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## Through the Lens

Villanova University  
**President's Report**  
**2016-2017**

**We are passionate, dedicated scholars—asking probing question after probing question until an answer is in sight.**

## Dear Friends,

Every day, I am inspired by our faculty and students to look at the world in new ways. To me, this is essential work for a university, and it is at the very heart of Villanova's academic culture and mission. To be inspired and challenged is to be called to learn, and I am proud to be part of a University community whose members never turn down that invitation.

Villanova has grown and expanded over the past several years, and yet the University remains rooted in our Augustinian Catholic mission and the pursuit of academic excellence at all levels. As you explore the stories of scholarship and research included in this year's President's Report, I invite you to take a look at Villanova through a different lens. Perhaps you will see us in a way that you haven't before.

As an academic community, our view spans from the ocean depths to the distant stars, and from the mysteries of the body to the intricacies of the mind. We focus our work on projects that are important to the common good and commit to causes we are passionate about.

Villanova faculty and students work side by side in the classroom, in the lab, in the field and in the community, making discoveries in ways that are collaborative, creative and productive. We are passionate, dedicated scholars—asking probing question after probing question until an answer is in sight.

Villanova was built in the vision of St. Augustine as a place where people could come together to apply their curiosity, their passion and their intellect in service of the world. More than 175 years after our founding, we are at a transformative moment in our history. Villanova's academic programs, national reputation and student profile are being enhanced at a remarkable rate, and it's a credit to the people who built and make up our community.

I invite you to get to know us even better. I have a feeling you will see Villanova in a new light.

Sincerely,



**The Rev. Peter M. Donohue, OSA, PhD, '75**  
President

TOGETHER,  
IGNITING  
CHANGE

**You attain wisdom by seeking truth in the company of friends.  
That's the Villanova way.**

Exploration and inquiry have always been fundamental to education at Villanova, where asking challenging questions and pursuing often complex answers are not impediments to progress but opportunities for collaboration on the path to discovery.

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Peer through the lens and perhaps gain a new perspective on Villanova. A picture of a community comes into sharp focus, one that is based in scholarship and teaching—in the creation and advancement of knowledge and the sharing of knowledge. Faculty are teachers and scholars in equal measure, engaging the minds of the academic community to search for answers and set the foundation for future discovery. They care deeply for their students, immersing them in the process of learning and innovating, all for the common good. The knowledge and insights that they achieve together—as teachers, scholars, students and partners—have the potential to change the world in ways both big and small.

How Villanova approaches teaching, scholarship and research is an extension of the University's perspective on the purpose of an education, which is rooted in the centuries-old Augustinian tradition and in the University's own 175-year history. You learn by doing. You learn by both failing and succeeding. You learn by teaching. You learn together, knowing that the collective achievement is more powerful than the individual victory. You ignite change in the world by creating and sharing knowledge.

Promoting the welfare and addressing the special health needs of vulnerable populations require multidisciplinary perspectives. Faculty from across Villanova's colleges research health disorders, psychological behaviors and public policies, leading to improved diagnoses and informed choices.

## Engineers Improve Diagnosis of Life-Threatening Disorder in Infants

The health of infants can be fragile. That of premature infants, even more so.

Periventricular leukomalacia is a potentially deadly brain injury that can cause serious speech, cognition and motor skills problems, as well as cerebral palsy or epilepsy later in life. Premature infants, especially those who undergo heart surgery, are at greatest risk of the disorder.

Researchers from Children's Hospital of Philadelphia tapped **C. "Nat" Nataraj, PhD**, professor of Mechanical Engineering and director of the Villanova Center for Analytics of Dynamic Systems, to help physicians examine biometrics to better diagnose PVL. The study is funded by a grant from the National Institutes of Health.

Dr. Nataraj has been a leader in studying how to predict failure of complex dynamic systems, including unmanned robots, and his advancements in diagnostics have allowed him to create technology to help robots repair and maintain their own systems. It is both unexpected and apt that he is applying those same cutting-edge concepts to push medical care forward.

"Medical diagnostics is all about interpreting data to reach conclusions. Engineers know how to apply science, and they can apply the same science to human beings," Dr. Nataraj says.

Dr. Nataraj has worked with the CHOP team to track data from blood pressure, heart rate and gas concentration readings, as well as MRI images, to develop algorithms to predict not only when PVL may occur, but also the severity.

For the first time, the team has recorded a 90 percent accuracy rate for predicting PVL. This will help medical staff determine when to take preventive measures or apply treatments. Dr. Nataraj's contributions to medical diagnostics were featured in November 2016 by *U.S. News & World Report* in a look at the health care of tomorrow.

Dr. Nataraj, who is also the Mr. and Mrs. Robert F. Moritz, Sr. Endowed Chair in Engineered Systems, is continuing to partner with CHOP on two additional studies: one on using data analysis to improve the success rate of CPR in hospitals and another to improve treatment of children in the intensive care unit.

**C. "Nat" Nataraj, PhD, professor of Mechanical Engineering, works with Children's Hospital of Philadelphia to apply data analysis to improve the diagnosis of a potentially deadly brain injury in infants.**

VILLANOVA'S FOCUS ON  
HELPING

FAMILIES  
THRIVE



HELPING FAMILIES THRIVE



## Support for Moms to Have Healthy Babies

Motherhood is a time for celebration—a welcoming of new life into the world. But it can also be a vulnerable time for mothers and children. Faculty members in the M. Louise Fitzpatrick College of Nursing have dedicated themselves to expanding understanding of prenatal, maternal and child health factors, helping caregivers everywhere offer better treatment and support.

