

2014 / 2015

 **CASE WESTERN RESERVE**  
UNIVERSITY EST. 1826  
10900 Euclid Avenue  
Cleveland, Ohio 44106-7017

think: connection



 **CASE WESTERN RESERVE**  
UNIVERSITY EST. 1826

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To the Case Western Reserve Community:

We speak often here about the power of partnership. As proud as we are of individual accomplishments, we recognize that we sometimes have even greater impact through collaboration. Such examples abound, but in 2014–2015, we saw an exceptional concentration of them.

Consider the possibilities of our work with Cleveland Clinic and Microsoft to transform learning with the mixed-reality HoloLens device. Or the synergies inherent in bringing medicine, nursing and dental medicine students together in the Health Education Campus.

Think about the lives that could be changed through technology developed by a biomedical engineer with assistance from a courageous amputee eager to help others. Or the patients whose lives could be saved by flight nursing students trained in a first-of-its-kind simulator.

Imagine how philanthropic support for a humanities initiative with Cuyahoga Community College will give promising students a clearer path toward bachelor's degrees. Or the new cooperative initiatives likely to emerge as Peter Knox leads community-wide planning for a major Cleveland humanities festival this spring.

Within these pages you also will learn how alumni and friends helped make our ideas reality. It was, in short, quite a year. The progress inspires us to press forward—and reminds us again of how compelling cooperation can be.

Barbara R. Snyder  
President

Case Western Reserve is all about collaboration—after all, the university itself emerged from a convergence of institutions. This year, though, we worked with others in unprecedented ways:

We forged new ties to transform education...



Foster + Partners

Cooperated to catalyze discovery...



Zoological Journal of the Linnean Society



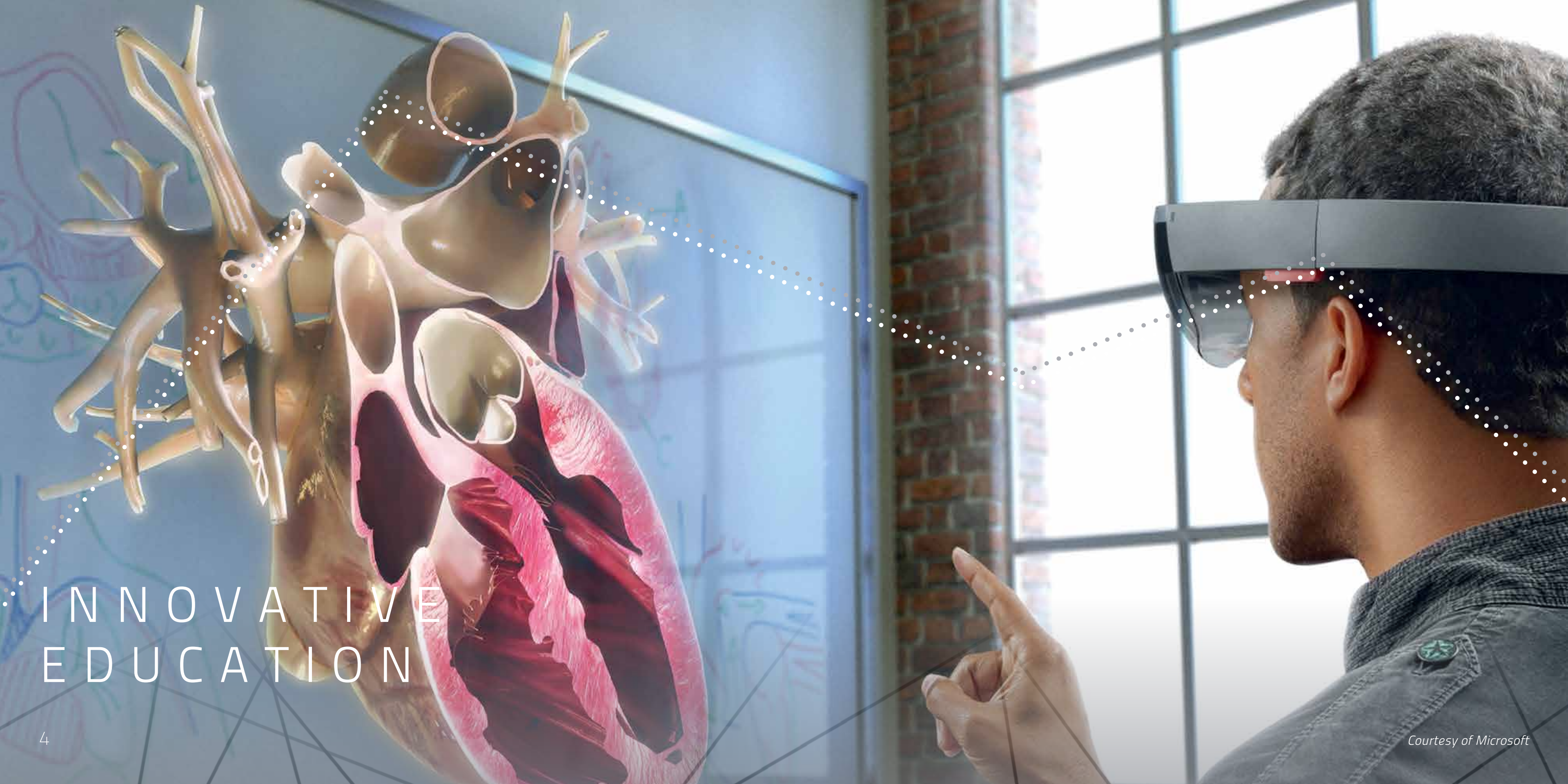
Teamed to connect with the community...

