



## PUBLISHING PORTFOLIO

p2

**EDUCATION**

p24

**LIFESTYLE**

p33

**B 2 B**



PUBLISHING PORTFOLIO

# EDUCATION

Fairfield Country Day School

Evergreen Country Day School

Boulder Country Day School

Yale School of Surgery

Yale School of Engineering

New Jersey City University



A photograph of two young boys in the foreground, looking down at something held in the hands of the boy on the right. The boy on the left is wearing a blue polo shirt and glasses. The boy on the right is wearing a light blue button-down shirt and red pants. In the background, another boy is partially visible. The setting appears to be outdoors near a building with large windows.

# FAIRFIELD Country Day SCHOOL

**In the Loop** Fall 2017

Including Annual Report 2016-2017

The FCDS Annual Fund > What is it?



Like most independent schools, Fairfield Country Day School has an annual appeal each school year to raise funds that support the operating budget of FCDS. These funds help close the gap between tuition income and operating expenses.

Donors to the Annual Fund provide resources that help propel FCDS forward as a leader in all boys' education. The Annual Fund covers approximately 7% of our operating budget each year and ensures that we are able to provide each boy with the incredible opportunities that are the hallmarks of the Fairfield Country Day School experience.

For more information on the Annual Fund and other frequently asked questions, please visit:

[fairfieldcountryday.org/Philanthropy](http://fairfieldcountryday.org/Philanthropy)  
or contact the Development Office at 203-259-2723

**\$613,568**  
was raised during the  
2016-2017 Annual Fund.

A Look Back at FCDS Philanthropy  
Over the Last Twenty Years

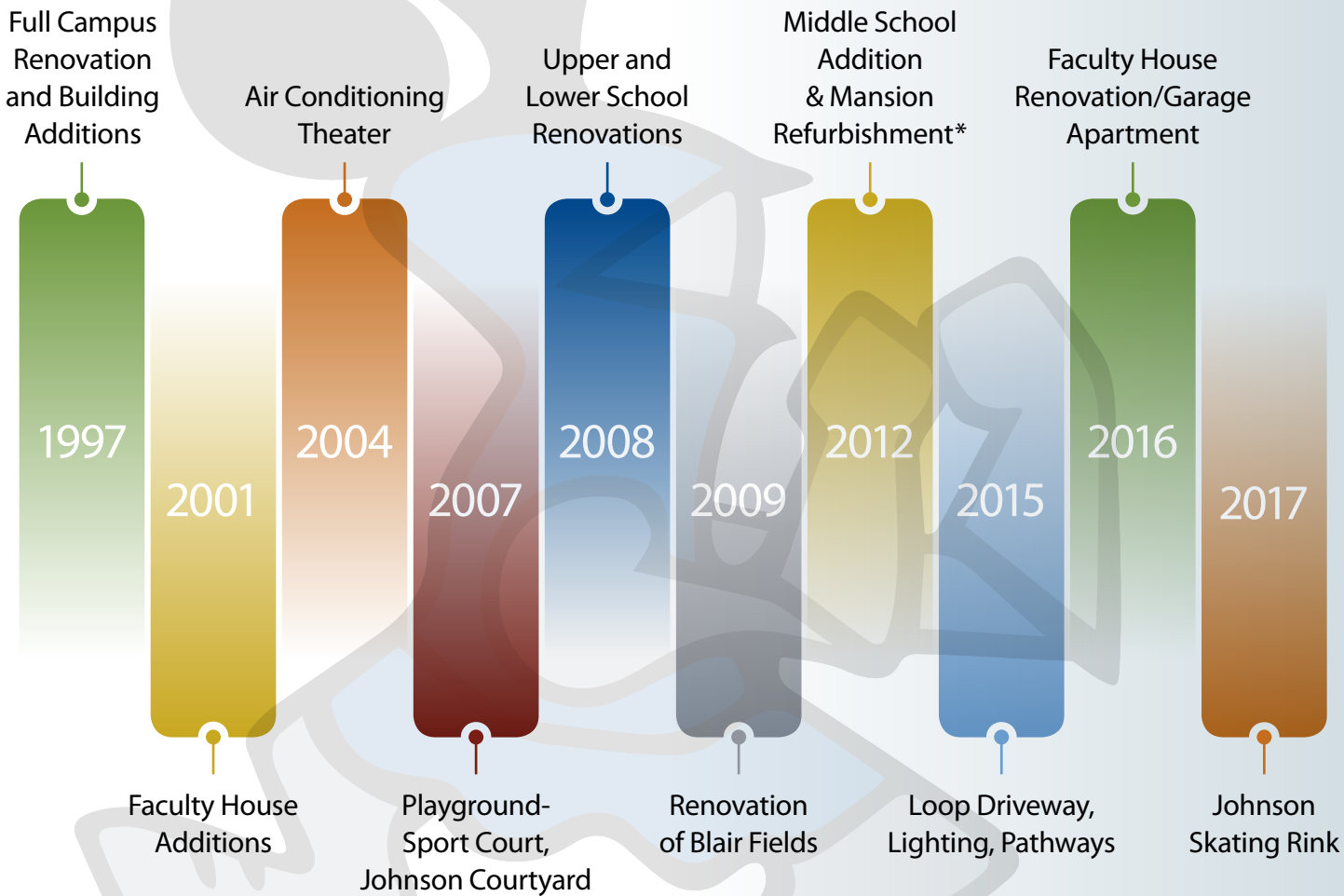
The Annual Fund has made it possible for FCDS to build a legacy of excellence in educating boys. Your support of the Annual Fund demonstrates your belief in a Fairfield Country Day School education and is an investment in our students, our faculty and staff, our campus, and our future.

Over the last twenty years, the Annual Fund has helped support the operating budget by covering costs such as sports gear, science lab equipment, props for the spring musical, and library books.

In addition to the everyday expenses of running a school, gifts to the Annual Fund have helped support major investments in our campus like faculty housing, the loop expansion, campus lighting, and renovations to the hockey rink.

Your support of the Annual Fund has a lasting impact on the future of Fairfield Country Day, allowing us to be the best school for boys.

Below you can see how your Annual Fund dollars have helped to support major investments at FCDS over the last twenty years.



\*Annual Fund support in addition to Campaign funds



MISSION STATEMENT:

Fairfield Country Day School provides an educational community dedicated to the personal growth and intellectual development of boys. Our balanced and challenging program is designed to help each student expand his desire and ability to acquire knowledge, stimulate his curiosity and creativity, and enhance his self-esteem and respect for others. Each boy's individual development is encouraged in an environment that anticipates the future while appreciating the past.

boys  
**thrive** at FCDS

where boys  
**excel**





**At FCDS you are KNOWN as a scholar,  
an artist, an athlete, a leader and a**

**friend.**

# welcome!

## At Fairfield Country Day School we know each student.

Our outstanding faculty are not only teachers—they are coaches, advisors, and leaders who connect with our boys daily, in the classrooms, on the fields, and around the lunch tables. Our small class size and emphasis on community allows our teachers to form lasting, meaningful relationships with our students that instill a desire for success and a lifetime love of learning.

We know boys are active learners, which is why we engage them with a balanced curriculum of academics, arts, music, and athletics. Our academic program teaches boys to communicate effectively, problem solve, and lead. Our structured yet flexible classes allow boys to move as part of the daily educational experience.

We know that a true education is far more than learning facts—it's about learning to solve problems. A Country Day education develops this critical skill by encouraging curiosity, creativity, and critical thinking. Our boys become more resilient, and ready to take on the complex issues of a fast-changing world.

We know the importance of creating an environment where boys can explore their talents in an atmosphere filled with trust, respect, care, and integrity. Our personalized approach to education encourages students to seek excellence at FCDS and beyond.



# Building boys of strong character.

## Our emphasis on students' moral growth

is equally as important as our focus on academic growth. The honor code teaches the significance of personal responsibility and good citizenship. The school-wide stewardship program provides age-appropriate opportunities for students to address the needs of others while learning about underlying social issues. At FCDS, character education is key to educating the whole boy.

**“It is easier to build a boy than to mend a man.”**

—Mahatma Gandhi



## The Blue Slip Tradition:

Blue Slips are a long standing tradition at Country Day. These handwritten slips recognize the members of our community who have distinguished themselves in a positive and noteworthy manner. This public acknowledgement is a highlight of the week for many, as boys and their advisors take great pride in receiving them. Slips may be awarded for good deeds such as boys lending their teachers a helping hand or when an older boy takes initiative to help out a younger student tie his shoes in the hallway.

### **SCHOOL MOTTO:**

*We are judged by our deeds.*



EVERGREEN COUNTRY DAY SCHOOL | CAPITAL CAMPAIGN

LOOKING

BEYOND

THE CLASSROOM...



WE ARE

BUILDING

THE HOME-FIELD ADVANTAGE!