Assistant Professor **Amy McKeever, RN, CRNP, WHNP-BC, '08 PhD** and Clinical Instructor **SueEllen Alderman, MSN, RN, PMHCNS**, have drawn on their extensive clinical experience to give other nurses insight into childbearing women with mental illness, which affects up to 20 percent of pregnant women. Their study, published in the journal *Nursing for Women's Health*, has the goal of helping clinicians work with interdisciplinary teams to identify women with mental illness and help them manage it during pregnancy.

Stress can cause expectant mothers to miss prenatal care and experience poor maternal and fetal outcomes. **Linda Maldonado, PhD, RN**, assistant professor, researches how stress affects pregnant Puerto Rican women, who have the poorest maternal outcomes of all Latina subgroups. Many Puerto Rican women simultaneously care for older members of their extended families and for their immediate families, and a large percentage live in neighborhoods with high rates of drug-related violence and homicides. “The research study will ultimately lead to a proposed intervention that the women themselves will help to create and enact,” says Dr. Maldonado, a 2016 scholar with the Health Disparities Research Institute, a program hosted by the National Institute on Minority Health and Health Disparities.

Alleviating stress in nursing mothers is also vital for the healthy development of children. **Sunny G. Hallowell, PhD, PPCNP-BC, IBCLC**, assistant professor, is leading research to examine how breastfeeding may help mitigate the effect of toxic stressors in infancy and early childhood, potentially reducing the development of diseases, including hypertension, diabetes, obesity and cardiovascular disease, in adulthood. Her article, published in *Nursing Outlook*, also reaffirms that choosing to breastfeed instead of purchasing formula may offer long-term nutritional benefits for babies and economic benefits for mothers.

The research conducted by Dr. Hallowell and her colleagues is providing further evidence of the intrinsic link between mother and child—and how integral a woman's mental and physical health are to the well-being of her children.



Above: One of many Villanova Nursing faculty members studying ways to improve care for mothers and children, **Sunny G. Hallowell, PhD, PPCNP-BC, IBCLC**, assistant professor, researches the long-term benefits of breastfeeding.

Above right, top: A Villanova Nursing student provides vision screenings to students at Delaplaine McDaniel Elementary School in Philadelphia.

Above right, center: **Janette Herbers, PhD**, assistant professor of Psychological and Brain Sciences, earned a five-year NSF Faculty Early Career Development Program award to study infants experiencing homelessness and poverty.



Focusing on the educational and developmental challenges of children who were born prematurely, the research of **Michelle Kelly, CRNP, '94, '12 PhD**, assistant professor of Nursing, makes the case for early intervention, therapies and programs.

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### IMPACT OF HOMELESSNESS ON CHILD DEVELOPMENT

Half of all children who experience homelessness are under the age of 6, but little is known about the impacts of homelessness on early child development. **Janette Herbers, PhD**, assistant professor of Psychological and Brain Sciences, received a five-year National Science Foundation Faculty Early Career Development Program award to study infants experiencing homelessness and extreme poverty. She will compare the risk, protection and adaptation of Philadelphia families who live in homeless shelters with that of families who are poor but have housing.

### THE HIGH EDUCATIONAL TOLL OF PRETERM BIRTH

Children who are born prematurely are at risk of many health issues, and developmental and educational problems can continue for years, according to **Michelle Kelly, CRNP, '94, '12 PhD**, assistant professor of Nursing. As they grow up, preterm babies are more susceptible to attention deficit disorder, learning disorders, asthma, speech impairments and other chronic conditions, Dr. Kelly's study found. Her findings, published in the *Journal of Pediatric Health Care*, pinpoint the educational and psychosocial challenges of children born prematurely and provide a strong justification for early intervention, therapies and education programs.

### REDUCING WASTE IN THE GLOBAL FOOD SUPPLY

One-third of food around the world goes unconsumed, and finding solutions is critical to expanding the reach of the global food supply to feed more people. For **Beth Vallen, PhD**, associate professor of Marketing, understanding how and why food is wasted by consumers is the key. In a paper that was published in the American Marketing Association's *Journal of Public Policy and Marketing*, Dr. Vallen and her co-authors define the factors that lead to waste, from the presentation of produce in supermarkets to the decision by consumers to dispose of “ugly” but still edible food. The study has implications for both households and public institutions seeking to better manage food supplies and reduce waste.

Researchers and scholars are attuned to the physical, social and spiritual needs of persons and communities. They put their ideas to work to improve quality of life and implement viable solutions, often in tandem with external partners.

## VILLANOVA'S FOCUS ON RESPONDING TO PEOPLE'S NEEDS AND HOPES

### Theologians Add to Dialogue on Contemporary Issues

Taking their cue from St. Augustine, who brought his beliefs into dialogue with ideas trending at the time, Villanova theologians address contemporary dilemmas by relating faith to culture to glean new and deeper insights. How can one's faith tradition shed light on a particular experience, and how can that experience enrich that tradition? Using these criteria, faculty stimulate new thinking in academic circles. But they also influence the public sphere, providing context, perspective and a way forward to people concerned about who they are and where society is headed.

One issue is what it means to be a Roman Catholic today. With 1.2 billion Catholics worldwide, answers vary across nations, cultures and pews. **Massimo Faggioli, PhD**, has a rare blend of credentials that make him a respected authority on patterns in regional and global Catholicism. An Italian- and German-educated church historian who, as a graduate student, secured approval to do intensive study in the Vatican Secret Archive, Dr. Faggioli is adept at bridging European and American Catholicism. As a contributing writer for *Commonweal*, a columnist for *La Croix International* and a reasoned voice on social media, he educates a global audience with his analyses of events and his big-picture thinking. In his latest book, Dr. Faggioli reflects on what documents from Vatican II entail for Catholicism and citizenship 50 years later, in a postmodern world.

