes most promising Ph.D. students away from their labs for 6 months to provide comprehensive education around technology commercialization.


UNY I-Corps Node
About
The Experience
How to Get Involved
Blog
Contact Us
UNY I-Corps
A hub for education, infrastructure and research to engage academic scientists and engineers in innovation.
LEARN MORE
ATTEND A SHORT COURSE
Cornell University
UNIVERSITY of ROCHESTER
R·I·T

PRAXIS CENTER
for Venture Development

BREAKING THE RULES to LEVERAGE OUR COLLABORATIONS AT CORNELL TECH

Your gift helped raise

$815 MILLION

for CORNELL TECH.

CORNELL TECH
HOME OF THE JACOBS INSTITUTE

Here's what it's created: →

CORNELL UNIVERSITY

PARTNERSHIP BETWEEN

2

UNIVERSITIES

TECHNION - ISRAEL INSTITUTE OF TECHNOLOGY

COMPUTER SCIENCE

ELECTRICAL & COMPUTER ENGINEERING

JOHNSON CORNELL TECH MBA

MASTER OF LAWS

7

MASTERS PROGRAMS

OPERATIONS RESEARCH & INFORMATION ENGINEERING

TECHNION-CORNELL DUAL DEGREES IN CONNECTIVE MEDIA

TECHNION-CORNELL DUAL DEGREES IN HEALTH TECH

500+
ALUMNI

300+
STUDENTS THIS YEAR

30+
FACULTY

50
Startups in Industries like IoT, Big Data, Machine Learning, and Health (92% in NYC)

$40+
Million Raised

248
Jobs Created

3
Startups Acquired

3500
NYC Public School Children Through K-12 Programs

1200
Young Women Participating in WiTNY

THANK YOU
FOR YOUR SUPPORT!

The Emma and Georgina Bloomberg Center

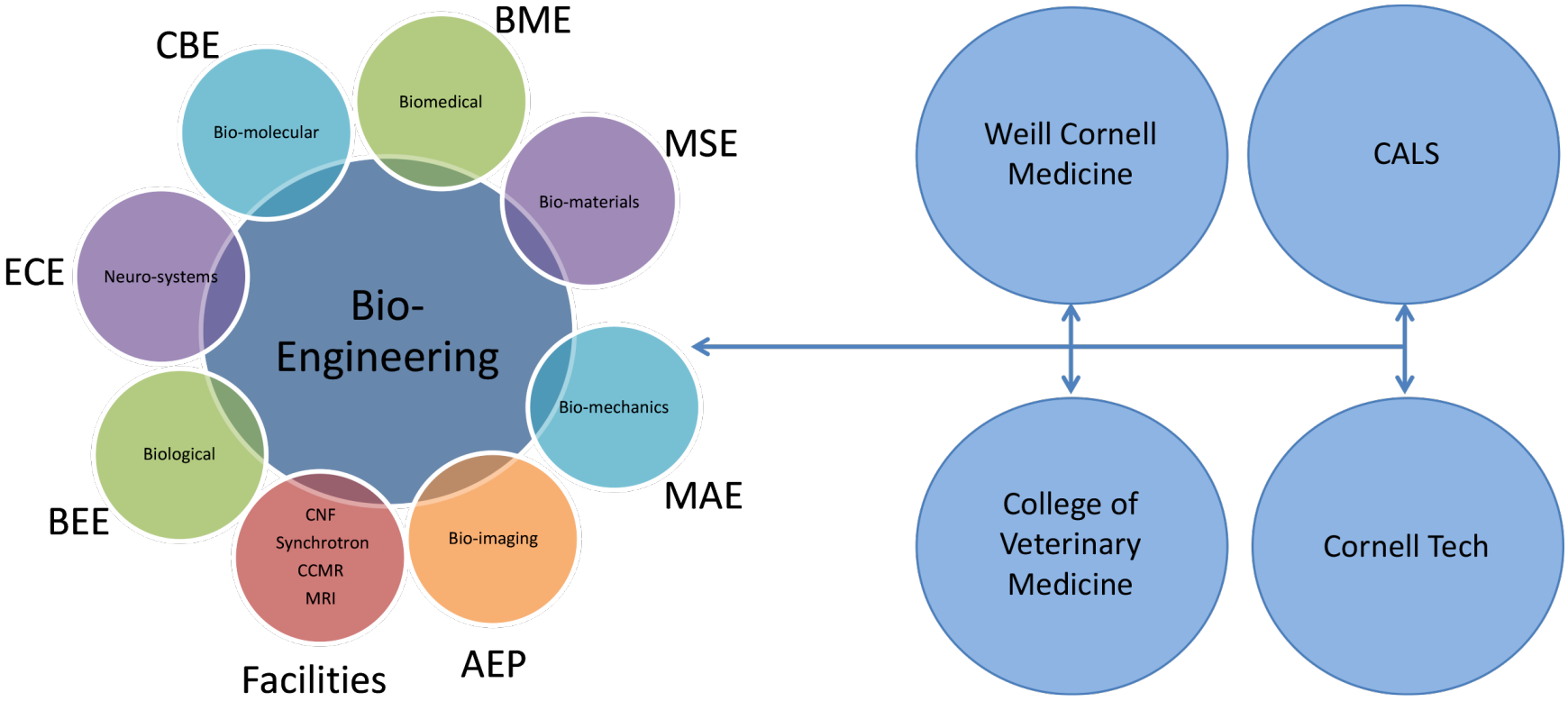
The Tata Innovation Center co-locates companies with Cornell academic teams