CHARACTER

LEADERSHIP

PERSEVERANCE

# WHERE WE'RE GOING!

## Our Vision...A Two Phase Plan for Construction

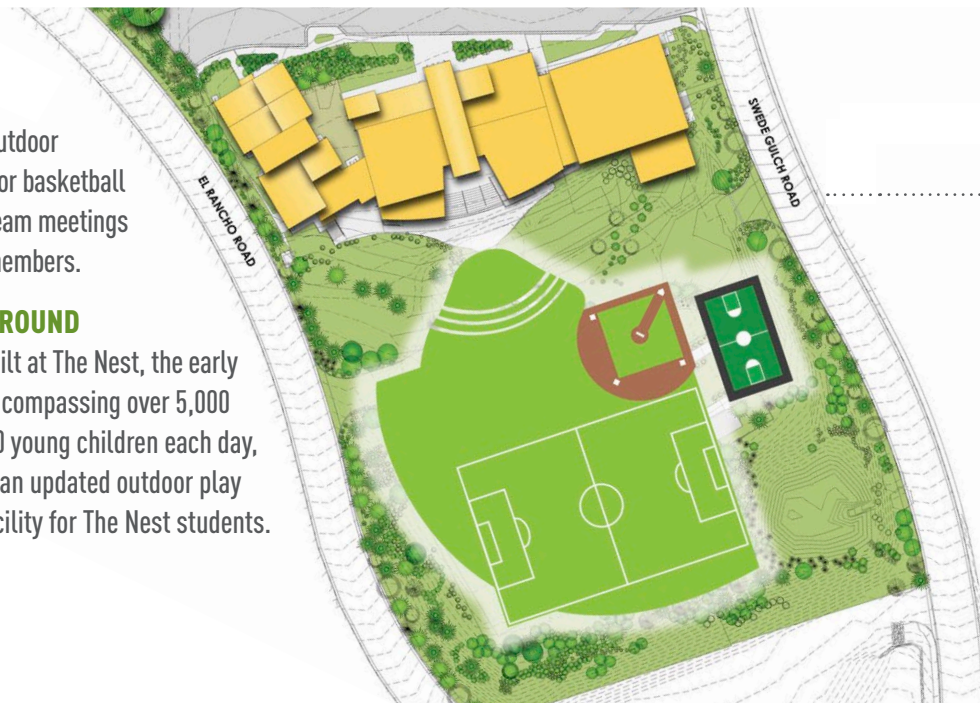
### PHASE 1: Outdoor Facilities

#### CHSAA REGULATION TURF FIELD →

Construction will begin in Spring of 2015 to build the school's first outdoor turf field, lined for soccer, lacrosse, and baseball. The current outdoor basketball court will be relocated, and an outdoor pavilion will accommodate team meetings and viewing. This field will be used by both school and community members.

#### ← NEW 5,000 SQ. FT. PLAYGROUND

Two new structures will be built at The Nest, the early childhood facility at ECDS. Encompassing over 5,000 square feet and serving 50-60 young children each day, these structures will provide an updated outdoor play and physical development facility for The Nest students.



### PHASE 2: Indoor Facilities & Endowment

#### STATE-OF-THE-ART GYMNASIUM WITH OVER 10,000 SQ.FT. OF NEW PLAYING SURFACES

The new gymnasium will feature a CHSAA regulation basketball hardcourt, also lined for volleyball. A center curtain will allow two simultaneous practices or events. The venue will provide space for school assemblies, meetings and performances. It will also be used for physical education, practices and competitions, and for rental to the community. Bleacher seating will accommodate spectators. Future facilities can be added for locker rooms, strength training and exercise, climbing walls and other needs.

#### MANAGING OUR ENDOWMENT, SECURING OUR FUTURE

Endowment funds will support the deferred maintenance on facilities and will further provide financial security.

## LEAVING YOUR LEGACY...

### Naming Opportunities at the Main Campus:

- GYMNASIUM: \$1,250,000
- ELEMENTARY ACADEMIC WING: \$750,000
- NEW BASKETBALL COURT: \$250,000
- NEW SOCCER FIELD: \$500,000
- PRACTICE COURTS(X2): \$50,000
- BASEBALL DIAMOND: \$50,000
- OUTDOOR BASKETBALL COURT: \$50,000
- ELEMENTARY PLAYGROUND: \$50,000

### Naming Opportunities at the Nest:

- THE NEST PLAYGROUND: \$50,000
- THE NEST MOVEMENT ROOM: \$15,000



# YOUR GIFT WILL LAST THEIR LIFETIME.

## WAYS TO GIVE

Cash/check: Simply fill out the donation form on the remittance envelope and mail it in, along with your check, payable to BCD.

## CREDIT CARD

We welcome gifts by credit card and accept American Express, Discover, MasterCard and Visa.

## PLEDGE

Pledge your gift now by completing and mailing in the enclosed form. Pledges may be paid in installments or with a single payment and must be fulfilled by July 31, 2014.

## CORPORATE MATCHING GIFTS

Each year BCD raises thousands of dollars through matching funds. Please contact your employer's human resource department to determine its matching gift availability and program terms.

## GIFTS OF SECURITIES

Gifts of stock not only benefit BCD, but may also provide additional tax advantages to the donor. Contact Business Director Ann-Marie Tewey at 303-527-4931 Ext. 228 for specific transfer instructions.

## BEQUESTS AND PLANNED GIFTS

To include BCD in an estate plan, consult your personal financial advisor for details.

**BCD**  
BOULDER COUNTRY DAY SCHOOL

4820 Nautilus Court North  
Boulder, Colorado | 80301  
T: 303.527.4931 Ext. 240  
[bouldercountryday.org](http://bouldercountryday.org)

# {giving} 2013-2014

THE ANNUAL FUND  
BOULDER COUNTRY DAY SCHOOL



**\$150=**

LITERACY MATERIALS  
FOR 3 STUDENTS

**\$25=**

4 LAB BEAKERS

**\$800=**

NEW PROJECTOR  
FOR CLASSROOM

**\$100=**

CLASS SET OF PAINT  
BRUSHES, CLASSROOM  
BUILDING BLOCKS  
OR SEVEN BOOKS

**\$1,500=**

LAPTOP FOR TEACHER



**YOUR DONATION MAKES ALL THIS POSSIBLE, AND MORE!**



**\$250=**

CLASS SET OF  
DISSECTION  
SPECIMENS  
FOR THE  
ENTIRE YEAR

**\$500=**

ANNUAL SUBSCRIPTION  
FOR E-BOOK DATABASE

**\$2,400=**

REFINISH GYM FLOOR

**\$15,000=**

ONE MONTH'S  
WORTH OF  
CAMPUS UTILITIES

YOUR PARTICIPATION MAKES A DIFFERENCE AND HELPS  
ENSURE THE **EXCELLENCE** OF A BCD EDUCATION.

**PERSONAL EXCELLENCE =**

BCD's motto - *Respect Yourself. Respect Others. Take Responsibility for Your Actions.* This is what guides BCD's personal development. We teach character education with intention, helping our students become responsible citizens, critical thinkers, and problem solvers.

**INNOVATIVE EXCELLENCE =**

BCD teachers use current technologies to enhance our rich interdisciplinary curriculum. We believe academic innovation empowers our students to become technologically literate 21st century leaders who capably balance their creativity with the efficiency and precision of current technologies. It is our goal to create lifelong learners through a multitude of opportunities, and we believe academic innovation leads to their success.

**ARTISTIC EXCELLENCE =**

At BCD, we place tremendous value on the arts. Our multifaceted program encompasses performance, production, art history, critiques, and aesthetics. We emphasize how and why we create and encourage each student to explore their artistic genius.

**ATHLETIC EXCELLENCE =**

Bulldogs strive for excellence - in and outside of our classrooms - and we commit to providing our athletes with the same type of outstanding instruction that they are accustomed to receiving in their academic classes. We teach the values of teamwork, sportsmanship, persistence, and personal best, and we encourage our students to build their skills by participating in a variety of programs.

**GLOBAL EXCELLENCE =**

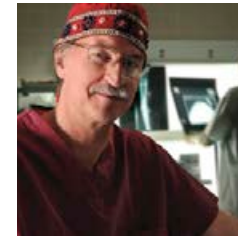
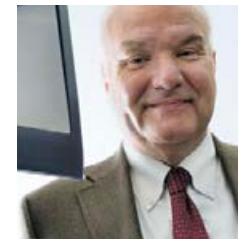
BCD students are responsible global citizens. We strive to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect. Middle school students participate in the International Baccalaureate (IB) Middle Years Programme, which provides a framework of academic challenge that encourages students to embrace and understand the connections between traditional subjects and the real world, and become critical and reflective thinkers.

**OPPORTUNITIES FOR EXCELLENCE =**

We are committed to providing a BCD education to a broad spectrum of families. Through a robust financial aid and scholarship program, nearly 15% of BCD families receive some form of financial assistance. The opportunity to attend BCD has helped change their lives in the most positive and nurturing ways. And so too does their presence on the BCD campus profoundly impact their classmates, teachers and the community as a whole.

**COMMUNITY EXCELLENCE =**

Through our reading buddy program, all-school assemblies, and countless other school-wide events, BCD fosters friendships that last a lifetime. Through our service programs, students learn the meaning of giving, and making connections in their broader communities.



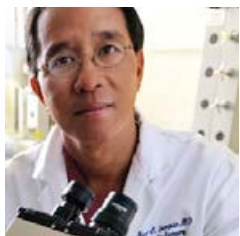
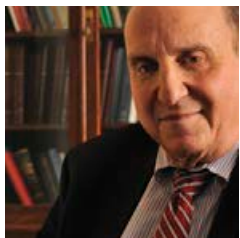
## Report from Yale Surgery



Yale School of Medicine  
Department of Surgery



ON THE FOREFRONT  
PATIENT CARE, TEACHING, RESEARCH



NEW HAVEN, CT (203) 785.2697



## CARDIAC SURGERY

The survival statistics for coronary artery bypass, mitral and aortic valve replacement and/or repair, performed by Yale's surgeons, are among the best anywhere in the United States. The successful outcomes for patients undergoing cardiac procedures has attracted patients nationally and internationally. By advancing the understanding of the basic cause of arteriosclerosis, we are seeking new ways to combat this most common risk factor for heart disease, hoping that new cures will be discovered.

Three of our faculty members specialize in pediatric patients, offering world-class surgery while exploring better ways to combat more complicated congenital cardiac defects. Yale pediatric cardiac surgeons provide care at both Yale-New Haven Hospital and at the Connecticut Children's Medical Center in Farmington, providing the most comprehensive surgical treatment of congenital heart surgery in the state.

Expanding the options of cardiac patients through research is essential to our mission. Yale is an international center for research on aortic aneurysms, particularly identifying the factors that allow early detection of this malady. Faculty member John Elefteriades, MD, was the first to establish a connection between weight training and death from previously undetected aneurysms in young athletes.

In clinical practice and research, the cardiac surgical section is enriched by its close collaborations with colleagues in cardiology and internal medicine. These relationships ensure seamless care for patients and a broad interdisciplinary vision. Moreover, our cardiac surgery residents and fellows have attained leadership positions in the most highly ranked academic medical centers in the country, clearly a result not only of their talent and promise, but an affirmation of the excellence of the program in which they trained.