A related issue is how to be a person of faith and of science in a society that polarizes these spheres. Franciscan **Sister Ilia Delio, PhD**, Villanova's Josephine C. Connelly Endowed Chair in Theology, embodies the answer. With doctorates in Pharmacology and Historical Theology, Sister Ilia integrates science and religion to offer profound insights into quantum reality, artificial intelligence and divine action in an evolving universe. She presents ideas in ways that are accessible to non-scholars. Scores of speaking engagements and thousands of book sales point to her popularity. "People struggle to understand how God can relate to a world of change and complexity," Sister Ilia says. "I give them the language and thought patterns to make meaningful connections."

Associate Professor **Vincent Lloyd, PhD**, breaks ground at the crossroads of religion, politics and race. His recent explorations include the religious dimensions of mass incarceration, a black theological approach to politics, and religion in the Black Lives Matter movement. His 2017 book, *Religion of the Field Negro: On Black Secularism and Black Theology*, challenges the dominant views of white theologians and affirms the



wisdom of those living on society's margins. With funding from the Henry Luce Foundation, Dr. Lloyd plays a leading role in organizing an interdisciplinary campus initiative that he hopes "will make Villanova a hub for cutting-edge exchanges on political theology."

Theology faculty tackle many other contemporary concerns. For example, Associate Professor **Gerald Beyer, PhD**, an expert in Christian ethics, applies principles of Catholic social teaching to topics such as racism, gun control and worker justice. In an article in the *Journal of Religious Ethics*, Dr. Beyer shows how ethicists can use concepts in moral theology to identify and address violations of workers' rights in various scenarios. Associate Professor **Stefanie Knauss, ThD**, pursues scholarship pertaining to culture, the body, and gender and queer studies. In recent articles, Dr. Knauss analyzes how the experiences of LGBTQ individuals can be resources in attempts to understand God and the Church, and highlights how discussions of celibacy perpetuate stereotypes about body, sex and gender.

Through these and other scholarly activities, Villanova theologians journey with people who seek wholeness, self-understanding and the tools to make sense of emerging ideas in light of age-old convictions.

Whether their conversations take place in a small classroom or on a global platform, Villanova theologians share expert perspectives on a cross-section of current topics. Here, Vincent Lloyd, PhD, associate professor of Theology and Religious Studies, chats with Psychology major Rahma Goran '20.



Villanova's dynamic theologians, including Massimo Faggioli, PhD, professor, and Stefanie Knauss, ThD, associate professor, are respected voices in scholarly and popular media.

## PEOPLE'S NEEDS AND HOPES

## Improving Home Health Care for an Aging Population

**Melissa O'Connor, PhD, MBA, RN**, dedicates her research to the quality and cost of skilled home health care for older adults. With roughly 58.5 million Medicare beneficiaries in the US—a number that climbs as baby boomers age—Dr. O'Connor, an associate professor of Nursing, brings to light trends and data that are especially significant for clinicians and policymakers.

One of the national health priorities is preventing “adverse events,” such as emergency department visits and hospitalization, among chronically ill older adults living at home or in assisted living centers. In their article in *Geriatric Nursing*, Dr. O'Connor and co-authors identify risk profiles that can predict these events and suggest strategies to create more targeted interventions.

Reducing the risk of such events also is crucial when older patients move from one level or setting of care to another. Recognizing that nursing programs in general do not adequately cover concepts of transitional care, Nursing researchers and faculty, including Dr. O'Connor, designed case studies and simulation scenarios that were then incorporated into Villanova's undergraduate nursing curriculum.

Discharging older adults from skilled home health services before they are ready also can have negative outcomes. Dr. O'Connor spearheaded the first study to identify which factors home health clinicians believe are important for evaluating discharge readiness. The findings, reported in *Research in Gerontological Nursing*, are an important step in developing what would be the first evidence-based decision support tool for clinicians.

Dr. O'Connor immerses herself in Medicare policies. In an article she co-authored for *Home Health Care Management & Practice*, she weighs in on proposed reforms to Medicare's payment system. She also served on the panels “Modernizing Medicare Home Health Care,” for the AARP Public Policy Institute, and “Patient Safety in the Home,” hosted by the Institute for Healthcare Improvement and the National Patient Safety Foundation.



The prolific scholarship of Melissa O'Connor, PhD, MBA, RN, associate professor of Nursing, focuses on home health care for older adults.

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### SHARING FINANCIAL SAVVY TO STRENGTHEN NONPROFITS

Empowering nonprofits and mission-driven organizations matters to Villanova. Its **Center for Church Management**, which is in the forefront of education and research related to ecclesial management in the 21st century, received a grant from the Lilly Endowment to develop financial literacy programming for church leaders. As pastors and other ministers are called to new levels of accountability and transparency in running parishes, the center is making sure church leaders are prepared for these responsibilities.

Likewise, when the Philadelphia Bar Foundation wanted to build the Equal Justice Center, a facility that would offer space to 25 Philadelphia-based nonprofits that provide services in such areas as legal aid, public welfare and immigration, it turned to Villanova's **Michael Posner, PhD**, associate professor of Mathematics and Statistics, and **Theodore Arapis, PhD**, assistant professor of Public Administration. The duo developed algorithms and predicted the EJC's economic and social impact. Their report was cited as one of the major factors that influenced the city's decision to approve the proposal.



### POOLING TALENTS TO IMPROVE WATER QUALITY

The water and wastewater utility **Aqua America Inc.** formed a partnership with Villanova's College of Engineering to mentor students, provide expertise in water quality and support the College's robust international service work. In their first joint effort, Aqua leadership and engineers accompanied faculty and students to Panama and Nicaragua. The team assessed newly proposed projects, evaluated recently completed projects and continued to build relationships with local partners to provide technical services on the sustainable development of water infrastructure.