Created alliances to support entrepreneurs...



And engaged thousands to help make our efforts possible.

Case Western Reserve and our partners capitalized on each to advance ideas—and society itself.



# INNOVATIVE EDUCATION



► TEAMING IN HIGH TECH

Imagine a heart so real you want to **reach out and touch it**.

Turn it around to view from all angles.

Take it apart to reveal each chamber and vessel.

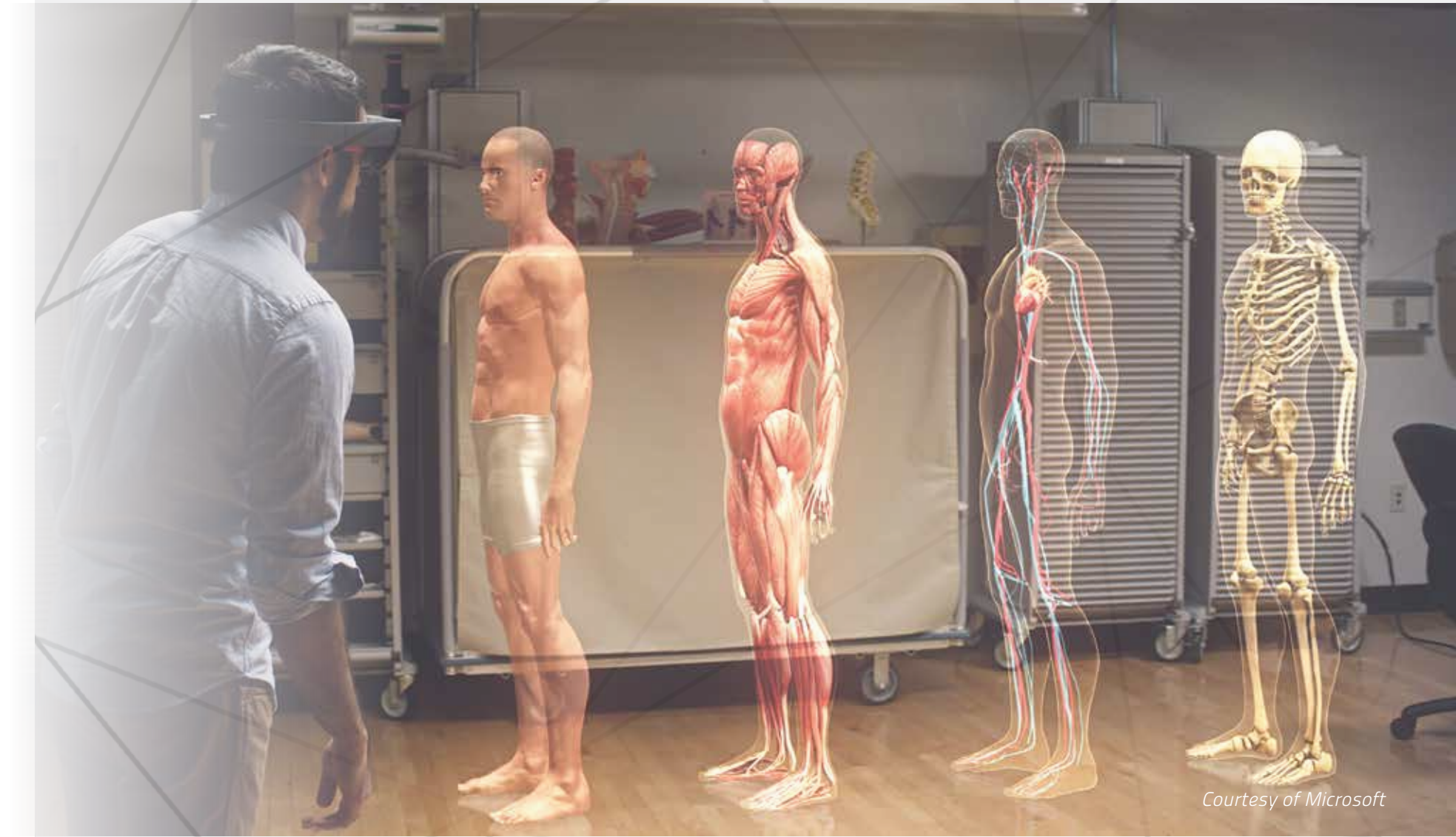
All without ever actually coming near a body.

Case Western Reserve has teamed with Microsoft and Cleveland Clinic to **make this vision a reality**.

Radiology Professor Mark Griswold leads our effort with the Microsoft HoloLens. His group is using the mixed-reality device to **reinvent learning**. They're starting with anatomy, but expect to extend to engineering, art history and more.

The opportunities are limitless. So is **the power of cooperation**.