**Dedicated Pioneers of Innovation**  
*Yale cardiac surgeons are dedicated to excellence in performing conventional operations for the full range of cardiac disease while pioneering innovative procedures that lead to better outcomes.*

## John A. Elefteriades MD, FACS

- William W. L. Glenn Professor of Cardiothoracic Surgery
- Chief, Cardiac Surgery



Yale School of Medicine  
Department of Surgery

ON THE FOREFRONT  
PATIENT CARE, TEACHING, RESEARCH

## Developing Tomorrow's Energy

The Energy Sciences Institute is fostering collaborations, finding power solutions

## Big Data

SEAS researchers are tapping into an unprecedented amount of data and making sense of it

## Inside/Outside

Environmental engineers are finding new ways to study the air we breathe — both indoors and out

2016-2017

# YALE ENGINEERING



Yale

## Grasping the Future of Robotics

How a Box of 77 Items Could Prepare Robots for their Next Challenge: Your Home

*The Publication of Yale's School of Engineering & Applied Science*

## Vital Collaborations

The interdisciplinary field of biomechanics has found a natural home at Yale

## From Waste to Energy

Yale engineers discover real benefits by utilizing a synthetic solution

## Expanding the SEAS Network

The new Yale Institute for Network Science connects SEAS to a variety of researchers

2013-2014

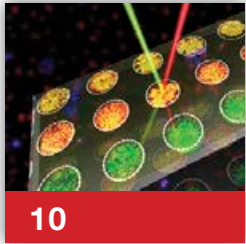
# YALE ENGINEERING

Yale

## LED'ing the Way

The digital canvas is just one of many ways SEAS is engineering connections across campus

*The Publication of Yale's School of Engineering & Applied Science*



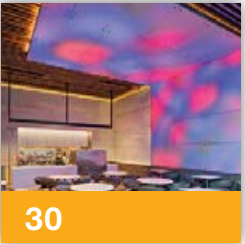
10

The Translator



18

A Hive of Creativity and Innovation



30

Lighting the Bridge

FEATURES



02

Year in Review



06

Macro Changes for Micro Devices



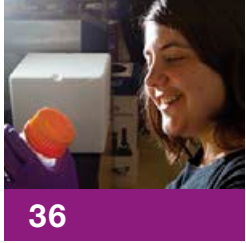
16

Today's Wasted Heat, Tomorrow's Energy Source



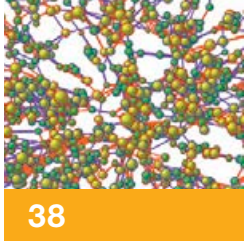
26

Vital Collaborations



36

Broadening the Horizon



38

Expanding the SEAS Network

EDUCATION SUSTAINABILITY INTERDISCIPLINARY MEDICAL INNOVATION TECHNOLOGY

YALE ENGINEERING 2013-2014

YALE UNIVERSITY  
School of Engineering & Applied Science

P.O. Box 208267 • New Haven, CT 06520

engineering@yale.edu • (203) 432-4200  
seas.yale.edu

T. Kyle Vanderlick  
Dean

Steven Geringer  
Director of New Media  
& Publications

Rase McCray  
Director of News  
& Outreach

Photography  
Robert DeSanto  
Fly on the Wall Productions  
Carl Kaufman  
Michael Marsland  
Lisa Wilder

Contributors  
Steve Kemper  
Michelle Sipics  
Laurie Wiegler



Message From the Dean

More unified, more accessible, more innovative, more excellent — words to describe the rejuvenation of Yale Engineering?

These words actually come from new University President Peter Salovey's vision for Yale's future as this great University forges ahead in today's technology-driven world — his "design principles," if you will. Not every president has viewed Yale Engineering as central to the mission of the University, the obvious example being when the School of Engineering at Yale was dissolved in the mid-sixties. But as every engineer knows, "failed" experiments and ineffective designs generally offer more lessons than successful ones. Indeed, they often provide the opportunity to create something far better than what might have ever been imagined. Today, Yale's School of Engineering (formally re-established in 2008) has emerged revitalized and reinvented, a destination of choice for today's Yale students, engineers and non-engineers alike.

And what does Yale's 23rd President hold up as emblematic of his vision for Yale? Our new Center for Engineering Innovation and Design! In fact, as exemplified in the stories throughout this issue of Yale Engineering, our unique identity as a School of Engineering and Applied Science is built upon the four "design principles" articulated by President Salovey.

Our School takes special pride in being central to the future of Yale in the eyes of our new President. On this last point, we have complete confidence: President Salovey may have passed up a career in engineering many years ago, but we know that engineering is in his blood — his dad was a chemical engineering professor!

T. K. Vanderlick

T. Kyle Vanderlick  
Dean, School of Engineering & Applied Science

# Year in Review

A look back at some of the news stories from the Yale School of Engineering & Applied Science over the last academic year

2015: September ▶

## Twice The Trash

A study from the lab of Julie Zimmerman, professor of chemical & environmental engineering and forestry & environmental studies, found that we are disposing of twice as much solid waste as previous estimates suggested. Led by Jon Powell, a Ph.D. student, the study revealed that 262 million tons of municipal solid waste were disposed of in the United States in 2012 — a 115% increase over the U.S. Environmental Protection Agency’s estimate of 122 million tons for the same year.



2015: October ♥

## Presidential Shout-Out

The Yale Undergraduate Aerospace Association received a White House salute for its work on developing an automated optical telescope. With software written by a team of students, the large telescope is motorized and computer-controlled. For better data collection, it



will have the ability to see deep-space objects and track celestial objects as they progress across the sky. It will also be equipped to take long-exposure photographs of deep field objects. The presidential recognition was part of the annual White House Astronomy Night.

2015: November ♥

## A Life-Saving Necklace

The Yale-founded social enterprise Khushi Baby won the Wearables for Good Challenge co-sponsored by UNICEF. The device, developed at the Yale Center for Engineering Innovation & Design (CEID), is a small, high-tech necklace that could save countless lives by storing an infant’s complete medical history and vaccination records, and made accessible to physicians. It was developed as part of “Appropriate Technology in the Developing World,” a course designed to tackle ongoing global issues co-taught by Dr. Joseph Zinter, assistant director of the CEID, and SEAS lecturer Bo Hopkins.



2015: December ▶

## Shedding Light On An Artist’s Work

When the Yale University Art Gallery holds an exhibition of artist Thomas Wilfred in 2017, it will be with the help of two teams of SEAS students. Wilfred, who used light as his medium, was considered a major figure in the art world earlier in the 20th century, but his works are rarely displayed today because much of the technology he used is obsolete. The two student groups in the “Engineering Innovation & Design” course built models of interactive displays for visitors to use at the exhibit, each designed to foster a greater appreciation of Wilfred’s work.



◀ 2016: January

## Keeping The Bugs Out

Zhong Shao, a professor of computer science, was selected for a National Science Foundation project known as Expeditions in Computing: The Science of Deep Specification (DeepSpec), which aims to exterminate the kinds of software bugs that create security vulnerabilities and computing errors. Funded by a \$10 million, five-year grant, Shao and other researchers from Yale, Princeton, MIT, and the University of Pennsylvania will develop tools to eliminate uncertainty from the complex task of software development and enable engineers to build bug-free programs and verify that their programs perform as designed.



2016: February ▶

## Hacking The Brain

Having hosted a number of medical hackathons, the Center for Engineering Innovation & Design served as the venue for the university’s first mental health hackathon. Organized by the student group BulldogHacks, “Hack the Brain: Rethinking Our Approach to Mental Health” challenged teams to identify a problem in the field of mental health, devise a solution, and build a prototype. In less than 24 hours, teams produced such innovative ideas as devices to assist people who can’t speak and an app to improve patient-doctor communications.

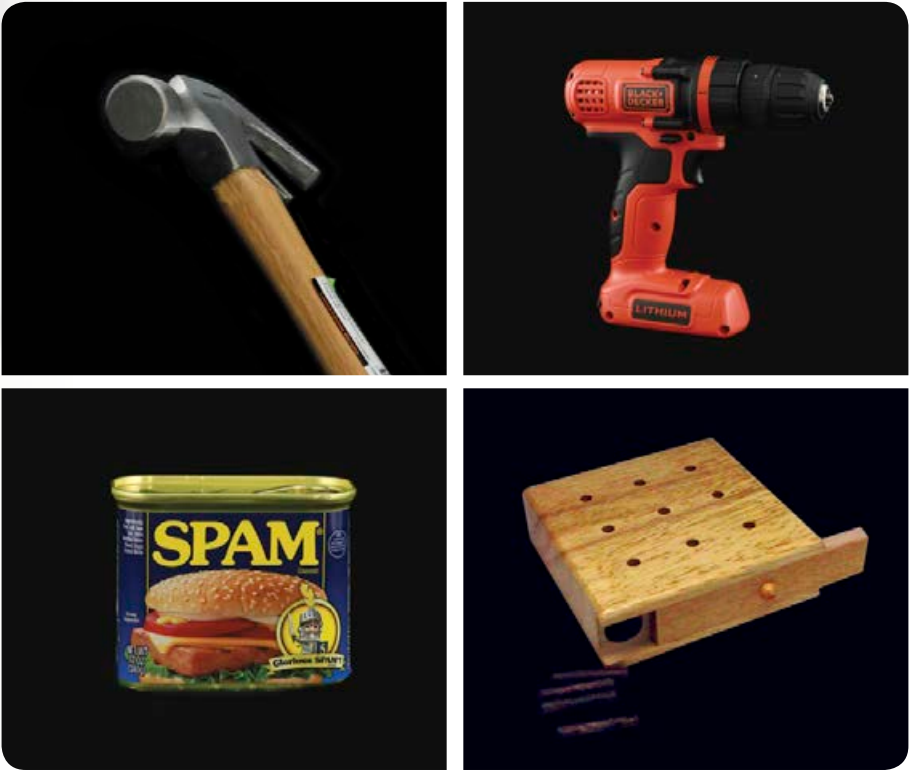
Continued →





# A New Standard in Robotics

How a box of 77 items could prepare robots for their next challenge: Your home



On the wall of Aaron Dollar’s office is a poster for *R.U.R.* (*Rossum’s Universal Robots*), the 1920 Czech play that gave us the word “robot.” The story ends with the nominal robots seizing control of the factory of their origin and then wiping out nearly all of humanity. Dollar, fortunately, has something more cheerful in mind for the future of human-robot relations.