Villanova College of Engineering faculty and staff, through a new partnership with Aqua America Inc., are expanding collaborations with developing communities in Central and South America to implement sustainable water infrastructure projects.

### ADVOCATING FOR RELIGIOUS FREEDOM AT HOME AND ABROAD

Villanova advances conversations around the preservation of, and attacks on, the universal right of religious freedom. Home to one of the first Arab and Islamic university centers in the US, Villanova was a fitting venue for a two-day conference on the **struggle for secular nationalism and citizenship** in the Middle East. Convened in December 2016, the event attracted experts from around the world who vigorously debated about the factors that imperil Christians and other deeply rooted peoples in the region.

Villanova also is home to faculty engaged in studying issues of religious freedom. It recently named **Michael Moreland, JD, PhD**, its first University Professor of Law and Religion, as well as the inaugural director of the Eleanor H. McCullen Center for Law, Religion and Public Policy. A preeminent scholar in constitutional law, torts, bioethics and religious freedom, Dr. Moreland has been a visiting fellow at Princeton and Notre Dame, and is a former member of the White House staff.

In addition, **Daniel Mark, PhD**, assistant professor, Political Science, was elected vice chairman and then, a year later, chairman of the US Commission on International Religious Freedom. The independent government body monitors violations of religious freedom worldwide and makes policy recommendations to Washington.

**Adriano Duque, PhD**, meanwhile, was awarded his second Fulbright fellowship to study Muslim-Christian relations. With a grant from the Core Fulbright U.S. Scholar Program, Dr. Duque, an associate professor of Medieval Spanish Studies, spent the spring and summer terms at Abdelmalek Essaadi University in Tétouan, researching the shared veneration of St. John the Baptist among Muslims and Christians in Morocco and Spain.

Uniting history with modern culture, scholars at Villanova seek answers to difficult questions by critically reexamining the past and challenging cultural assumptions about the present. By bringing untold narratives to light, they shift perspectives on history and culture, and contribute new context to today's world.

## VILLANOVA'S FOCUS ON REVEALING HIDDEN TRUTHS

### Uncovering Stories of Families Divided by Slavery

Slavery tore apart families, wrenching parents from children, husbands from wives, sisters from brothers. More than 150 years after the Emancipation Proclamation and the end of the Civil War, the descendants of former slaves still feel the effects of these severed family ties.

After the Civil War, freed slaves bought advertisements in African-American newspapers with hopes of finding long-lost family. The ads listed names, circumstances of separation—any memory that could spark a reconnection.

Even now, there are painful stories left untold, ones that tug at the heart, says **Judith Giesberg, PhD**, professor of History and director of the Graduate Program in History. To keep these stories from being lost to time, Dr. Giesberg and her graduate students digitized more than 2,000 advertisements, launching the “Last Seen: Finding Family After Slavery” project.

“These ads have been overlooked for a hundred years. They have the potential to open up new doors to those whose family trees end with slavery,” says Dr. Giesberg, who is also editor of *The Journal of the Civil War Era*.

The ads offer glimpses of mothers who have not seen their children since they were just old enough to crawl. Daughters searching for their mothers after three decades apart. People searching, against all odds, to find their kin. In a handful of cases, Dr. Giesberg found ads from the era that recounted stories of successful reconnections with family.

Volunteers helped transcribe the documents and contributed their own advertisements or records of their own families' stories. The project grew to include a website with a searchable archive that gives descendants, genealogists and researchers new tools to study this time in American history, and new insight into the lives of former slaves, which were by turns desperate and hopeful.

The “Last Seen” project has been covered by *The Washington Post*, *CBS Evening News*, NPR and *The Philadelphia Inquirer*, and more than 1 million people visited the website in the first six months. Additionally, Dr. Giesberg and her graduate students have brought the project into local communities through seminars and programming.

“Family is an essential part of the human experience, yet enslaved people were routinely denied family in the US. They held on to memories of their loved ones,” Dr. Giesberg says.



Judith Giesberg, PhD, professor of History, and Margaret Jerrido, archivist at Philadelphia's Mother Bethel African Methodist Episcopal Church, were interviewed by *CBS Evening News* about a project undertaken by Dr. Giesberg and her graduate students to digitize ads that former slaves placed after the Civil War to locate long-lost family.

## REVEALING HIDDEN TRUTHS

### Looking for Truth in Advertising



A pair of Marketing faculty at the Villanova School of Business are leading voices on how marketing campaigns can be reflections of society, both in who is included and who remains out of sight.

For two decades, **Charles R. Taylor, PhD**, has tackled this subject from the perspective of one of the world's biggest sporting events and marketing opportunities—the Super Bowl. Dr. Taylor, the John A. Murphy Professor of Marketing and senior research fellow at the Center for Marketing and Consumer Insights at Villanova, has turned a critical eye to the commercials that dominate the media before and during the big game each year. Because of this and other research, he was awarded the Flemming Hansen Award for excellence in advertising research by the European Advertising Academy. In 2017, Dr. Taylor's analysis, published in *Forbes*, found that diversity in marketing has made significant progress, responding to societal moves toward inclusion and realistic portrayals of minority groups.

His research drew on an assessment of the impact of diversity on Super Bowl advertisements over the last five years. More than half of the commercials featured people of more than one race, with appearances by Latino and Asian-American models increasing in frequency. Looking at responses to the ads on social media and other metrics, Dr. Taylor revealed that diversity alone did not make the messages resonate. Rather, combining creativity with diversity, he found, created the most resonance with audiences.