Mark Griswold



Courtesy of Microsoft

**PARTNERING FOR PATIENTS** ▶

Research shows team-based care improves patient results. Yet generations of health sciences students have trained in silos. No more. The university's new Health Education Campus with Cleveland Clinic will bring medical, dental and nursing students together in one building. They will learn, study and even eat together. Come graduation, they'll not only be ready for cooperative care—they'll lead it.



Courtesy of Foster + Partners



Medical student Katrina Kratzer, dental student Funmi Abosede and nursing student Matthew Tavares.



Stephanie Steiner (left), clinical director of the Dorothy Ebersbach Academic Center for Flight Nursing, shows patient-care techniques.



Sonja Siler, assistant professor of political science at Cuyahoga Community College, and Molly Berger, associate dean of CWRU's College of Arts and Sciences.

**PAIRING TO LEAD IN HEALTH CARE**

Take one of the nation's most renowned hospitals. Add professors famed for innovative leadership ideas. Together, they create the Cleveland Clinic–Weatherhead School of Management Executive MBA. For those who want to lead in health care, the program offers experts in each. Students graduate in two years, and then it's their turn: How will they make places better for patients?

▼ **ALIGNING FOR INTERACTIVE LEARNING**

Ever leave a lecture thinking you understood a topic—then started homework and realized you were wrong? Enter the “flipped” classroom. In it, students watch online lessons in advance. Then, in class, they tackle the actual work—with peers and professors right there to help. Faculty at the Jack, Joseph and Morton Mandel School of Applied Social Sciences tested the new model with help from Information Technology Services. The results after a year: Students reported more positive learning—and closer connections with classmates.



One of our active-learning classrooms.

▲ **COLLABORATING FOR IN-AIR CARE**

Medical helicopters move patients fast. But they do have their drawbacks. Cramped quarters. The possibility of rain. Sleet. Even snow. Plus, at thousands of feet in the air, even a small wind gust can feel like a wallop. With assistance from Redbird Flight Simulations and Hartzell Propeller, the Frances Payne Bolton School of Nursing found a way to make in-air care less daunting. The new simulator combines a fuselage that pitches and rolls with video “windows” whose images mimic different airborne views. After those experiences, our students will be ready to soar.

**FORGING FOUNDATIONS** ▶

The Andrew W. Mellon Foundation's previous award involving Case Western Reserve helped catalyze Joseph and Nancy Keithley's \$15 million commitment to the university and Cleveland Museum of Art. That success inspired a new joint proposal to the Mellon Foundation for a humanities collaborative between Case Western Reserve and Cuyahoga Community College. The foundation responded with a \$1.55 million grant for students to earn their associate's degrees at Tri-C and then earn bachelor's degrees in the humanities at CWRU. As part of the model, faculty from both institutions will work together to advise and mentor 45 students over four years.

# DISCOVERY





# Professor + Patient = Real Feeling



Igor Spetic and Dustin Tyler, associate professor of biomedical engineering.

For someone who's lost a limb, **a prosthetic is invaluable.**

But it falls well short of an actual replacement.

Biomedical Engineering Associate Professor Dustin Tyler understood.

With colleagues on campus and at the Louis Stokes VA Medical Center, he created **a system to restore severed connections—among the body, the mind and the world.**

Through the dedication of former industrial worker Igor Spetic, Tyler and his team learned how to bring human feeling to artificial fingertips.

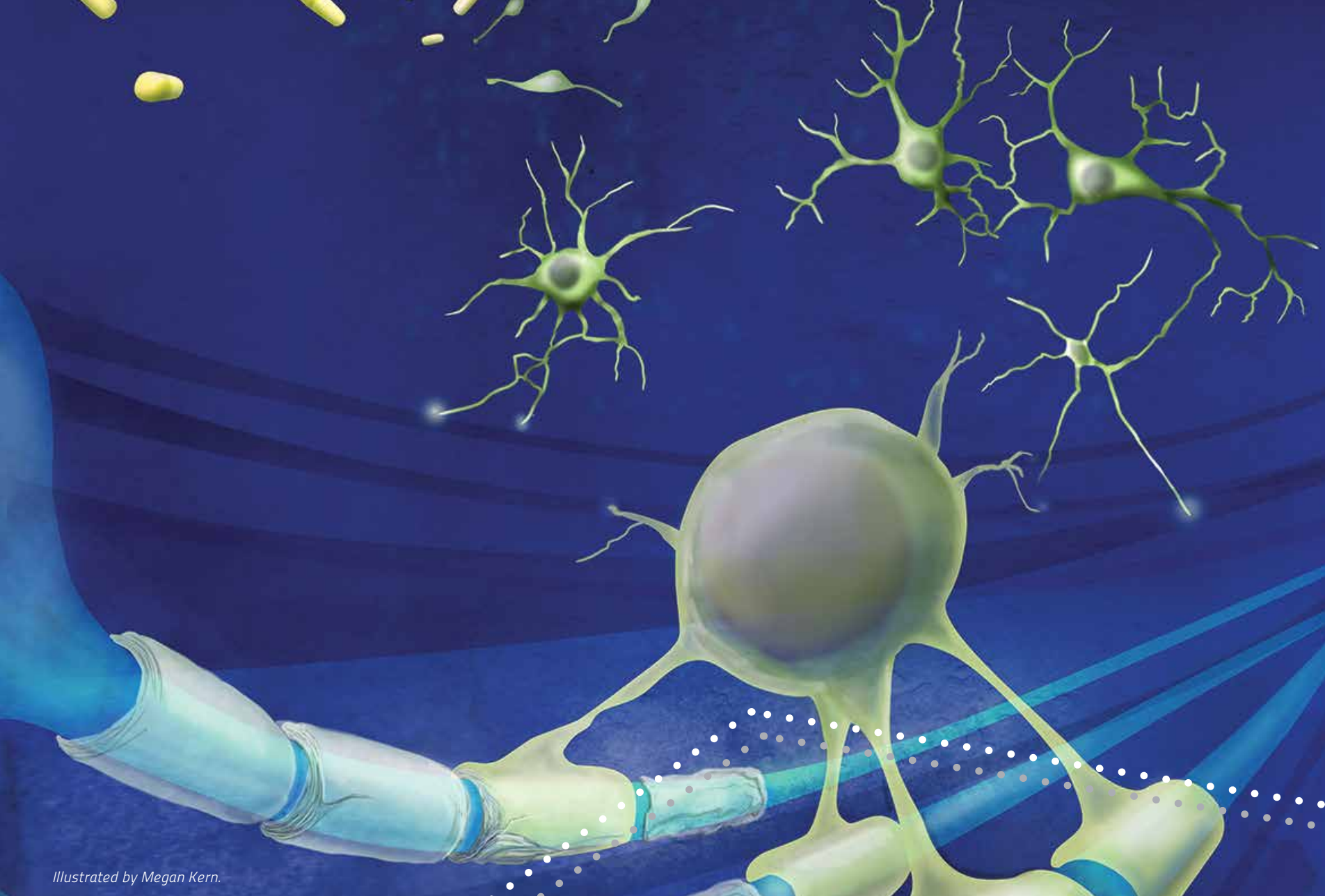
Now Spetic can hold a cherry tomato without crushing it. Spread mayonnaise without tearing the bread. He can even **feel his wife's hand.**