CornellEngineering

Opportunities to Partner with Cornell Tech

- Pipeline for Cornell Engineering students interested in joining the tech boom in NYC
- CT/CIS/COE in partnership with campus breadth provides a unique opportunity to advance digital and data technologies
- Co-branding

BREAKING THE RULES to EXPAND BIOENGINEERING


CBE
BME
Biomedical
Bio-molecular
MSE
Bio-materials
ECE
Neuro-systems
Bio-
Engineering
Bio-mechanics
Biological
MAE
BEE
CNF
Synchrotron
CCMR
MRI
Bio-imaging
Facilities
AEP
Weill Cornell
Medicine
CALS
College of
Veterinary
Medicine
Cornell Tech

Nancy E. and Peter C. Meinig School of Biomedical Engineering

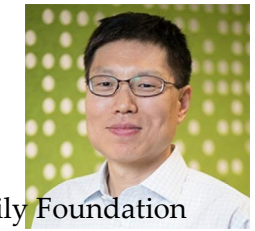
- The Meinig family has made a $50mm gift to name the Nancy E. and Peter C. Meinig School of Biomedical Engineering.
- At the same time the Meinig School had just been approved by the state of New York to award an undergraduate degree in biomedical engineering.

Robert Frederick Smith School of Chemical and Biomolecular Engineering

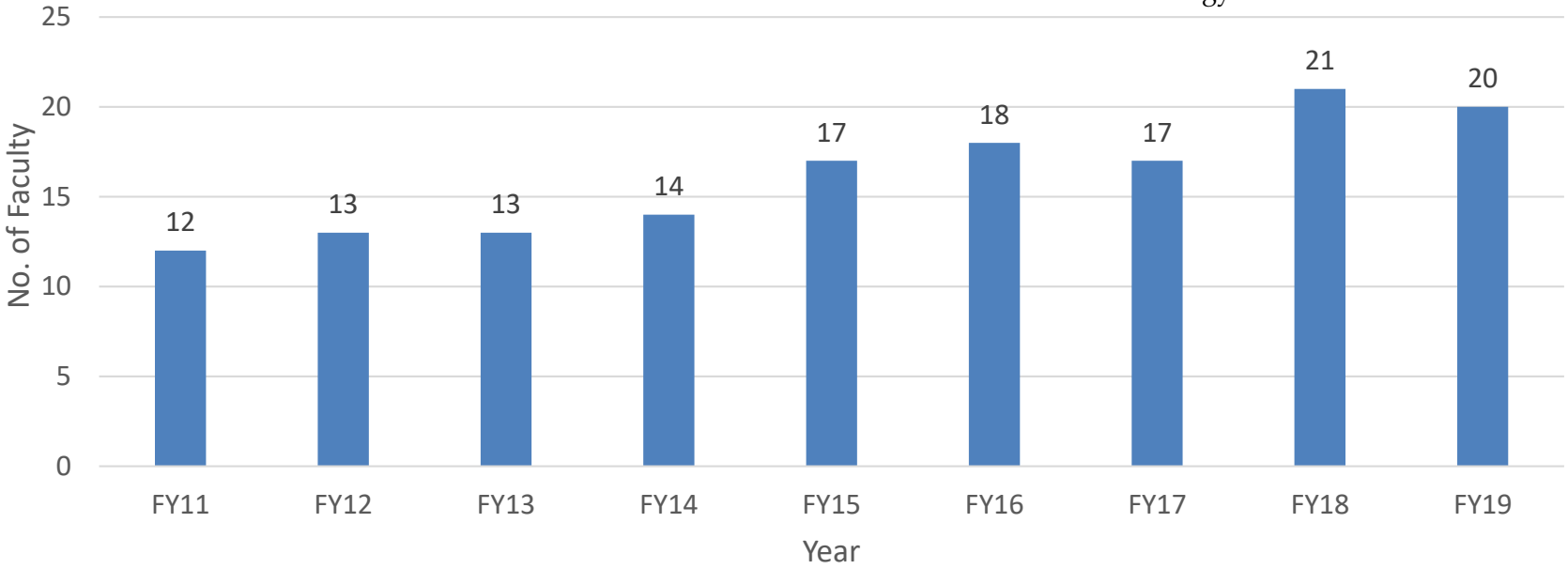
- Robert F. Smith, along with his Fund II foundation, have made a $50 million commitment. The funds support CBE students with a focus on African-American and female students.
- The gift also created a unique fellowship program at Cornell Tech that further strengthens the New York City campus's ties to engineering in Ithaca.
- CBE was named the Robert Frederick Smith School of Chemical and Biomolecular Engineering.

BME Faculty Growth

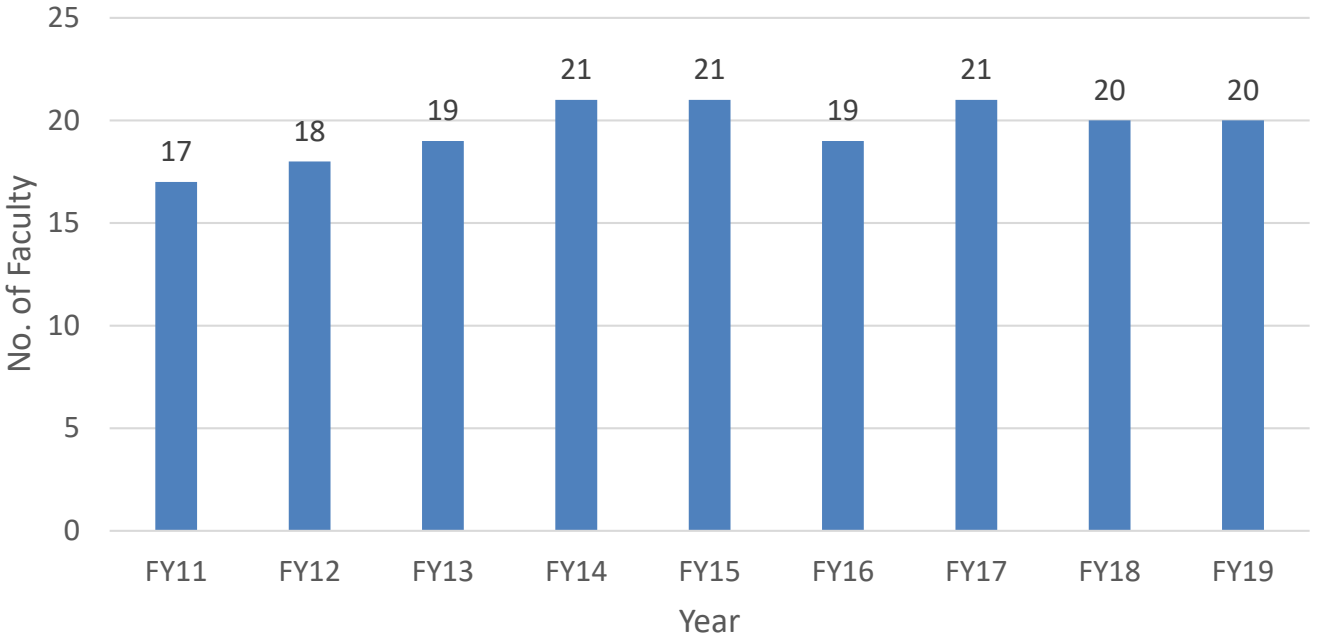
James Antaki
Susan K. McAdam
Professor of Heart Assist Technology