While strides are being made to diversify marketing efforts, the impact of less inclusive campaigns still lingers, going beyond brand perceptions and sales.

**Aronté Bennett, PhD**, associate chair of Marketing and Business Law, researches how the omission, intentional or not, of minorities in marketing efforts can be harmful to those groups' identities and experiences. Those omissions can lead to restricted consumption and the reinforcement of institutional privilege, wrote Dr. Bennett in the *Journal of Public Policy & Marketing*.

**Charles R. Taylor, PhD, the John A. Murphy Professor of Marketing, and Aronté Bennett, PhD, associate chair of Marketing and Business Law, study the effects of marketing on society.**



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### RECONCILING PAST AND PRESENT

A forthcoming book by a Villanova Political Science assistant professor examines how and why countries confront, excuse, rationalize or, in some cases, deny violence and atrocities in their pasts. In *Changing the State's Story: The Politics of Dark Pasts in Turkey and Japan*, **Jennifer M. Dixon, PhD**, explores the narratives these two countries have constructed about dark periods in their history. Investigating the roots of ongoing contestation over the 1915-1917 Armenian Genocide and the 1937-1938 Nanjing (Nanking) Massacre, Dr. Dixon writes that international pressures can push states to reevaluate past atrocities, but domestic political considerations shape how far states are willing to go in addressing dark pasts. More generally, the book sheds light on the persistence of contention over and the difficulty of "coming to terms" with past wrongs.

### LENDING HISTORICAL TRUTH TO ENTERTAINMENT

A Villanova teacher-scholar's expertise has helped to ground a Netflix miniseries on the Roman Empire in historical reality. By providing commentary for the *Roman Empire: Reign of Blood*, Assistant Professor of Classical Studies **Andrew Scott, PhD**, gave deeper context to the show's portrayal of historical figures and political infighting.



**Mark C. Alexander, JD, the Arthur J. Kania Dean and Professor of Law, Villanova University Charles Widger School of Law, is a First Amendment scholar whose new book is on the reading lists of many law students.**

### THE FIRST AMENDMENT IN THE 21<sup>ST</sup> CENTURY

Law students immersing themselves in the First Amendment are turning to a new book co-authored by **Mark C. Alexander, JD**, the Arthur J. Kania Dean and Professor of Law, Villanova University Charles Widger School of Law. *A Short & Happy Guide to the First Amendment* is a concise and engaging guide to help lawyers and nonlawyers alike better understand one of our fundamental rights, tracing the First Amendment's history to current issues, including hate speech and campaign finance.

### THE LEGACY OF COLONIAL STATES

Contributing key insights into the lingering consequences of British, French and Portuguese colonial rule in Asia, Africa and the West Indies, **Olukunle P. Owolabi, PhD**, assistant professor of Political Science, has published a working paper on the developmental legacies of colonial states that used separate laws for settler and native populations. His paper, published by the Kellogg Institute for International Studies at the University of Notre Dame, found that colonies with a distinctive legal system for indigenous populations experienced worse developmental outcomes over the long term than colonies that developed an inclusive and universal legal system.

### THE VITAL ROLE OF HISTORY COMMUNICATORS

Historians possess deep knowledge of the past, and communicating that effectively and persuasively in today's media environment is essential to societal understandings of our present and our future. Director of the Lepage Center for History in the Public Interest **Jason Steinhauer** has created the field of "history communication," speaking to *Time*, CNN and *Inside Higher Ed* on the role historians now play in providing accurate, research-based information to the public through new media. Steinhauer recently traveled to Lithuania at the invitation of the US Department of State to discuss history communication and how historians can help to combat the spread of fake news, fake history and propaganda online.

Principles of sustainability govern and guide the University, which recognizes the sacredness of creation and the responsibility of global stewardship. This consciousness influences curricula and permeates research.

## VILLANOVA'S FOCUS ON PROTECTING THE PLANET



## Biologists Contribute to International Landmark Document

The International Union for Conservation of Nature released the milestone report *Explaining Ocean Warming: Causes, Scale, Effects and Consequences*, which presents an exhaustive review of the science and implications of ocean warming. Scholars worldwide collaborated to contribute chapters within their areas of expertise, illuminating the severity of the impact, gaps in capability and the need for global action.

Among those scholars were Villanova's **Samantha Chapman, PhD**, and **Adam Langley, PhD**, associate professors of Biology. They had been invited to help write the section of the report that describes the effects and consequences of ocean warming on tidal marsh and tidal freshwater forest ecosystems, including plant production, decomposition rates, carbon sequestration and methane emissions. According to the authors, the ability of these ecosystems to withstand accelerated sea-level rise ultimately will depend on the balance of the complex feedbacks between plants, microbes and physical processes.

At Villanova, Dr. Langley researches how ecosystems respond to global change—and how those responses accelerate or slow down global change. Supported by a National Science Foundation grant, he is studying the effects of rising carbon dioxide and sea levels on marshes. Dr. Chapman investigates how biodiversity, climate change and nutrient pollution alter the services that ecosystems provide for humans. She led a NASA-funded study that showed that the spread of mangroves may protect coastal wetlands—research being furthered with an NSF grant.

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### TEACHING LEARNERS TO KNOW THEIR ENVIRONMENT

*Practicing Environmental Law*, a new, innovative, practice-based text, guides students through real problems that environmental attorneys encounter. The approach challenges students to creatively resolve complex scenarios. **Todd Aagaard, JD**, vice dean of Villanova University Charles Widger School of Law, is a co-author.

### DIRE PREDICTIONS ABOUT TORNADO DAMAGE

In a study published in *Climatic Change*, **Stephen Strader, PhD**, assistant professor, Geography and the Environment, and his co-authors investigated how risk and the vulnerabilities of the built environment influence tornado disaster probability. Their results suggest that the potential for annual tornado impact magnitude and disaster will increase dramatically over this century.