Tyler next will take the system out of the lab. Spetic can't wait to have it 24/7. Once refined, **the system could bring the sense of touch to legions more.**

Imagine the impact on hands—and hearts.

## A PERFECT TRIANGLE

When two scholars needed help, each turned to one person: Music Professor Ross Duffin. Duffin did more than provide an expert eye—he offered extraordinary answers. First, he deciphered a misunderstood lyric in Shakespeare's *Love's Labour's Lost*. Then he analyzed a Cleveland Museum of Art engraving that had been accepted as showing Orpheus; he suggested it actually featured Leonardo da Vinci portraying the musician of myth. Neither discovery would have happened without the original findings—or Duffin's willingness to help.



Illustrated by Megan Kern.

### A MULTI-PRONGED ATTACK ON MS

When medical school faculty member Paul Tesar decided to take on multiple sclerosis (MS), he knew he'd need help. Tesar recruited the best minds he could find, including ones beyond this campus. Together, they discovered that two common medicines—one for athlete's foot and another for eczema—also may be able to direct stem cells to reverse MS damage. Next steps include transforming the topical medications for internal use, and conducting clinical trials. Still, the initial results are so promising that this much already is clear: Team science works.

### MARRIED TO THEIR WORK?

When spouses Katherine and Tim Krynak—she a doctoral candidate in biology and he a Cleveland Metroparks projects manager—traveled to Ecuador for a collaborative research, they were drawn to a tiny rain frog. Or was it two? In fact, the animal can transform—going from spiky to smooth skin in response to its surroundings. The discovery makes the Krynaks the first to find an amphibian able to change texture.

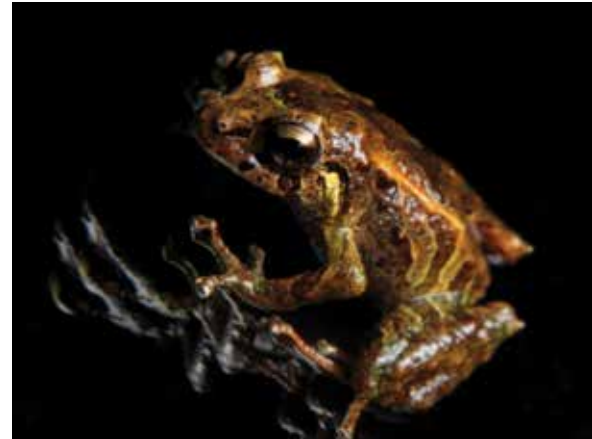


Photo by Tim Krynak.

### DOUBLING UP ON DISCOVERY

The 55,000-year-old partial skull unearthed in Israel was a discovery in itself. But orthodontics faculty Mark Hans and Bruce Latimer thought the bones might have more to tell. The answer even surprised them: The skull offers the earliest evidence yet that modern humans and Neanderthals may have crossed paths 15,000 years earlier—and in a different location—than previously thought. Now *that's* putting your heads together.



# ENTREPRENEURSHIP

*Felipe Gomez del Campo, working on his project at NASA Glenn Research Center.*

# Pitching in for a High-Flying Idea

Felipe Gomez del Campo arrived at Case Western Reserve with **a winning high school science project**.

Today, the Case School of Engineering student is **founder and CEO of FGC Plasma Solutions**. He has a patent pending, has garnered more than \$135,000 in awards and other support, and even earned a trip to meet President Barack Obama.