Yadong Wang
McAdam Family Foundation
Professor of Heart Assist Technology

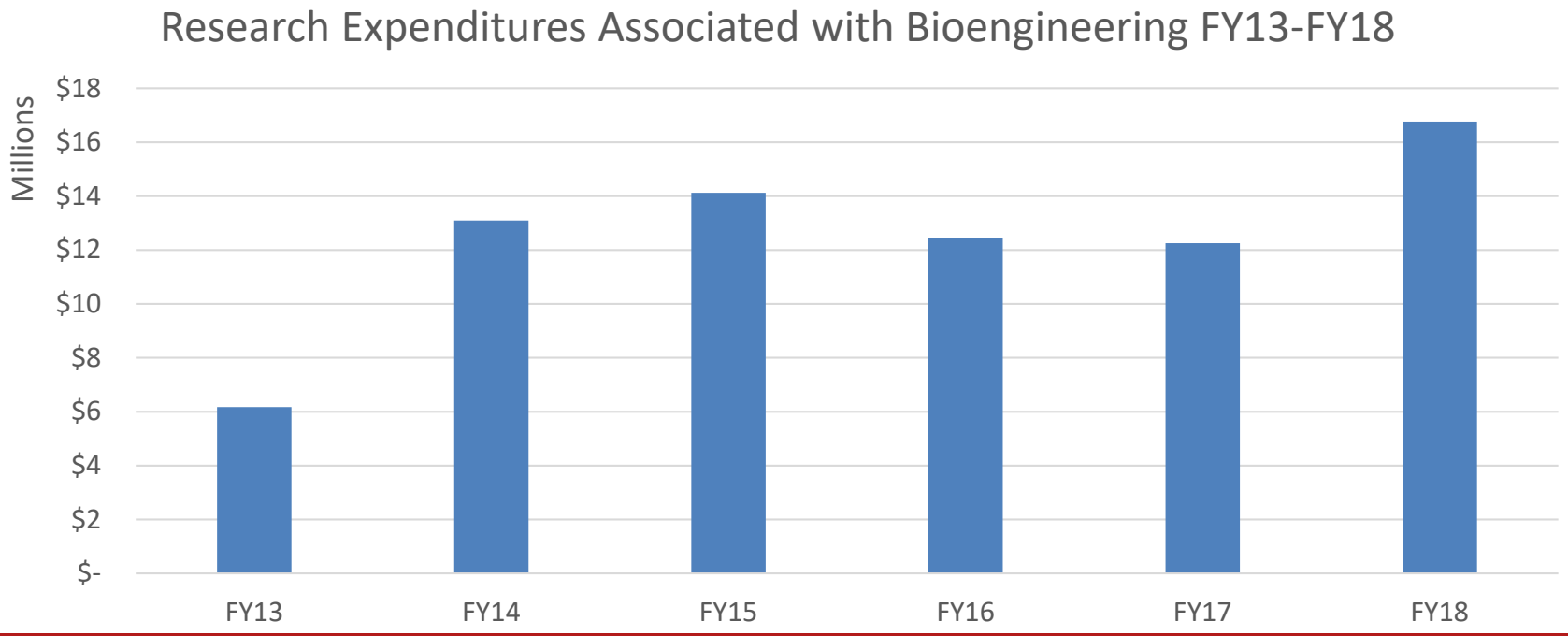


CBE Faculty Growth



Nicholas Abbott
Tisch University Professor

Bioengineering Research Expenditure Growth



PUSHING THE BOUNDARIES TO ENHANCE ENERGY CREATION

Cornell Energy Systems Institute

CORNELL ENERGY SYSTEMS INSTITUTE

Director: Lynden Archer (CBE); **Associate Directors:** Oliver Gao (CEE)
Teresa Jordan (EAS), David Muller (AEP), Fengqi You (CBE)

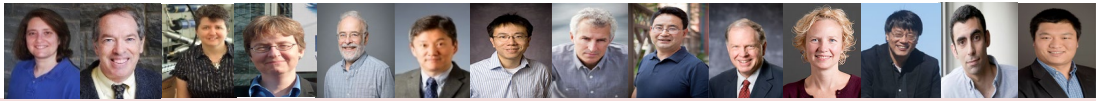
CESI Mission

CORNELL ENERGY SYSTEMS INSTITUTE

Make energy systems with low carbon footprint the norm through innovations in materials, technology, and systems design.

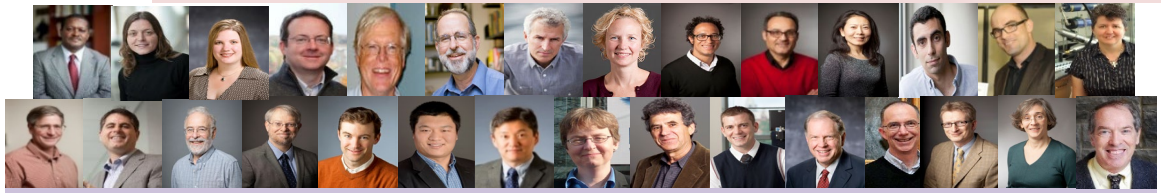
CESI Faculty

CORNELL ENERGY SYSTEMS INSTITUTE



Technology Integration
Systems

Engineered Energy



Enabling Science and Technology
Technology Base

Fundamental Knowledge
Knowledge Base

CESI Research Thrusts

CORNELL ENERGY SYSTEMS INSTITUTE

Transportation & Manufacturing Systems

- Make electrified transportation the norm for human mobility
- Make manufacturing and energy operations management technologies smart & data-driven

Energy Production Systems

- Make low carbon footprint energy generation technology, including **Earth-Sourced Heat, *Wind,*** and ***Nuclear Fusion,*** cost-effective and reliable