**Samantha Chapman, PhD** (pictured, left), is among many Villanova professors with expertise on the effects of climate change.

## Fighting to Conserve Coral Colonies

Rising ocean temperatures and acidification levels are imperiling vibrant-hued coral colonies around the globe. Evidence of the toll being taken on corals is the ominous phenomenon known as bleaching, in which the organisms lose the symbiotic algae that nourish them.

**Lisa Rodrigues, PhD**, associate professor of Geography and the Environment, has the expertise, network and funding to explore new ways to conserve these marine invertebrates and the tropical ecosystems that they build.

With the help of a National Science Foundation Collaborative Research grant awarded to her and a team of colleagues at the University of Washington, Dr. Rodrigues will study the mechanisms corals use to tolerate and successfully reproduce under thermal stress caused by changes in their environment. Her research will focus on an important and dominant reef builder in Hawaii that has the capacity to sexually reproduce despite bleaching.

In addition to aiding coral conservation and management efforts, Dr. Rodrigues' findings will be used to educate young people and adults about the need for long-term recovery. From a workshop with teachers from Hawaiian immersion schools, to marine biology lesson plans for teachers of underrepresented groups in Seattle, to classroom activities and field trips for underserved high school students in Philadelphia, community outreach programs will incorporate her research.

What constitutes the universe? What controls objects on the go? What drives human behavior? Questions about matter, motion and mind absorb faculty and students. They seek answers that have practical outcomes and spark new inquiries.

## VILLANOVA'S FOCUS ON UNDERSTANDING HOW THINGS WORK

### Stellar Year for Astronomers

Astronomers in Villanova's College of Liberal Arts and Sciences have their eyes trained on the skies, and their commitment and expertise have led to discoveries with implications for our world, our galaxy and beyond.

**Edward Guinan, PhD, '64**, professor of Astrophysics and Planetary Science, and **Scott Engle, PhD, '03**, research assistant professor, played major roles in two significant studies that received widespread attention.

As leaders of a team of American and Canadian astronomers, Dr. Engle and Dr. Guinan discovered a surprising new class of pulsating variable stars—ones that are X-ray active. The revelation has astronomers particularly excited because the star that is producing these pulsed X-rays represents a group of supergiant stars known as Classical Cepheids. The properties of Cepheids help scientists measure distances to other galaxies and determine the universe's rate of expansion. As they reported in *The Astrophysical Journal*, the researchers used new images obtained from NASA's Chandra X-ray Observatory to make the discovery.

Dr. Guinan and Dr. Engle also participated in an international team that made a landmark discovery: evidence of an exoplanet—a planet outside the solar system—orbiting the red dwarf Proxima Centauri, the closest star to the sun. The significant breakthrough was featured on the cover of *Nature* for the Aug. 25, 2016, issue. The team, led by Guillem Anglada-Escudé, PhD, of Queen Mary University of London, found that the exoplanet, called Proxima b, is slightly more massive than Earth, orbits in its host star's habitable zone and has a surface temperature that could allow liquid water to be present—conditions that raise tantalizing questions about its potential for supporting life.

In evaluating the habitability of exoplanets, Dr. Engle and Dr. Guinan have a resource nearby: **Andrej Prsa, PhD**, an associate professor and expert in eclipsing binary stars. Dr. Prsa is the principal investigator on two National Science Foundation grants that will improve theoretical models of eclipsing binaries and the planets that orbit them. Key goals are to more accurately measure the stars' masses and radii, and to determine their compositions. Dr. Prsa will carry out this work with Villanova and Penn State colleagues. The funding also supports Dr. Prsa's revisions to the modeling codes themselves.

Such successes arise from international collegiality—a spirit that Professor **Edward Sion, PhD**, embodies. A renowned expert on isolated white dwarf stars and white dwarfs in cataclysmic variables, Dr. Sion is a founding member of the Lebanese Academy of the Sciences, which was established in Beirut in 2007. In January 2017, Dr. Sion and other members of the executive committee presented to Prime Minister Saad Hariri the academy's first report to the nation on the strengths and challenges of scientific research and education in Lebanon. One of the well-received proposals: the creation of a "super-planetarium" in Beirut that would double as an educational center and a tourist attraction.



### POTENTIAL LIFESAVER: EARTHWORM HEMOGLOBIN

Access to a blood substitute that doesn't require refrigeration could be the difference between life and death on battlefields and in remote areas. Investigations into the potential of earthworm hemoglobin for this purpose earned **Jacob Elmer, PhD**, assistant professor of Chemical Engineering, an Academic Research Enhancement Award (R15) from the National Institutes of Health. The funding also creates a collaboration with researchers at Children's Hospital of Philadelphia and supports undergraduate students involved in the project.

Members of the Department of Astrophysics and Planetary Science collaborate with leading scholars around the world on projects funded by NASA, the National Science Foundation and other premier agencies to acquire new and deeper knowledge of the universe and to share it with academia and the public.

## HOW THINGS WORK

### Water, Soil Experts Track Materials on the Move

Faculty in Villanova's Department of Civil and Environmental Engineering dig into questions about when soil, water and other matter should—and should not—be on the move, and the consequences for human health and the environment.

No community wants a reservoir or a hazardous waste landfill to leak. Engineered barriers are key to restricting hydraulic flow and the migration of contaminants, and geotechnical engineer **Kristin Sample-Lord, PhD, PE**, assistant professor, focuses part of her research on the design, materials and performance of these barriers. Her recent publications analyze the properties of sodium bentonite, a clay that is used in many critical containment applications.