How did he get from a Bunsen burner experiment in the backyard to speaking at the White House?

First: his own **intelligence, initiative and ingenuity**.

Then: assistance from CWRU's Blackstone LaunchPad, its Intellectual Property Venture Clinic and Sears think[box] innovation hub, and an initial gift from an alumnus.

Gomez del Campo's device injects a precise amount of plasma into jet fuel to allow the engine to burn more efficiently.

These days, he's refining his technology at NASA Glenn Research Center. If he succeeds, the device will lower fuel consumption and reduce emissions in airliners and industrial gas turbines.

Who knows—**someday *he* might be one of those alums investing in student startups**.

## ▼ INNOVATION ECOSYSTEM

Felipe Gomez del Campo isn't the only one to benefit from campus resources for student entrepreneurs. The year also saw budding business minds develop robotic teddy bears, hospital bedside cleaning devices and a pedal-powered machine to charge cell phones in areas without electricity. There's even a big-data-analysis system to improve medical treatment. All told, our students attracted more than \$200,000 in local and national competitions. The success teaches their classmates a key lesson: Product pitches really can pay off.



*Left to right: Engineering student Xyla Foxlin, co-founder of Baymax Buddies; doctoral nursing student Shanina Knighton, creator of a hospital bedside hand-sanitizing device; and engineering student Sam Crisanti, mathematics student Ian Ferre and engineering student Quentin Baker, leaders of Greenlite Technologies.*

### PROTECTING IDEAS

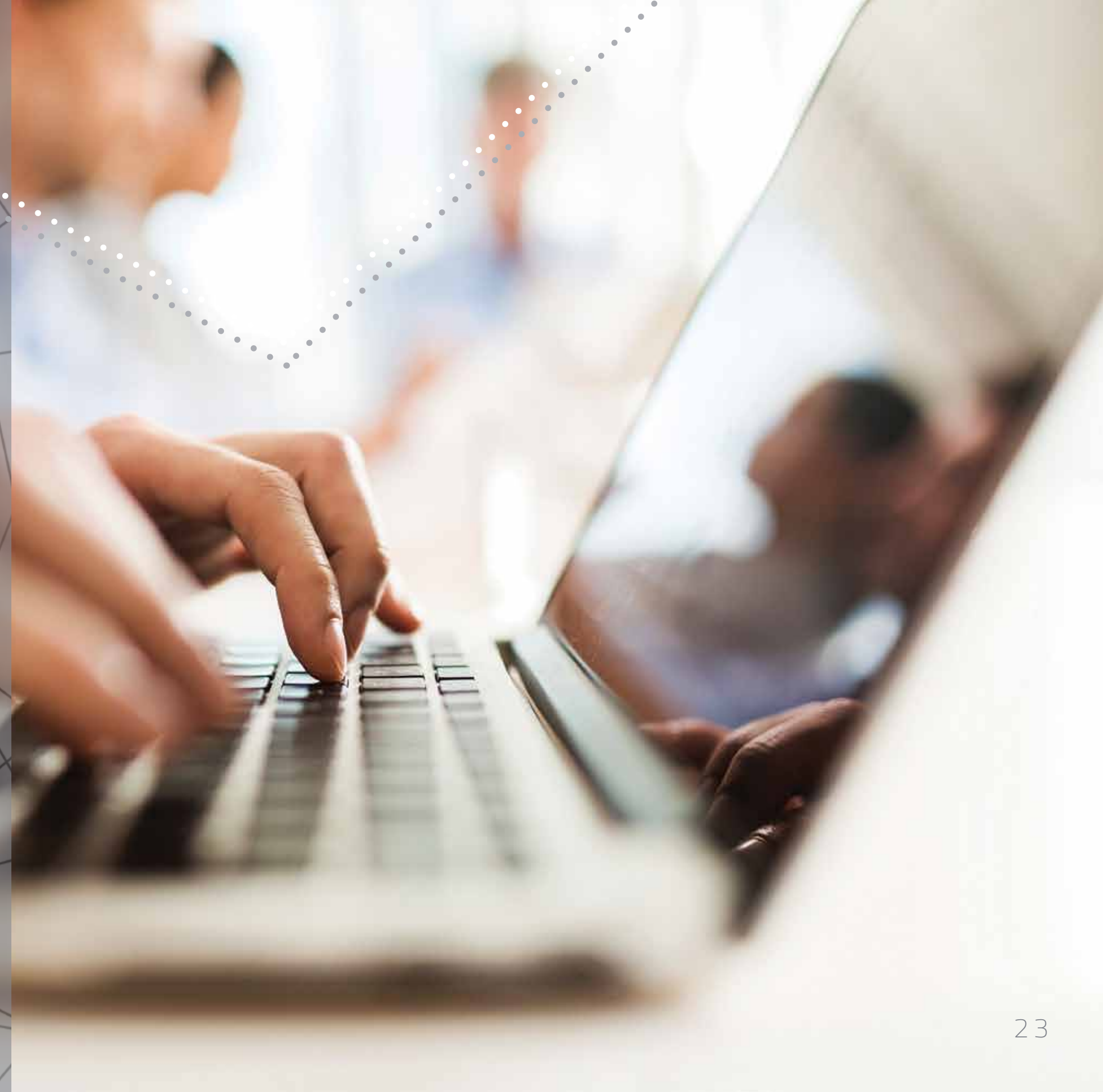
The law school's Intellectual Property Venture Clinic gives students a win-win: Hopeful inventors get essential information, and aspiring advisers get practice offering guidance. Part of the newly launched Spangenberg Center for Law, Technology & the Arts, the clinic also offers interdisciplinary educational programs where students from different schools work together to develop an idea, devise a business strategy and address legal issues involved in commercialization.