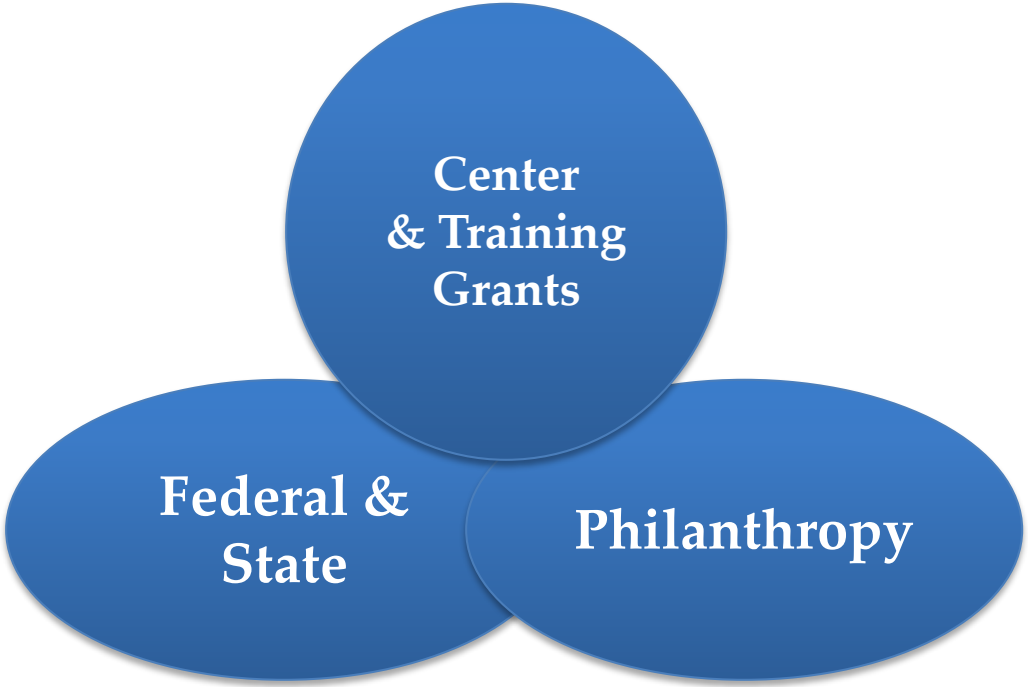
Carbon Capture and Conversion Systems

- Make carbon dioxide capture and conversion to high-value products cost-effective and commonplace in construction and process systems

"Pollution is nothing but the resources we are not harvesting. We allow them to disperse because we've been ignorant of their value." - **R. Buckminster Fuller** (1895-1983)