He sees them as helpers in our daily lives — performing tasks like setting the table or assisting with the assembly of your new bookcase. But getting to the point where robots can work in the unstructured environment of our homes (as opposed to industrial settings) would take a major technological leap and a massive coordination of efforts from roboticists around the globe. The living room has been called the last frontier for robots — but first, the robotics community needs some standards that everyone can agree on.

Enter a suitcase-sized box containing 77 objects. It contains things like hammers, a cordless drill, a can of Spam and a nine-hole peg test. As ordinary as they may seem, these carefully curated household items could be the future of a new kind of standardization for robotics. Known as the Yale-CMU-Berkeley (YCB) Object and Model Set, the intent is to provide universal benchmarks for labs specializing in robotic manipulation and prosthetics around the world.

Dollar, an associate professor of mechanical engineering & materials science, came up with the idea about two years ago. He wants to bring a level of specificity and universality to manipulation tasks in robotics research. For instance, a research paper today might describe a particular task as “robotic hand grasps hammer.” Are we talking about a big hammer or a little one? We don’t know,

Continued →

# Today's Wasted Heat, Tomorrow's Energy Source

## Yale engineers discover real benefits in a synthetic solution

Last year's "OPEN 2012" program from the U.S. Department of Energy and its Advanced Research Projects Agency for Energy (ARPA-E) awarded \$130 million to 66 "transformational, breakthrough technologies that show fundamental technical promise" for developing a broad array of energy sources, from conventional fossil fuels to solar, wind, and geothermal power. Menachem Elimelech, the Roberto C. Goizueta Professor of Chemical & Environmental Engineering, and Chinedum Osuji, associate professor of chemical & environmental engineering, received \$2.6 million of that ARPA-E funding to develop a low-cost power generation system that can operate sustainably on a large (industrial) scale.

The researchers' approach utilizes energy derived from the difference in salt concentrations between two water sources, known as salinity gradients. "For obtaining fresh water from a salty solution, we need energy – the 'energy of separation' – so we eventually get a fresh water stream

and a more salty, or concentrated, stream," explains Elimelech. "Now, if you mix these streams, we can harness the 'energy of mixing,' which is equal to the energy of separation but with a minus sign."

Two well-known processes used to do this separation – pressure-retarded osmosis (PRO) and reverse electrodialysis (RED) – both use membranes in the mixing of streams.

"PRO [uses] a semi-permeable membrane that converts the osmotic pressure (or concentration) difference between the two streams to mechanical work via a semi-permeable membrane that allows water to pass through but retains salt. The mechanical work is then converted to electricity by a hydro-turbine," says Elimelech. "In RED, the energy of mixing is converted directly to electricity with the aid of specialized selective membranes that allow ions to go through but retain water."

Though both processes are viable sources of energy, improvements are needed before either can be used on a

large scale; the PRO membrane needs technological improvements, while the RED membrane is cost-prohibitive. A larger challenge, however, is with the source of the salinity gradient.

To date, large-scale implementations of these systems have used continuous flows of natural fresh and saltwater sources. This is obviously ideal from a sustainability perspective: the sources are essentially free and completely renewable. But the natural water used in these so-called open-loop systems presents technical challenges.

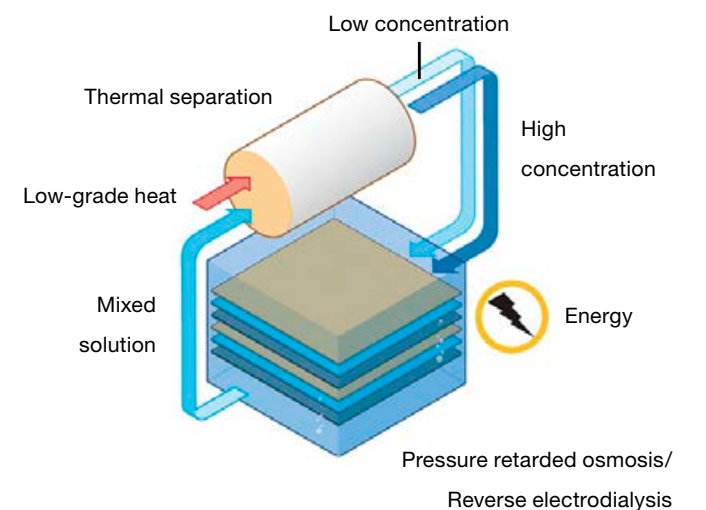
First, these water sources require costly, extensive pretreatment, in addition to other measures to prevent fouling of the system. More critically, while salinity concentrations between natural water sources are different enough to harvest energy when mixed, the differences are *not* large enough to make the technology profitable on a large scale.

Elimelech and Osuji propose to adapt such technology for "closed-loop" use: instead of continuous natural water flows, their system uses synthetic solutions, first blending them together to harvest energy, then using heat to separate them into low- and high-salinity streams for continuous re-use. In this approach, sustainability comes not just from the water sources, but from the heat source used in separation – a technology referred to as the "osmotic heat engine."

"Our process is particularly adept at utilizing low-grade heat sources, where the modest temperatures available do not typically allow for economical energy generation using conventional heat engines," says Osuji. "Examples of such heat sources include industrial waste heat and geothermal energy. In that sense, we are capturing valuable and useful energy instead of just letting it escape into the atmosphere."

By recent estimates, the industrial sector, the largest power user, discharges approximately one-third of the energy consumed as heat loss – heat that can instead drive the researchers' closed-loop system.

Of course, the efficiency and sustainability of the system also depends on the solution. "In an open-loop system, you



Power generation from waste heat with a closed-loop membrane-based system

need continuous inputs of river water and seawater, and they are wasted once used – we get a mixed brine that is discharged to the ocean," says Elimelech. "In the closed-loop system, we use a synthetic solution and because the solution is reused and always in the closed-loop, we need only the initial solution. So, we need very little, as opposed to with natural water sources, where we need a lot.

"We can create the necessary solutions by simply mixing simple salts that are highly soluble and inexpensive with distilled water," he continues. "In our project, we are using sodium chloride, but we can also use other high-solubility salts."

Elimelech and Osuji's work, undertaken in collaboration with Tzahi Cath and Michael Heeley of the Colorado School of Mines, spans the breadth of the engineering challenges associated with the closed-loop approach: developing robust and high-performance membranes to use in the solution mixing; testing their setups on the laboratory scale, bench scale, and pilot scale; and finally, developing a mathematical model for the entire process that demonstrate the system's efficiency and allows for further design optimization.

The ARPA-E award was announced late last year, and work began early in 2013. To date, Elimelech and Osuji have already modeled the hybrid system and begun developing the membranes needed for use. They remain on schedule to complete a full-scale pilot system test by mid-2016.

THE MAGAZINE FOR ALUMNI AND FRIENDS OF NEW JERSEY CITY UNIVERSITY

# NJCU

Spring/Summer 2016

The Making of an Opera  
Small World Initiative  
News Briefs

Faculty Research  
The Arts at NJCU  
Gothic Knights Athletics

GRAND OPENING:  
West Campus Village  
Student Residence Hall

## Tending the Grounds

The Team Behind NJCU's Impeccable Campus

Insight

Each issue, President Sue Henderson will offer knowledge and insights on a topic of interest in higher education.

# Our Economic Imperative

By Sue Henderson, Ph.D., *President, NJCU*

In the final analysis, the purpose of a college education is to give students the wherewithal to thrive in the future—the exact nature of which is unknown to us all. We know that certain skills can quickly become obsolete. We also know, as former President Bill Clinton said: “We are currently preparing students for jobs that don’t yet exist using technologies that haven’t been invented in order to solve problems that we don’t even know are problems yet.” For this future, we do know that

being able to think creatively and critically, articulate ideas effectively, being quantitatively astute, and intellectually curious will be abilities that will put students in good stead. That is precisely what a first-rate liberal arts education provides. Among the biggest challenges facing American higher education today is our failure to provide those who will be the majority of tomorrow’s workforce the education that will give them these skills. Best estimates are that by 2020, 65% of jobs nationwide will require

**“Among the biggest challenges facing American higher education today is our failure to provide those who will be the majority of tomorrow’s workforce the education that will give them these skills.”**

Sue Henderson, Ph.D., in her fourth year as president has spearheaded transformational change including the implementation of a \$350 million West Campus development plan.



to move on stage and be expressive...how to tell a story.”

Kim dons a bright green Polo t-shirt, jeans and sneakers, appearing to blend in with his students. Originally hailing from South Korea, Kim studied music and voice intensively beginning at age 12. While in high school he attended his first Opera, *La Traviata*, and fell in love with the performance art, its beautiful lighting and elaborate costumes. “I never looked back,” he reminisced, “That was the moment I decided to be an opera director.”

At 25 years old, Kim embarked on his journey to the United States without a word of English in his repertoire. For months, Kim dedicated himself to learning the English language in hopes of applying to NJCU and developing his love of opera. Following his acceptance to the University, Connolly handpicked Kim to become an assistant teacher in her Opera Workshop while he pursued his undergraduate degree in Music. Like Mayfield, Kim earned his master’s in Music while living in Texas, studying at UT Austin. He worked successfully on several productions before his path again crossed with Connolly who persuaded him to return to his true home, NJCU. Since September 2015, Kim has purposefully incorporated innovative set designs, transforming the Workshop’s live performances.

“There is no paper program given at our performance. Instead, it is projected into the play. My goal is to have the audience feel the subtext of the performance through visuals, like projectors. I’m working with a video designer to cast 3-D images behind the performers that will provoke subliminal feelings of happiness or sadness,” Kim said, “Meanwhile, we are using less complex mapping and figuring out how to be more dynamic on a smaller scale.”