### GOING GLOBAL ▶

Michael Goldberg wants to introduce you to someone you should know. The venture-capitalist-turned-management-faculty-member revels in linking students with professionals across the globe. They might get advice...or an investment...or even a job. Now, Goldberg has expanded his networks exponentially: His new massive open online course, or MOOC, has enrolled nearly 100,000 students in 190 countries, with translations into 14 languages. His latest connection? Putting engineering students here in touch with a hopeful entrepreneur in Namibia.



*Law students collaborate with each other—and across schools—to bring products to market.*





SCHOOL OF DENTAL MEDICINE  
CASE WESTERN RESERVE  
UNIVERSITY

Smiles!

McGregor  
PAGE

COMMUNITY



*Dental students and faculty travel around Cleveland in the Lifelong Smiles van to provide care to senior citizens.*

# On the Road to a Better Smile

Treating Cleveland students' dental issues while they're in the classroom **proved a stirring success** for our dental school. So when it came time to consider senior citizens' needs, they favored a similar approach.

The State of Ohio signed on to the efforts by donating a 38-foot van, and the McGregor Foundation offered support for renovations.

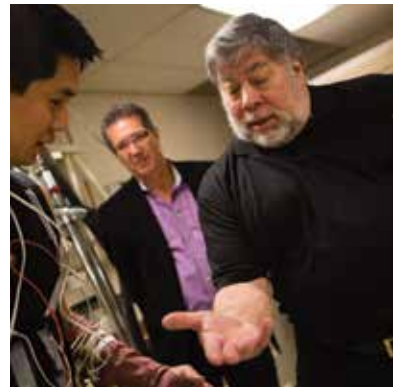
Now equipped for exams, fillings, X-rays, cancer screenings and more, the customized van is driven to nursing homes, where **School of Dental Medicine students and faculty provide treatment to seniors**, many of whom are receiving their first oral care in years.

## TEAMING TO SUPPORT CIVIL RIGHTS

Rebecca Sremack didn't need a law degree to decide that Akron's sweeps of homeless camps violated the U.S. Constitution. But the third-year law student did require help to do something about it. She joined with six classmates and Associate Professor Avidan Cover at the Milton A. Kramer Law Clinic, ultimately filing a federal lawsuit. The case is pending, but even the start of litigation raised awareness of due process and unreasonable search and seizure protections at risk.

## EXCHANGING IDEAS

The appeal of a university extends beyond the many minds already there. It's also about the individuals drawn to campus to share their ideas and experiences—and to hear ours. The past academic year featured an especially high-profile list, from Apple co-founder Steve Wozniak...to feminist activist Gloria Steinem...to Emmy-nominated actress and transgender advocate Laverne Cox. The university brought a new speaker series to campus in 2014, and other individuals and organizations pooled support to attract still more standouts to our podiums.



Steve Wozniak and Case School of Engineering Dean Jeffrey L. Duerk (background)



Gloria Steinem



Laverne Cox



Peter Knox

## CULTURAL CONNECTIONS

An endowed professorship wasn't all that convinced classics scholar Peter Knox to leave the Colorado mountains for Case Western Reserve. The director of the Baker-Nord Center for the Humanities had two other hooks: exceptional faculty colleagues and extraordinary cultural institutions. Knox quickly engaged both, and one of the most inspiring outcomes is the April 2016 launch of a major annual humanities festival in Cleveland. With that as his opening move, just *imagine* what connections he'll make next.

## CHANGING LIVES

Dan Flannery, director of the Begun Center for Violence Prevention Research and Education, has studied the national Fugitive Safe Surrender program since people wanted on warrants first were allowed to turn themselves in at a Cleveland church in 2005. So when Cuyahoga County hosted its first Juvenile Safe Surrender program last fall, he was there again, along with several graduate students and colleagues from the Jack, Joseph and Morton Mandel School of Applied Social Sciences. Our law students also attended; some worked side by side with practicing attorneys to understand how innovative models can more effectively address community needs.





*The Tinkham Veale University Center is a hub of activity, offering homes for organizations such as the Flora Stone Mather Center for Women and Undergraduate Student Government.*

# EXTENDING OUR IMPACT

# 40,000 Strong— and Counting



Judge Ben C. Green Professor of Law B. Jessie Hill, medical student Akshay Sharma, biology and anthropology student Temi Omilabu, and Sears think[box] manager Ian Charnas (CWR '05).

Case Western Reserve's **\$1 billion capital campaign goal** sounded awfully lofty for a place that hadn't done a major fundraising drive in nearly two decades.

Imagine the surprise, then, when more than 40,000 supporters took the campus past that big number—**2.5 years ahead of schedule**.

Perhaps even more astonishing? Rather than stop and celebrate, the university announced an expanded campaign goal of **\$1.5 billion** in August 2014.