Institute Structure & Philosophy

CORNELL ENERGY SYSTEMS INSTITUTE



Initial Successes & Opportunities

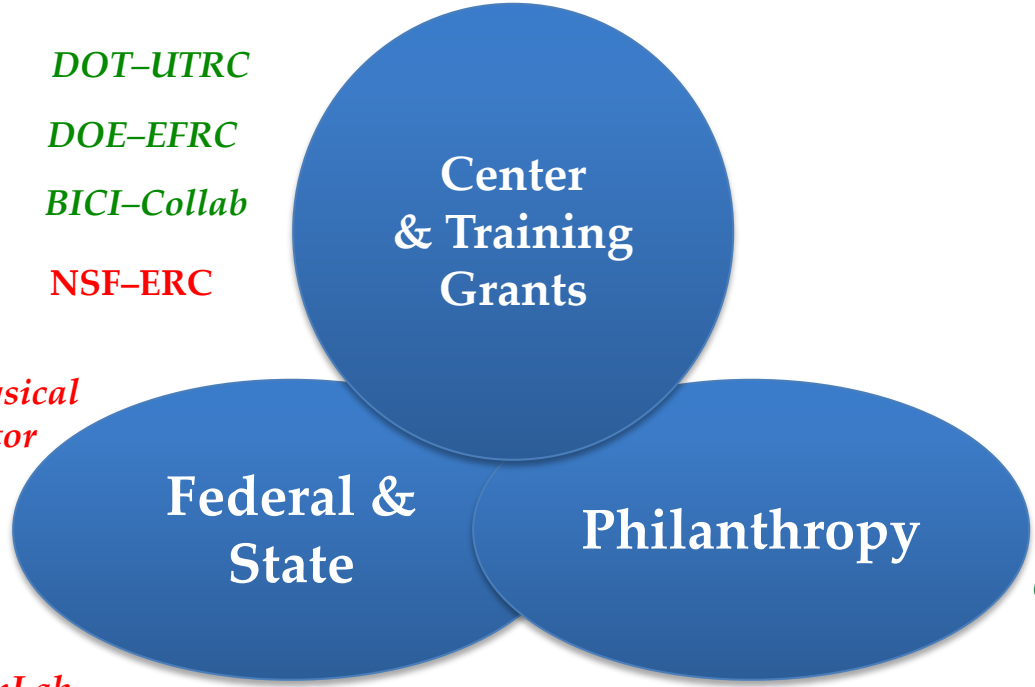
CORNELL ENERGY SYSTEMS INSTITUTE

DOT–UTRC

DOE–EFRC

BICI–Collab

NSF–ERC



Engineering & Physical Sciences Incubator

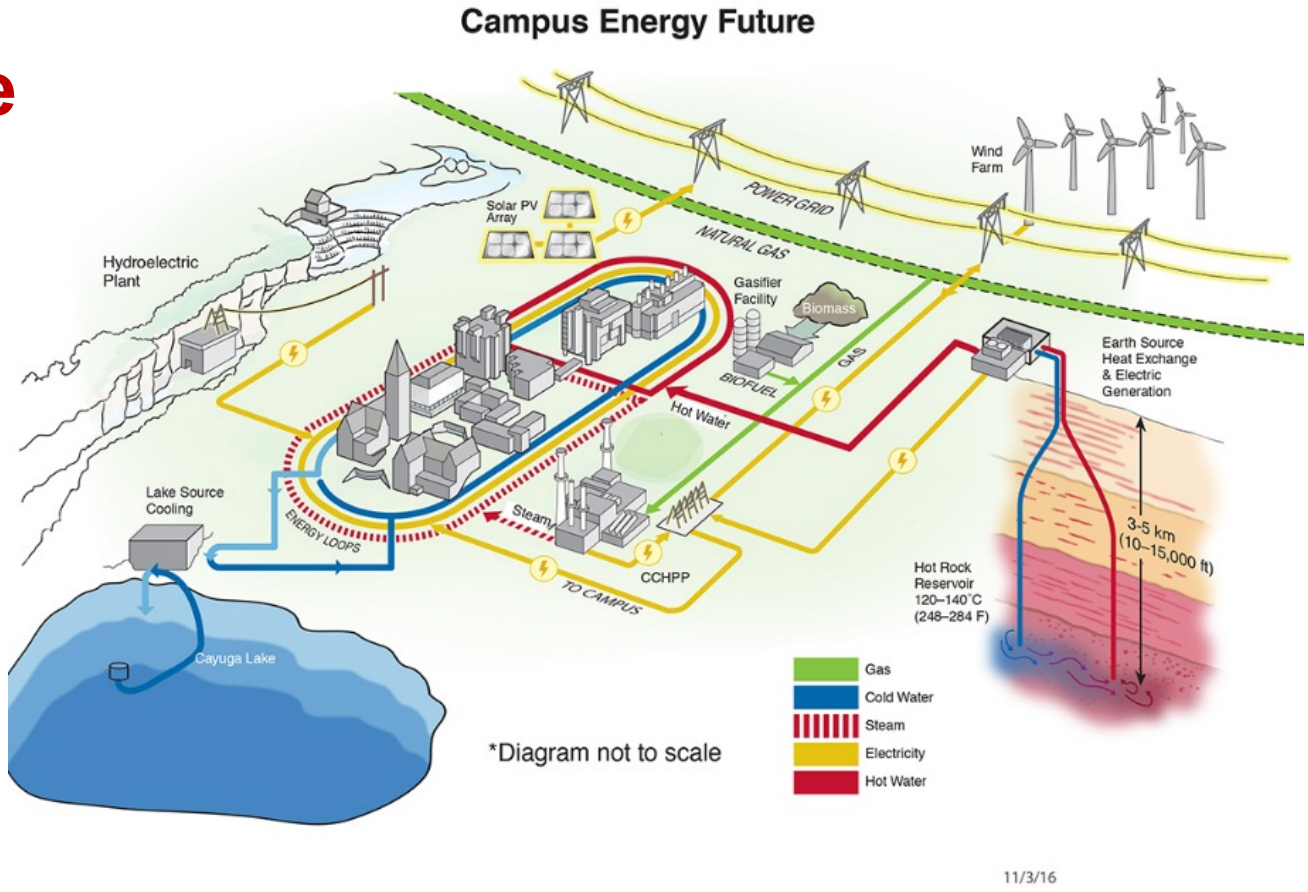
CESI–Postdoc Fellowships

CESI–Student Club

CESI–Distinguished Lectures

CESI–*OpenLab*

Earth Source Heat



BUILDING ON BREAKTHROUGHS TO DESIGN THE FUTURE

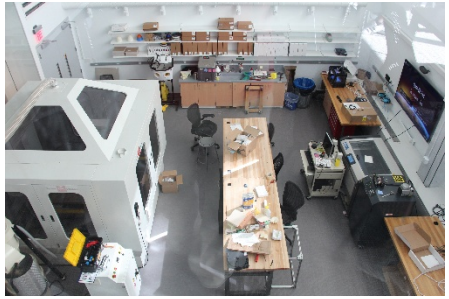
Weill Hall

Upson Hall

Upson Hall Full Renovation Complete

- Teaching labs, tech-enhanced classroom, team space
- LEED Platinum







Rhodes Hall

Olin Hall

Hollister Hall

Cornell Tech: The House

- Uses 60-70 percent less energy than typical buildings.
- A louver system spans the building to serve as “gills” where the heating and cooling live, allowing the systems to breathe.
- Compared to conventional construction, it is projected to save 882 tons of CO2 per year.

Cornell Tech: Bloomberg Center

- The Bloomberg Center has set the goal of being net zero (i.e., producing as much energy as it consumes)
- LEED Platinum
- Its passive energy-efficient design includes a rooftop photovoltaic array system and geothermal heating and cooling systems