In some cases, however, impediments to water flow create a different set of problems. Water resources expert **Virginia Smith, PhD**, assistant professor, and students in her Urban Coastal Rivers Research Group undertake projects related to hydrology, sediment transport and climate. Dr. Smith was the lead author on a study published in *Geomorphology* that is the first geomorphic model of a river's downstream response to a dam. The consequences of sediment buildup in the reservoirs of dams can be serious, including downstream bed erosion and changes in a river's form, which affect infrastructure and ecology downstream.



#### OPTIMIZING THE PERFORMANCE OF DEFENSIVE SYSTEMS

Military defensive systems need to be able to respond quickly and precisely to intercept warheads and other hostile threats, and a Villanova engineer has developed a novel and efficient algorithm to help ensure that they do. **Hashem Ashrafiuon, PhD**, professor of Mechanical Engineering and director of Villanova's Center for Nonlinear Dynamics and Control in the College of Engineering, has been addressing the challenges of how to compensate for the unstable shape of rockets and other crafts without sacrificing maneuverability and precision. Dr. Ashrafiuon's findings were published in *IEEE Transactions on Control Systems Technology*.

#### ANALYTICS ON A PRO SOCCER STRATEGY'S PAYOFF

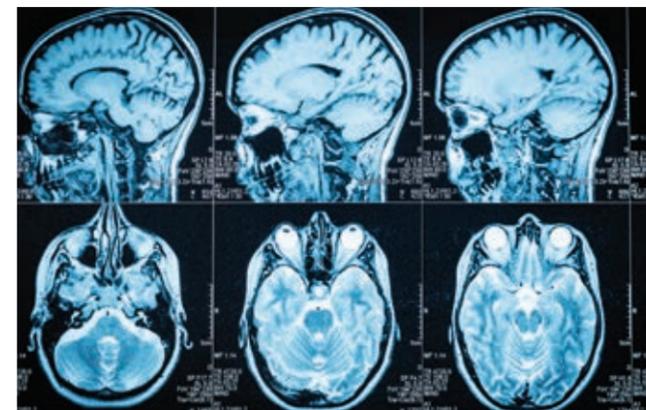
Professional soccer is big business and deals in big bucks. To win, coaches want to implement the most effective strategies—especially when it comes to how players move and shoot the ball. **Bret Myers, PhD, assistant professor, Management and Operations, in the Villanova School of Business**, and an expert in business and sport analytics, is mining for answers. Dr. Myers collected data from England's Premier League to examine how changes in pass behavior in the "attacking third" (the portion of the field closest to the opponent's goal) affect the ability of the team with the lead to claim victory. His findings appeared in *The Sport Journal*.

### Changing Temporal Perception to Reduce Drug Cravings

With a three-year grant from the National Institute of Drug Abuse, **Matthew Matell, PhD**, a professor in the Department of Psychological and Brain Sciences, is using Pavlovian conditioning to study how the perception of time affects drug cravings. For more than a decade, NIDA, an organization within the National Institutes of Health, has funded Dr. Matell's research into how changes in temporal perception may contribute to the use and abuse of addictive drugs.

#### TAPPED TO INTERPRET AUGUSTINE'S VIEWS ON FREE WILL

Great scholars through the ages have explored aspects of human psychology and agency. One of the most contentious and complex concepts they wrestle with is that of free will. **Jesse Couenhoven, PhD**, an associate professor of Moral Theology in the Department of Humanities, was one the leading researchers from around the world asked to contribute chapters to *The Routledge Companion to Free Will*, a compendium of essays on influential figures and essential topics. Over the centuries, philosophers, theologians from various cultural traditions and scientists alike have commented on free will—and few more influentially than Augustine. In the chapter he penned, Dr. Couenhoven expertly clarifies and explains the development of Augustine's views of freedom, sin and grace, and raises contemporary questions about the nature of the human person.



Graduate and undergraduate students collaborate with assistant professors Kristin Sample-Lord, PhD (top), who researches the design and evaluation of soil barrier systems to protect human health and the environment; and Virginia Smith, PhD (middle), who investigates how rivers, reservoirs and floodplains change over time.

Innovations and new trends create incredible potential—and unforeseen implications. The world continues to accelerate through technology, and Villanova faculty address the ramifications and contribute to the understanding of technical advancements and their impact on households, workplaces and society at large.

## Smart Tech Requires Even Smarter Users



Stephen J. Andriole, PhD, the Thomas G. Labrecque Professor of Business Technology, analyzes and forecasts rapidly changing technology's impact on society.

The Internet can break down boundaries, but it can also be harmful to society in an age of fake news and clickbait advertisements. Separating truth from fiction in a digital space is difficult, as information on the web moves at lightning speed. That is why experts like **Stephen J. Andriole, PhD**, the Thomas G. Labrecque Professor of Business Technology, are vital thought leaders in a digital age.

With decades of experience in government, academia and industry, Dr. Andriole has been a leading figure in technology. He designed the Early Warning and Monitoring System, a computer-based system used by the US government during President Ronald Reagan's administration for crisis forecasting. He was also the principal architect of the investment strategy of venture capital firm Safeguard Scientifics Inc. and its partner companies, which were valued at more than \$100 billion.

At Villanova, Dr. Andriole teaches emerging business technologies, management consulting, and innovation and entrepreneurialism, drawing on his broad and deep body of scholarship. In all, he has written more than 30 books, including the forthcoming *The Innovator's Imperative: Rapid Technology Adoption for Digital Transformation*, written in collaboration with Villanova undergraduate students.