Fundraising for existing priorities continues, along with increased emphasis on scholarships, endowed professorships and research.

Apparently the audacity inspired. Eleven months later, CWRU announced that donors had **lifted the institution to its second-straight annual attainment record: \$166.9 million**, beating the previous year's total by more than \$15 million.



Opening the Wyant Athletic and Wellness Center was a key priority in the university's capital campaign.

**CENTRAL SPACE** ▶

Alumnus Tinkham “Tink” Veale’s \$20 million commitment ended decades of waiting for Case Western Reserve to have a modern-day university center. Individuals and organizations had contributed toward the project for years, but it wasn’t until Veale made his naming gift that construction could start. Though he died before the building’s dedication in 2014, his dream of people from all disciplines coming together in one place is realized every day (and night: the 89,000-square-foot space is open 24/7 during the academic year).



*Tinkham Veale University Center*

▼ **ATHLETIC OPPORTUNITY**

James C. Wyant had no plans to pursue athletics when he arrived on campus as an undergraduate in the early 1960s. But an early encounter with legendary coach Bill Sudeck led to four years of varsity letters—and lifelong lessons from sports. Now a university trustee, Wyant made a \$4 million lead commitment to give today’s students similar opportunities; the 24,000-square-foot Wyant Athletic and Wellness Center opened in October 2014, complete with weights, exercise machines and meeting space.



*Wyant Athletic and Wellness Center*

**BUILDING COMMUNITY** ▶

The Jack, Joseph and Morton Mandel School of Applied Social Sciences has been a creature of its community since it opened a century ago. Cleveland’s leaders recognized early the need for professional preparation of social workers, and the institution has evolved ever since. Last spring, the school launched a \$9.2 million renovation and expansion project, thanks in part to a lead gift from the Jack, Joseph and Morton Mandel Foundation. The updated space will encourage increased collaboration within the school community, as well as with many beyond the campus.



*A rendering of renovations for the Mandel School.*



## Degrees and Campus Statistics

July 1, 2014 - June 30, 2015

### Degrees Awarded

Bachelors	902
Masters	1,211
PhDs	185
Other Doctorates (JD, MD, DMD, DNP, DMgt, DMA, SJD)	470

### Degrees by School (Undergraduate and Graduate)

Case School of Engineering	483
College of Arts and Sciences	573
Frances Payne Bolton School of Nursing	275
Jack, Joseph and Morton Mandel School of Applied Social Sciences	149
School of Dental Medicine	84
School of Law	224
School of Medicine	518
Weatherhead School of Management	478

### Enrollment (Fall 2015)

Undergraduate	5,121
Graduate and Professional	6,219
States Represented	50
Countries Represented	86

### Campus

Faculty (full-time)	3,360
Staff (full-time and part-time)	3,067
Campus Size (acres)	
University Circle	185
University Farm (Hunting Valley, Ohio)	389

## Research and Technology Highlights

### Research

Sponsored Research Projects	1,451
Sponsored Research Project Awards	\$292.1 million

### Technology Transfer

New Intellectual Property Deals with Industry	50
Licensing Revenues	\$2.3 million
New Inventions	258