Cornell Tech: Tata Innovation Center

- LEED Silver
- Rooftop photovoltaic canopy unifies the campus
- The energy generated from the roof will offset the overall energy consumption of The Bloomberg Center

College Visibility

Unclogging blood flow to the brain could open the floodgates for Alzheimer's treatment

Chris Schaffer, left, and Nozomi Nishimura, associate professors in the Meinig School of Biomedical Engineering, are behind promising new research into Alzheimer's

College Visibility

Mahowald testifies to Congress: Act now to arrest climate change

Natalie Mahowald, the Irving Porter Church Professor of Engineering

College Visibility

DispatchDate: 18.02.2019 · ProofNo: 426, p.1

nature climate change

LETTERS

https://doi.org/10.1038/s41558-019-0426-8

Robust abatement pathways to tolerable climate futures require immediate global action

J. R. Lamontagne[1*], P. M. Reed[2], G. Marangoni[3], K. Keller[3,4] and G. G. Garner[5]

Patrick M. Reed, Joseph C. Ford Professor of Engineering

College Visibility

Tackling cancer biology research across colleges and campuses

Richard Cerione, the Goldwin Smith Professor of pharmacology and chemical biology, and Claudia Fischbach, professor of biomedical engineering in the Meinig School of Biomedical Engineering and co-director of the Cornell Physical Sciences Oncology Center on the Physics of Cancer Metabolism.

College Visibility

The microscope revolution that's sweeping through materials science

David Muller with his team's electron microscope. Credit: *Nature*

College Visibility

Engineers' plan averts NYC's dreaded L train shutdown

Cornell Engineering's U.S. News Graduate School Ranking Comparison 2019 vs. 2020

Category	Weight	2020 Score	Rank 2020	2019 Score	Rank 2019
Overall Score		65	14	63	15
Peer assessment score (5.0=highest)	25%	4.3	9	4.2	9
Recruiter assessment score (5.0=highest)	15%	4.2	8	4.2	8
Engineering school research expenditures (in millions)	15%	140.6	19	123.2	22
Research expenditures per faculty member (in thousands)	10%	638.9	20	565	26
Ph.D. students/faculty	7.50%	5	10	4.7	13
Faculty membership in National Academy of Engineering	7.50%	12%	9	11%	9
Average quantitative GRE score	6.75%	167	3	166	7
Ph.D.s granted	6.25%	181	13	166	16
Graduate enrollment	3.75%	2353	15	2222	19
Acceptance rate	3.25%	26%	20	29%	26

Released March 12, 2019

Questions?