The minimalist set props for this almost two-hour performance underscores the success of Kim’s method, consisting of only a chair and bench, a blanket and eight apples throughout various scenes. The 42-foot projection screen remains in place through the performance, illuminating a variety of scenes, from budding spring flowers to ominous gravestones, to set the tone for an emotional piece.

**ACCEPTING THE CHALLENGE**

“Opera singing for a vocalist is like competing in the Olympics for athletes,” suggests 33-year-old Israel Hernandez, NJCU Music major and former pre-college Julliard student. A rarity in the Opera Workshop, Hernandez is one of the few performers with prior opera experience but his path to NJCU was no more traditional than those of his classmates.

**The cast of Mozart's *The Impresario* takes a bow. (From left) baritone Alex Maldonado, '16, B.M., tenor Will Flaim '16 B.M., soprano Ioanna Tsakalakos, '14, M.M., and soprano Pamela Dempsey, junior music major**



**COMING FALL 2016:**  
***Die Fledermaus* by Johann Strauss**  
**G. Schirmer Edition**  
**Directed by Kimun Kim. Conductor and music director, Robert Prowse.**  
**Location: West Side Theatre**  
**Dates & Times:**  
**Thursday, November 17, 7:30 p.m.**  
**Friday, November 18, 7:30 p.m.**  
**Saturday, November 19, 7:30 p.m.**  
**Sunday, November 20, 3:00 p.m.**

**Ticket Price:**  
**\$15.00 General Public**  
**\$5.00 Students, Children & Seniors**

**For more information, call:**  
**201-200-3151**

Hernandez was attending Manhattan School of Music when he realized that the angst he was feeling wasn’t homesickness; it was regret. Longing for the one-on-one coaching he received while attending Newark High School, Hernandez transferred to NJCU where his high school music coach was now employed.

“I realized that you can’t go to a school because of a name, it’s the teachers that matter. Let’s face it, our egos can get the best of us,” Hernandez said, “I believe in my path. Everything happens for a reason. I needed to grow emotionally and the faculty at NJCU has helped me with that.”

Standing quietly, Sarah Blood’s most distinguishing feature is her vibrant red hair but the moment she begins to sing, her beautiful, resonating voice captures the attention of the entire theater. Receiving her undergraduate degree at Kean University, Blood now pursues her master’s at NJCU. While NJCU was not part of Blood’s original plan, the advice of a trusted voice coach drew her to the school.

“I’d been studying music for a long time and was considering getting my master’s when my private voice teacher recommended NJCU,” Blood said. “She told me that the program was small but there was a teacher there that could do wonderful things with my voice. One-on-one attention is important for mentoring and the absolute best thing you can do for yourself.”

Blood recalls feeling immediately comfortable on the small NJCU campus and within the tightknit Opera Workshop family. Born and raised in Winfield Park, NJ, population: 1,500, Blood loved the small town feel of the University but quickly realized that the demands of the Workshop were far more intensive than she previously imagined.

“The Opera Workshop is difficult for so many reasons. A lot of separate parts need to come together to make something seem attractive to an audience. You need to convey emotion while speaking a foreign language to your audience, do your research on the person who wrote the poetry or composer, memorize lines and execute perfect staging. Then add more emotion! Not to mention all the rehearsals, it all takes a heck of a lot of time,” she added.

**THE FINAL BOW**

Exhaustion is setting in as the clock strikes 10:00 p.m. The time has come to practice the ‘final bow,’ and the expression on each student’s face proves that even this small detail is more complex than they previously thought.

“Let’s do that last scene all over again,” directs Kim. The stage clears before the scene begins again, from the top. Practice makes perfect, and this team will settle for nothing less. [NJCU](#)



PUBLISHING PORTFOLIO

# LIFESTYLE

WellesleyWeston Magazine

New England Fine Living Magazine



# WellesleyWeston

M A G A Z I N E

spring  
2014

FIVE DOLLARS

# WellesleyWeston

M A G A Z I N E

summer  
2018





BRIAN SMITH

## contents volume 14 issue 2

### 14 Publisher's Letter

### 16 Editor's Letter

## features summer 2018

### 56 Honoring the Fallen

Meet a group of Wellesley residents who are honoring the significance of World War I by bringing Memorial Grove back to life.

### ◀ 66 Setting the Stage for a Medical Future

We sit down for a face-to-face interview with Dr. Dennis A. Ausiello.

### 76 Welcome Home

The second in a series of articles that explores the multifaceted and illuminating accounts of how international families have settled in Wellesley and Weston.

### 88 Where Gratitude and Optimism Prevail

Faced with profound physical challenges, Ben Elwy lives life to the fullest with support from his loving family.

### 98 Timeless Charm

As Wellesley's historic Hathaway House changes hands, we look back at its illustrious past and learn about the plans for its future.

### 106 They're Back

Learn how to survive and thrive when your adult child decides to move back home.

### 116 From Sea to Shining Sea

Wellesley's Frank Liu shares his family's RV cross-country travel adventure.

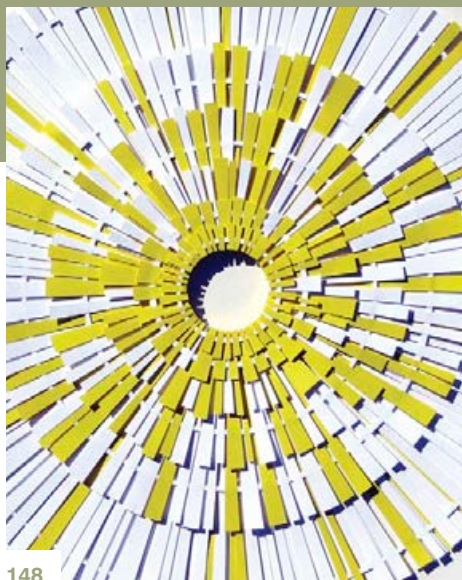
cover

PETER BAKER photographer

*A lemonade stand stirs up  
childhood memories and provides  
a refreshing image of summer.*



# WellesleyWeston



148



138



168

## departments summer 2018

### 20 The Green Scene

Ruth Furman provides tips on how to grow and care for roses, the most luscious residents of the summer garden.

### 26 10 Tips for "Green" Ways to Keep Your Lawn Green

Our tips will help you achieve a beautiful and healthy lawn this summer.

### 32 Inbox

Get the latest on the people who make things go in community businesses and read about important events in Wellesley and Weston.

### 52 Forum

Readers speak out on issues of importance to them. In this issue, Dick Carls makes the case for building a continuing care retirement community on the Wellesley land known as the "North 40."

### 126 Business

Mother-daughter team Salwa and Juann Khoory have built an empire of bridal boutiques in Boston.

### 132 Fitness & Health

Meet Lee Rubin Collins and read about her quest to help couples facing infertility.

### 138 Education

Discover the diverse nature programs available to young people this summer.

### 148 Artist Profile

Robert Pillsbury's cut-paper creations whirl, swirl, and twist in a three-dimensional dance.

### 156 Books

A new book by Sanjiv Chopra and Gina Vild, *The Two Most Important Days*, has valuable advice for how live a happier, healthier life.

### 162 Local Cuisine

Celebrate the warm weather and get a taste of the al fresco dining options that are close to home.

### 168 Food & Wine

Make the most of the fresh produce that is available this summer.

### 174 Excursions

If you haven't been to East Boston lately, it's time to go.

### 184 About Town

Wellesley and Weston residents attending noteworthy events throughout Greater Boston.

### 196 Last But Not Least

This page gives our readers the opportunity to express themselves creatively with writing, art, and photography. In this issue, artist Chelsea Sebastian shares her painting, *Truly Summer Night*.

# Setting the Stage for a Medical Future

STEVE MAAS **writer**

BRIAN SMITH **photographer**

**dr. dennis a. ausiello** spent nearly two-thirds of his life teasing out the causes and possible remedies for diseases, starting from a perch at a lab bench and advancing to one of America's most prestigious hospital positions: chief of medicine at Massachusetts General Hospital (MGH).

After 17 years in that top post, Ausiello is tackling "one of the little-known aspects of medicine" — what it means to be healthy.

"We're very good at diagnosing and understanding disease and its progression to death, but we're the only profession in the world that doesn't know its own gold standard: We can't diagnose wellness and its progression to illness," said Ausiello, in an interview in the living room of his home in Wellesley Hills.

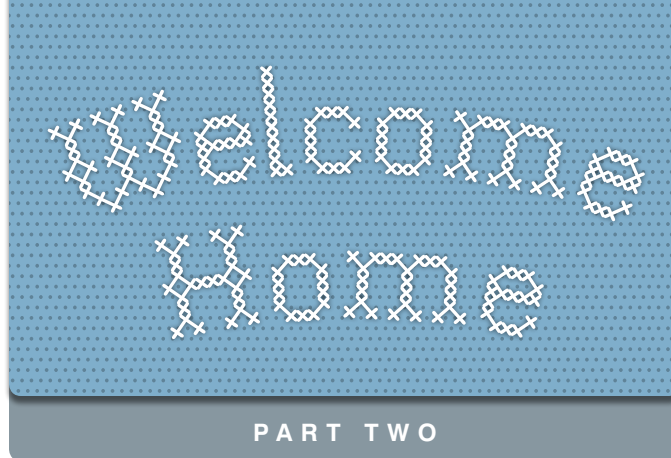
"It's a little like bringing your car into the garage, and the mechanic saying, 'Yep, you've got a broken carburetor here, but unfortunately, I don't know what a normal carburetor looks like.'"

Ausiello, 72, has assembled a group of partners that includes faculty from Harvard and MIT, as well as scientists from high-tech and bio-pharmaceutical companies to create CATCH, the Center for Assessment Technology and Continuous Health at MGH.

"I didn't want to build another big center," he said. "I really wanted to build a SWAT team or a think tank that could engage partnerships with the molecular geneticists, with the instrumentation people, with the Googles and the Apples of the world."

Ausiello envisions consortiums like CATCH setting the stage for a medical future out of *Star Trek*, where tiny implants and everyday objects like smartphones and automobiles collect galaxies of data that help doctors head off diseases long before they breach the body's defenses.