## 2015 Competitive Sponsored Research Projects

### Projects Awarded

### Awarded, in Millions\*

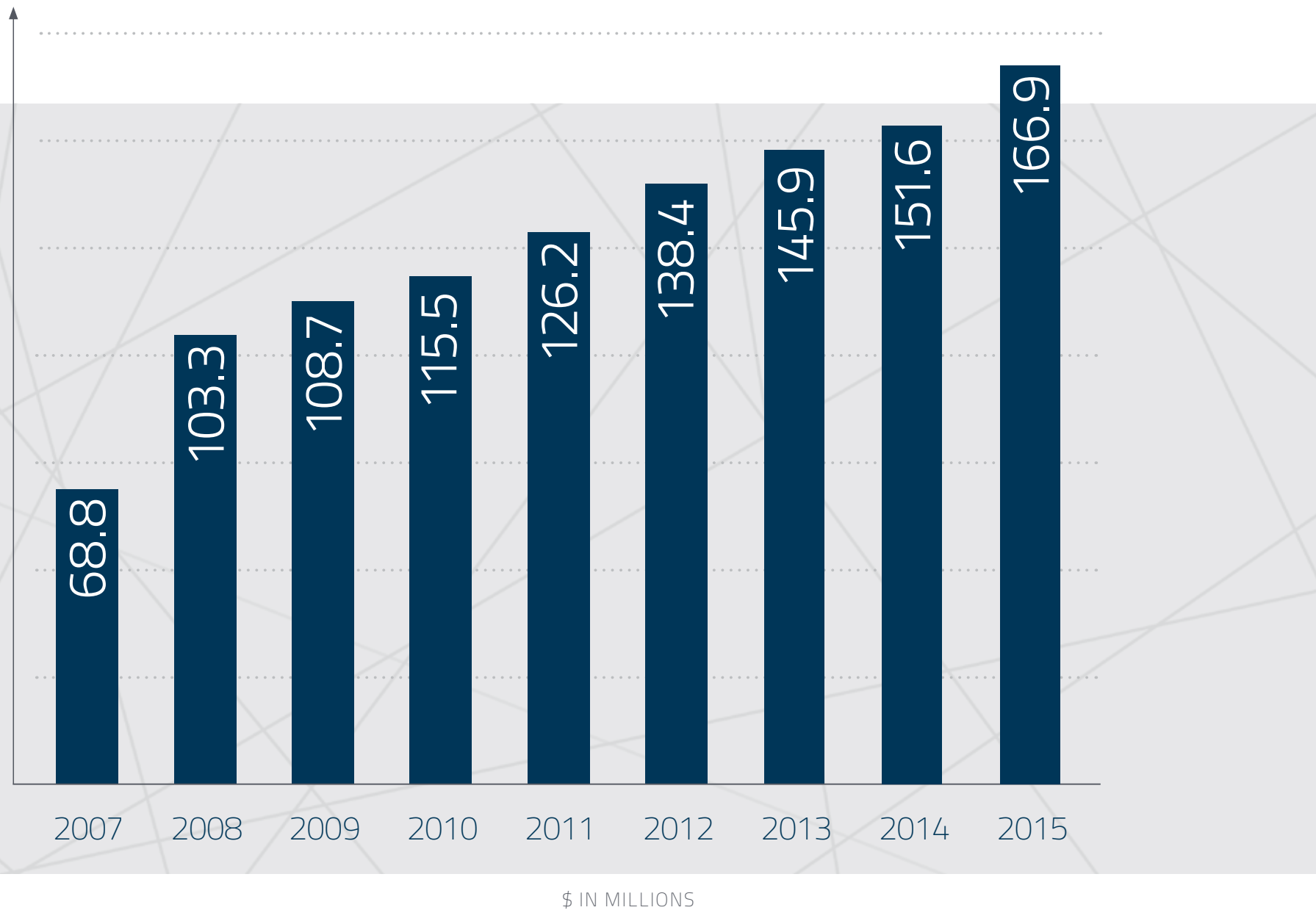
407	National Institutes of Health	\$174.9
52	National Science Foundation	\$12.1
29	Department of Defense	\$10.5
11	Department of Energy	\$3.8
23	NASA	\$2.1
55	Other Federal	\$3.9
174	Industry	\$15.3
649	Nonprofit, Foundations, Associations, Societies	\$65.7
51	Other Government	\$3.8
<b>1,451</b>	<b>Total</b>	<b>\$292.1</b>

\*Numbers have been rounded.

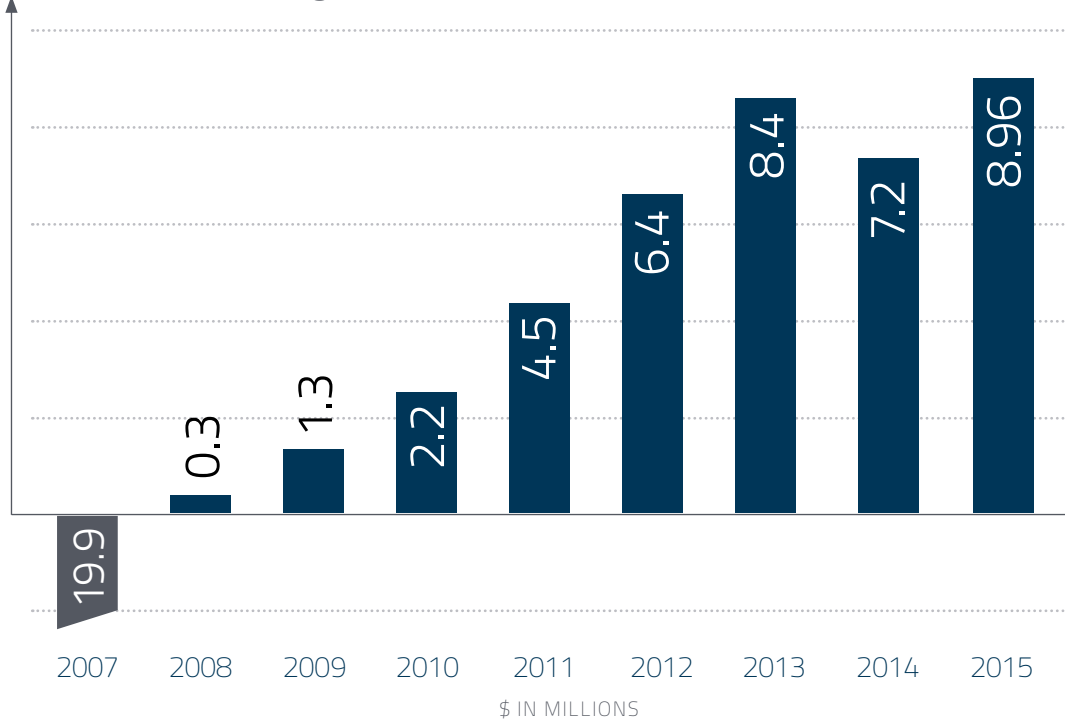
### Financial Highlights

July 1, 2014 - June 30, 2015

#### Gifts and Pledges from Private Sources



#### Total Operating Surplus (Deficit)



#### Total Operating Revenues and Expenses



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As of Jan. 1, 2016

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*For a listing of the most current trustees, including emeriti, please visit [case.edu/bot](http://case.edu/bot).*

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As of Jan. 1, 2016

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