## Successful Immigration Tales



This ongoing series shares accounts of how immigrant families have settled in our area and become part of our community's fabric.

CHERYL BALIAN SCAPARROTTA **writer**

MAURA WAYMAN **photographer**

### The Kumars: Pioneers Forging New Paths

It was a wintry day when Dr. Kaplesh Kumar landed at New York's JFK Airport in 1970. With simple instructions from a friend in New Jersey, Kaplesh, a native of India, asked the taxi driver to take him to the Port Authority bus station in Manhattan. From there, he planned to take a bus to Hoboken, where his friend awaited him.

Upon arrival at the bus terminal, the taxi driver, learning that this was Kaplesh's first visit to the United States, refused to accept a fare. "I insisted on paying him, but I had no idea what to give him, so I gave him about \$7," says Kaplesh, fondly recalling his first interaction in America. "People were so nice and helpful to me upon my arrival, and I've never forgotten that."

Dr. Kumar and his wife, Savinder, are both natives of Lucknow, India (about 350 miles southeast of New Delhi), and have lived in Wellesley since 1978. Kaplesh recently retired from a busy professional life as an



NEW ENGLAND  
**FINE**  **LIVING**  
LUXURY HOMES LIFESTYLE & LIVING



SUMMER 2015  
Display Until September 1



*Inside...*

**An Upscale Island Getaway \* Outdoor Living & Entertaining  
Secure Your Financial Future \* A Hidden Historical Find**

# Strawberry Spinach Salad

## by Simon Pearce Restaurant

*Created by Chef Brian Gazda*

### For the spinach salad:

3 oz baby spinach (washed and dried)  
1 oz Great Hill blue cheese  
1 oz spiced nuts  
1 oz balsamic vinaigrette  
3 halves of grape tomatoes  
Strawberries

Toss the spinach with the balsamic vinaigrette in a mixing bowl. Place the salad on a chilled 10" plate. Top the salad with the spiced nuts, Great Hill blue cheese and grape tomatoes.

### For the spiced nuts:

1 cup walnuts  
½ cup pecans  
½ cup almonds  
½ stick butter  
3 T brown sugar  
½ T rosemary  
½ t salt  
Pinch cayenne

Place the nuts on parchment lined sheet trays. Toast the nuts in a 350-degree oven for 6 minutes. Meanwhile place the butter, brown sugar, rosemary, salt and cayenne into a saucepot. Place the pot over medium heat and bring to a boil. Stir the mixture frequently. Place the toasted nuts into a large mixing bowl. Pour the seasoned butter mixture over the nuts. Toss the nuts around to evenly coat them with the seasoned butter. Place the nuts back onto the parchment lined sheet tray. Toast again in a 350-degree oven for 6 minutes.

#### The Simon Pearce Restaurant

1760 Quechee Main Street  
Quechee, Vermont  
(802) 295-2711  
SimonPearce.com

**Lunch:** Daily, 11:30 am - 2:45 pm

**Dinner:** Daily, 5:30 am - 9:00 pm

**Brunch:** Sundays, 10:30 am - 2:45 pm

#### Products shown in the photo:

Cavendish White Wine Glasses

Barre Salad Plate in Slate

New Cavendish Bowl

Andrew Pearce Salad Servers



PUBLISHING PORTFOLIO

**B 2 B**

DiversityInc Magazine



# DiversityInc

September 2014



## On-Boarding Tips

## From KPMG, BASF and TD Bank

- Get D&I Message Out, Encourage ERG Membership
- Gay Recruit Tells Why He Chose KPMG

## PLUS:

Recruiting Case Study:  
How PWC Finds Interns

Cultural-Competence  
Lessons for National  
Hispanic Heritage Month



Winter 2015-2016

# Talent Development

Leadership Skills  
Performance  
Executive Presence  
Strong Values  
Project Management  
Team Player



---

**Grooming Women  
Tech Leaders**

---

**Mentors vs. Sponsors:  
How Each Can Help**

---

**How to Bring Together  
Millennials, Gen X-ers  
and Boomers**

---

**Preparing Talent:  
Leveling the Playing Field for  
Students with Disabilities**



## Cover Story

### Grooming Women Tech Leaders

- 32 | Countering “macho” tech culture and bolstering women’s confidence can slow rush of mid-career women heading for the door.

## Best Practices

### 14 | Your Guide to Defining Mentors vs. Sponsors: How Each Can Help

The two may seem similar but each plays a distinct role in career success and advancement.

### 18 | Straight Talk: An Innovative Approach to Bring Millennials, Gen X-ers and Boomers Together in the Workplace

How KeyBank is finding common ground between the “we want it now” generation and the “shut-up and deal with it” older generations.

### 22 | Labor Dept. Warns Federal Contractors: ‘Waiting Period is Over’ to Hire People with Disabilities

U.S. Labor Department’s Director of Compliance Patricia Shiu says it’s time for federal contractors to hire more individuals with disabilities. NOD’s Disability Employee Tracker can help companies employ typically non-traditional talent.

### 24 | Giving Talented, Yet Low-Income Students a Realistic Shot at Top Colleges

The Coalition for Access, Affordability, and Success has partnered with 83 schools, including Harvard, Brown, Cornell and Princeton, to provide all students with the same opportunities to attend college.

### 28 | Leveling the Playing Field for Students with Disabilities

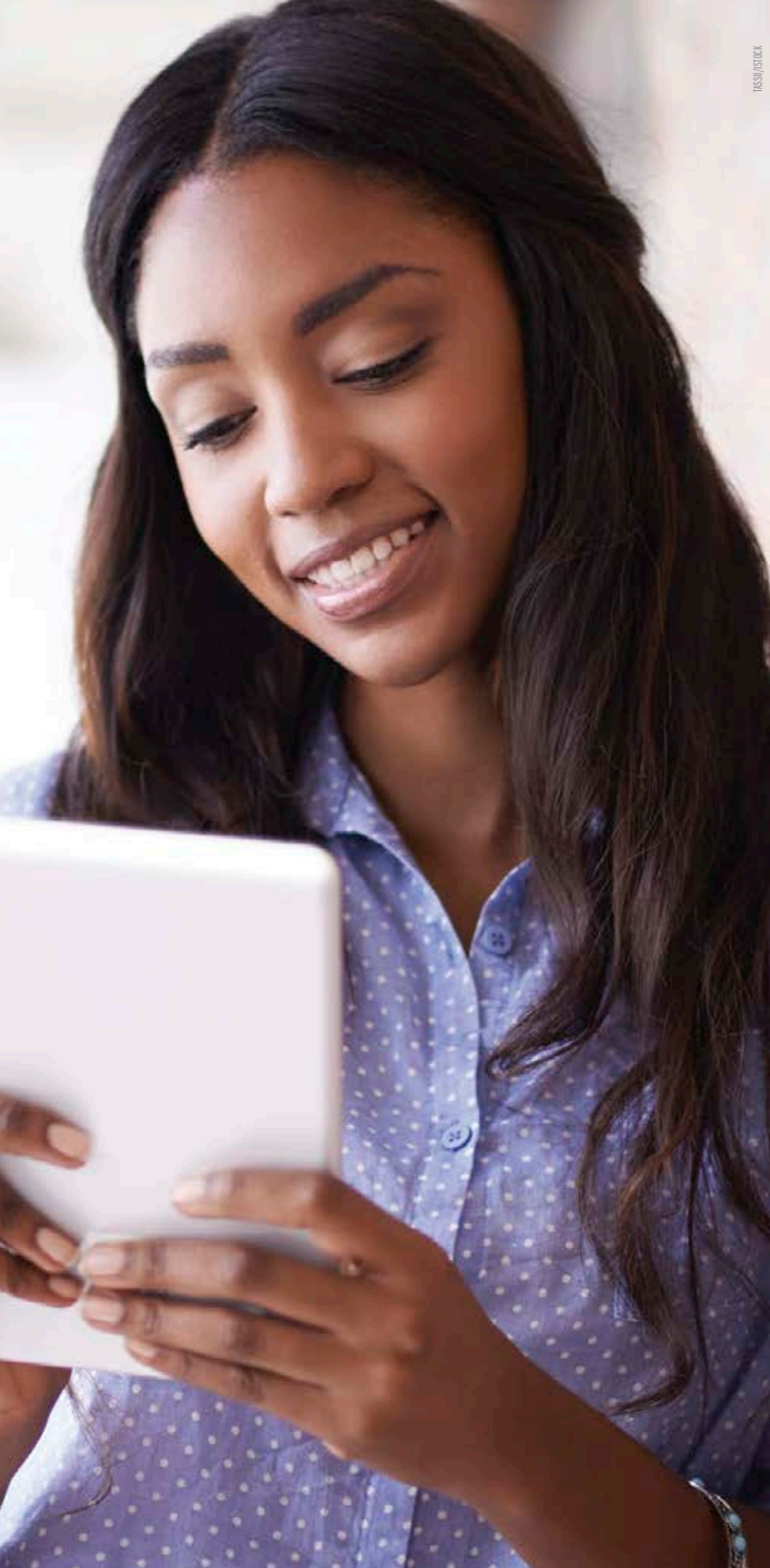
Villanova University’s LEVEL program prepares students with disabilities to have the same career, academic and social opportunities as their peers.



18

## In Every Issue

- 6 | CEO’s Letter  
10 | Chief Science Officer’s Letter  
78 | Company Index



***How KeyBank is finding common ground between the “we want it now” generation and the “shut-up and deal with it” older generations.***

BY TAMIKA CODY

**H**ow do you bridge the communications gap between Millennials, Gen X-ers and Baby Boomers?

Kim Manigault, CFO of KeyBank’s technology and operations division, recently created a feedback program to help the three generations come together. The program, Straight Talk, encourages constructive observation instead of complaints.

Manigault explained that the goal is to get the three groups to see that they all are actually asking for the same things.

“The reason why I started with the Millennials is because they are more forthcoming on how they operate,” Manigault said noting that she is not generalizing all Millennials. She explained that the Millennials she works with are not afraid to tell their employers what they think or what they would like to have. “And they don’t have a problem empowering themselves to make the change,” she said. However, before Millennials reveal how vocal they can be, Manigault said they want to be assured that it is okay to speak up in a corporate environment.

“Our Gen X-ers and Baby Boomers believe that Millennials just want too much,” Manigault said. “What I’ve realized is they all want the same thing; the only difference is that [Millennials] are not afraid to ask for it. Gen X and Gen Y come from the shut up and deal with it phase, and Millennials come from [the] if you don’t like it change it phase.”

Most Gen X-ers and Boomers are stuck in believing that there isn’t a way to change things. “It’s like taxes and politics, you kind of have to just deal with it,” Manigault said. “Millennials don’t have to deal with it. They can get up and go. They say ‘I don’t have to stay for 20 plus years [in one job]. I can go somewhere else in six months.’”

**How Straight Talk Works**

In April, Manigault was tapped as the line of diversity and inclusion champion for the finance team at Cleveland-based KeyBank, a subsidiary of KeyCorp (No. 49 on the DiversityInc Top 50). Soon after taking on the role as D&I champion, Manigault launched the program Straight Talk. “It’s not a place to come and complain,” said Manigault. “It’s a place to take ownership of making a change.”

To set the program in motion, Manigault and her team gathered groups of minorities, including people of diverse ethnicities and women, and asked the groups two specific questions.

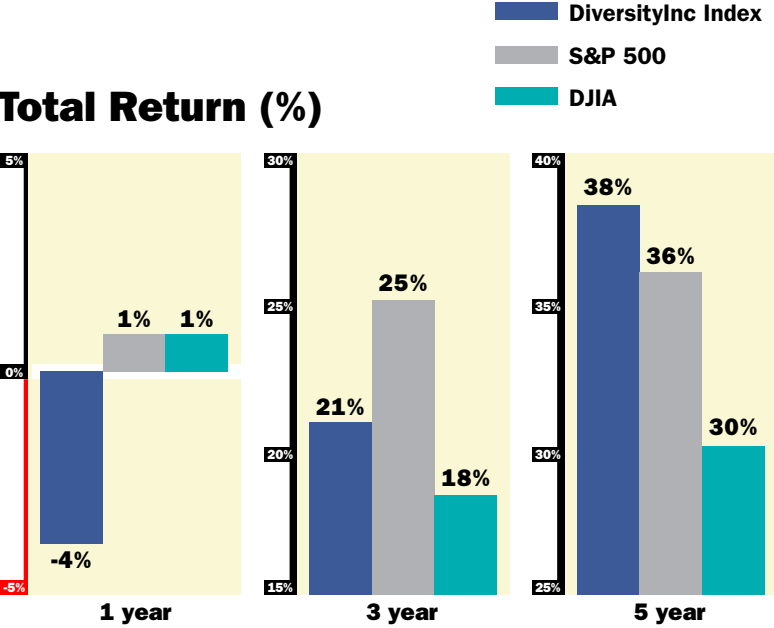
# Straight Talk:

**An Innovative Approach to Bring Millennials, Gen X-ers and Boomers Together in the Workplace**

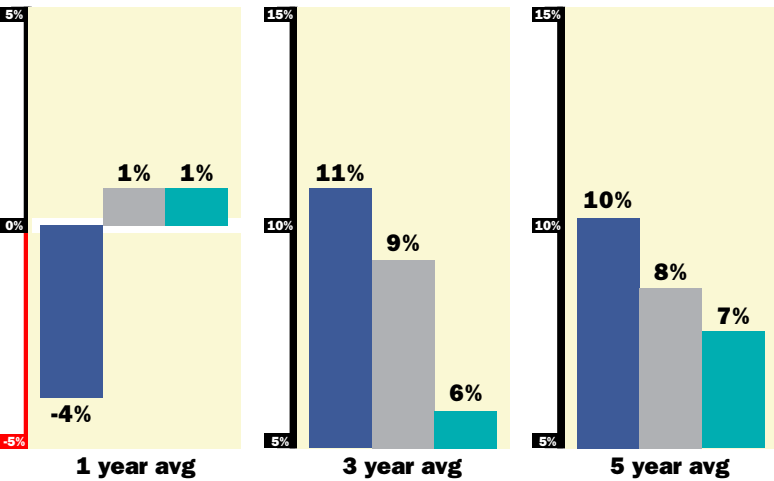
The 2016 DiversityInc  
TOP 50  
Companies for Diversity

- 1 Kaiser Permanente
- 2 Novartis Pharmaceuticals Corporation
- 3 EY
- 4 AT&T
- 5 PricewaterhouseCoopers
- 6 Sodexo
- 7 MasterCard
- 8 Johnson & Johnson
- 9 Marriott International
- 10 Prudential Financial
- 11 Deloitte
- 12 Wells Fargo
- 13 Procter & Gamble
- 14 Abbott
- 15 Accenture
- 16 KPMG
- 17 Merck & Co.
- 18 Cox Communications
- 19 Cummins
- 20 IBM
- 21 ADP
- 22 Target
- 23 New York Life
- 24 BASF
- 25 Anthem
- 26 Eli Lilly and Company
- 27 Wyndham Worldwide
- 28 Dell
- 29 Comcast NBCUniversal
- 30 Kellogg Company
- 31 Northrop Grumman
- 32 Aetna
- 33 TIAA
- 34 Toyota Motor North America
- 35 Allstate Insurance Company
- 36 Colgate-Palmolive
- 37 Time Warner
- 38 The Walt Disney Company
- 39 TD Bank
- 40 General Mills
- 41 Nielsen
- 42 Hilton Worldwide
- 43 Monsanto
- 44 KeyCorp
- 45 AbbVie
- 46 Southern Company
- 47 MassMutual Financial Group
- 48 General Motors
- 49 Genentech
- 50 Medtronic

DiversityInc Top 50  
Stock Index



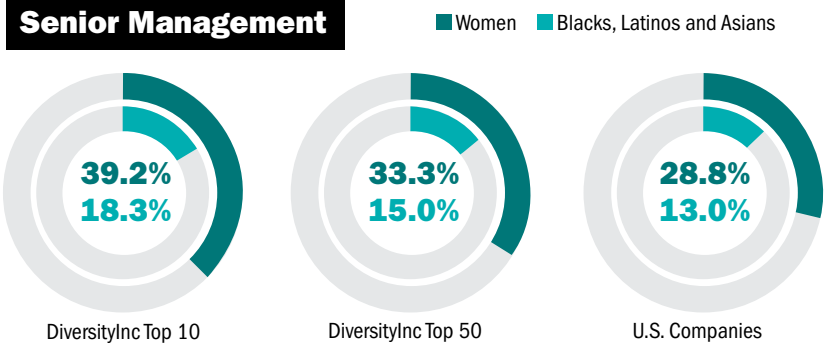
Annualized Return



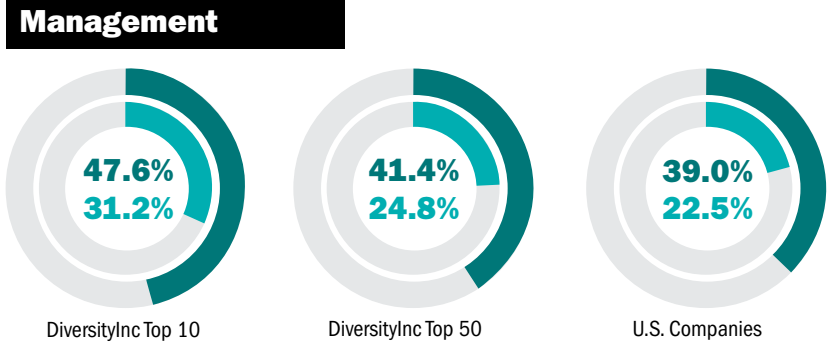
- DiversityInc Index is a price-weighted index consisting of the 2016 DiversityInc Top 50 Companies.
- Nonpublic companies (ex. Dell, KPMG) are excluded.
- Returns are calculated based on daily data to 4/1/16 by the CNBC Market Data Services Team.

For the first year since the subprime crisis, one-year stock returns for the DiversityInc Top 50 Index do not beat the broader market; however, three- and five-year returns are favorable. If you follow the market at all, you know that last year was very unusual.

Senior Management



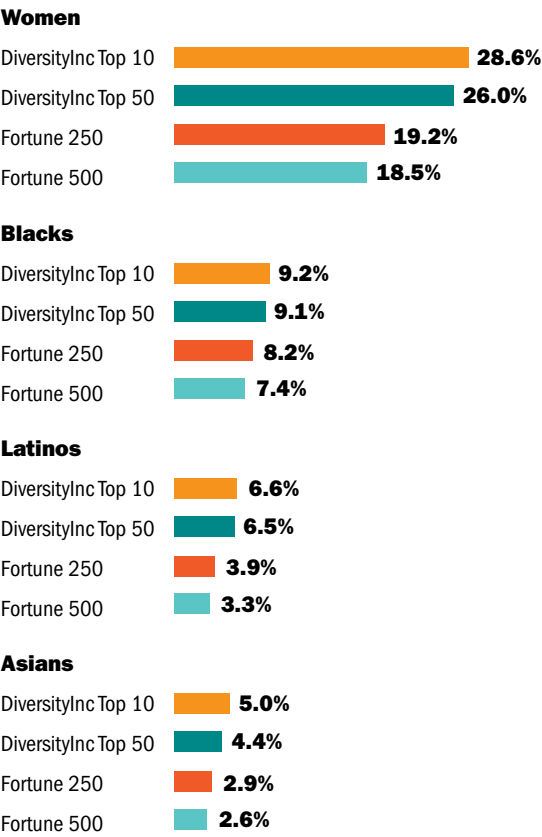
Management



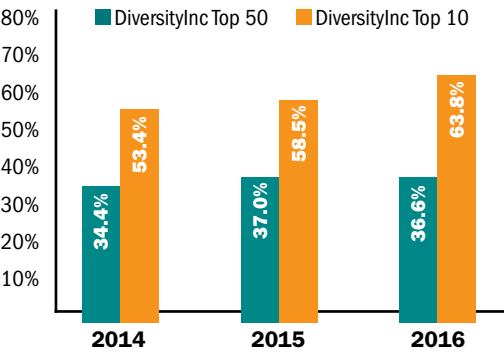
33 2016 DiversityInc Top 50  
Companies in the Fortune 500

6. General Motors	104. Time Warner
12. AT&T	124. Northrop Grumman
24. IBM	134. Abbott
30. Wells Fargo	146. AbbVie
32. Procter & Gamble	151. Eli Lilly and Company
36. Target	154. Cummins
37. Johnson & Johnson	163. Southern Company
38. Anthem	171. General Mills
43. Comcast NBCUniversal	179. Colgate-Palmolive
49. Aetna	197. Monsanto
55. Prudential Financial	210. Kellogg Company
57. The Walt Disney Company	221. Marriott International
71. Merck & Co.	251. ADP
80. New York Life	280. Hilton Worldwide
89. Allstate Insurance Company	308. MasterCard
92. TIAA	497. Wyndham Worldwide
94. MassMutual Financial Group	

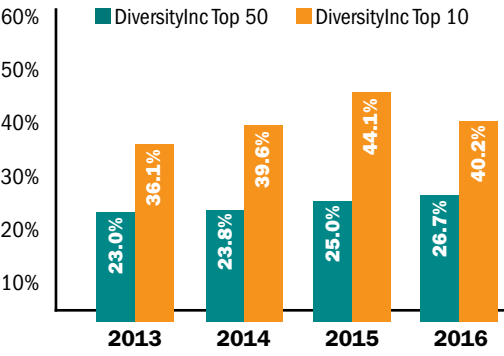
Boards of Directors



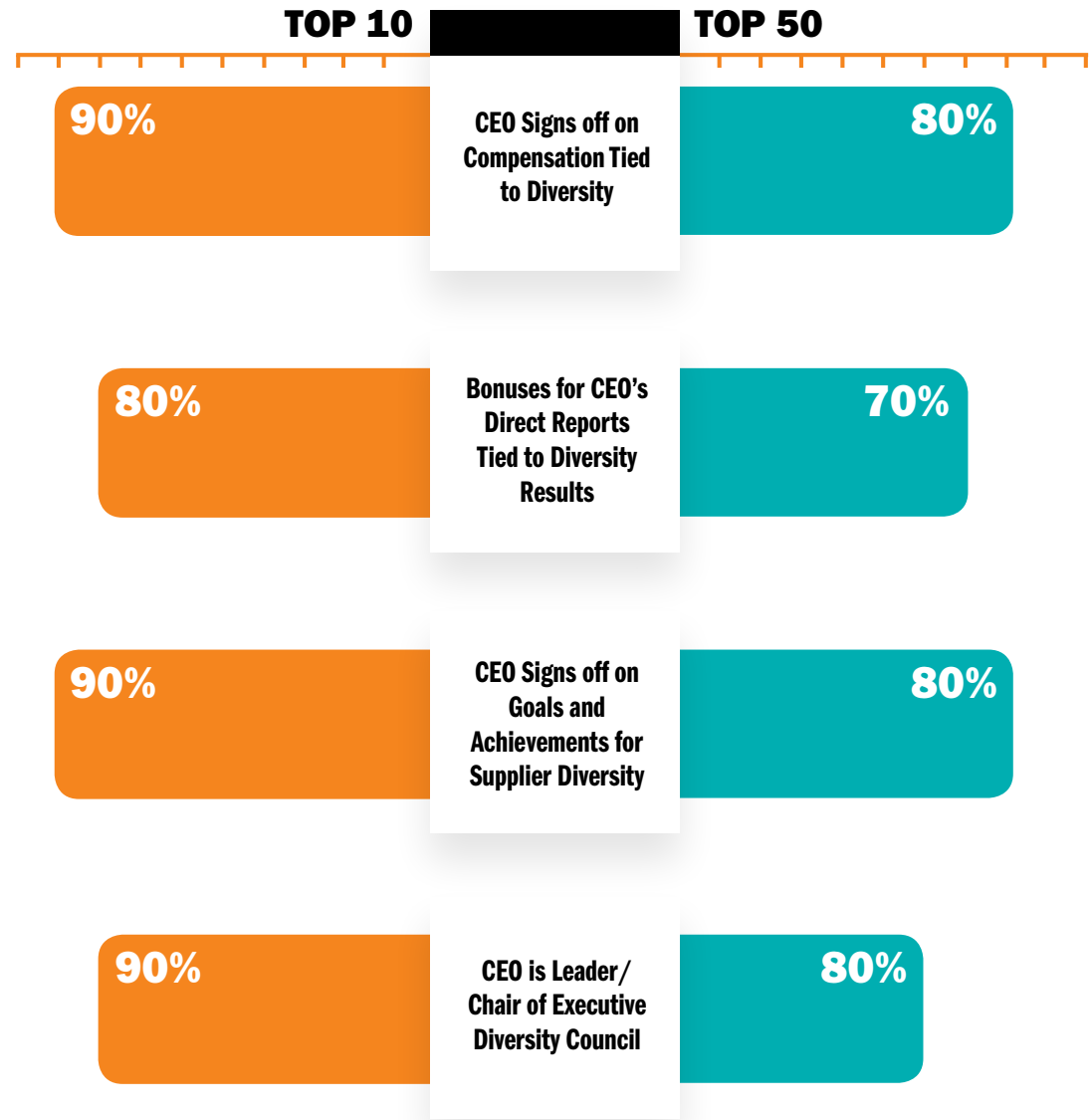
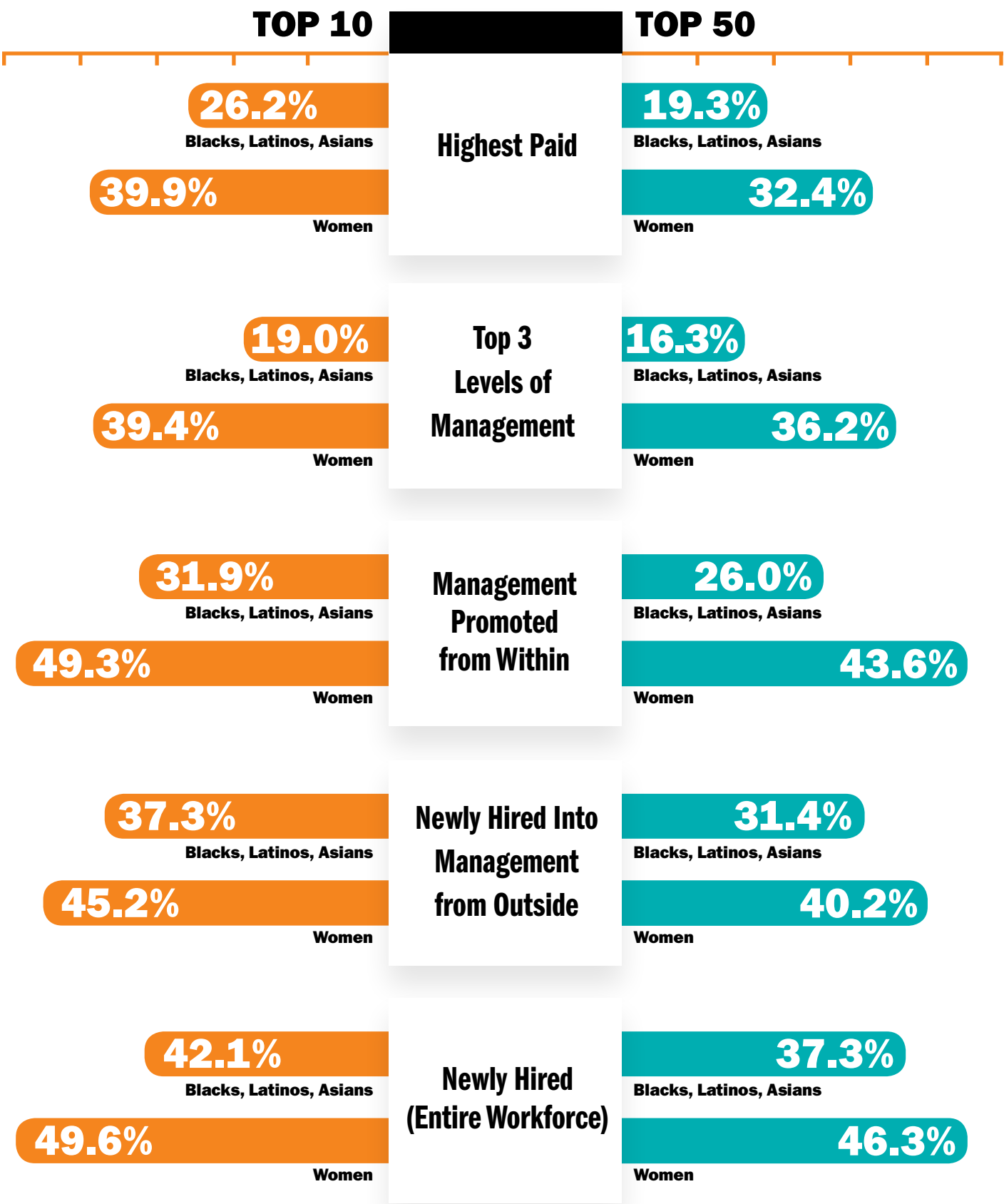
Managers in Mentoring



Employees in ERGs



For more, go to [DiversityInc.com/top50](http://DiversityInc.com/top50)



WOMEN IN COMPANIES			
	DiversityInc Top 10	DiversityInc Top 50	S&P 500
CEOs	10.0%	12.0%	4.0%
Board Seats	28.6%	26.0%	19.2%
Total Management	47.6%	41.4%	25.1%
Overall Workforce	50.7%	45.9%	45.0%

Sources: Catalyst, Alliance for Board Diversity, Russell Reynolds Associates, DiversityInc 2016 Top 50 Companies for Diversity Survey



WILTON, CT

For More Information:

**ECHOBRANDGROUP.COM**

Contact:

**ADAM PEMBERTON**

**ADAM@ECHOBRANDGROUP.COM**

**203-856-1800**