Dr. Andriole has also penned hundreds of articles, exploring every corner of information technology in an ongoing column in *Forbes*. He has covered the future of technology, fake news on digital media platforms and the impact of artificial intelligence on the workplace, among other topics.

"The pace of technology change and the rapid adoption of emerging technology represent amazing social, economic and political progress," he wrote in *Forbes*. "So what's the problem? The distance between digital joy and pain is widening."

## VILLANOVA'S FOCUS ON ANALYZING TECH'S POWER AND PORTENT



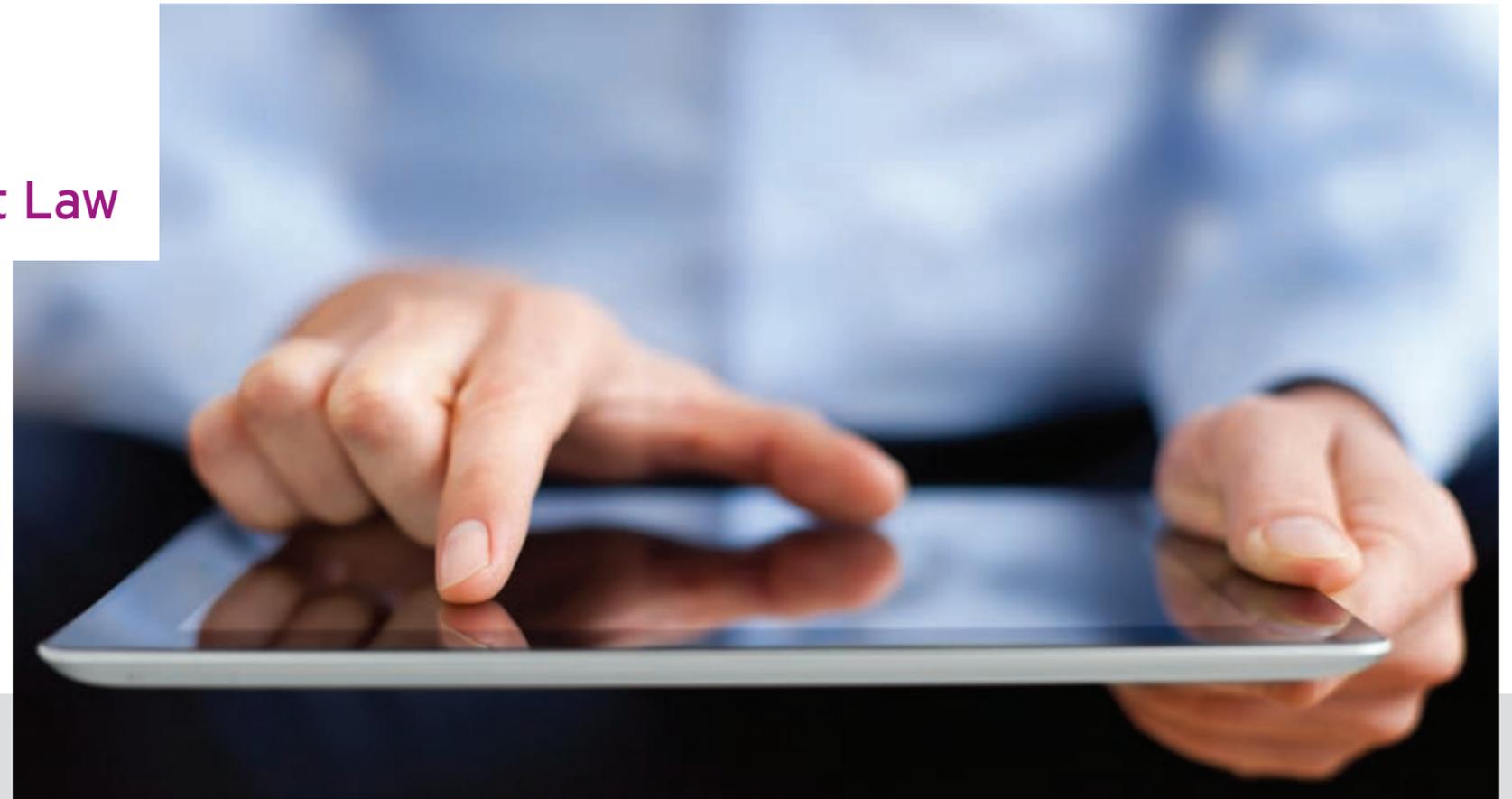
TECH'S **POWER** AND **PORTENT**

## Navigating Intellectual Property and Internet Law

Recognized internationally for his legal prowess, **Michael Risch, JD**, professor of Law at the Villanova University Charles Widger School of Law, focuses his scholarship specifically on the labyrinth of intellectual property questions that have emerged as technology has advanced.

Professor Risch, who is also associate dean of Faculty Research and Development at Villanova Law, has had his scholarship cited repeatedly by the US Supreme Court and legal briefings in intellectual property cases and has provided expert advice to attorneys, litigants and investors.

In addition, he is a go-to expert for the media, where he comments on topics as diverse as high-profile trademark, patent and copyright, internet and technology regulation, and legislation for media outlets, including NPR, Bloomberg News, Reuters, *The Wall Street Journal* and *The Washington Post*. In 2016, he provided commentary and expert analysis to multiple media outlets on *Apple v. Samsung*, which was the first case involving design patents to be heard by the US Supreme Court in more than 120 years.



## et al.

### INNOVATION IN NURSING EDUCATION

A Villanova Nursing professor has developed several innovative, technology-based teaching-learning strategies designed to prepare nurses to take steps to prevent errors in hospital and clinical settings, and to promote a culture of safety among Villanova nurses. **Bette Mariani, PhD, RN, ANEF, '82**, associate professor, and her colleagues used clinical simulation as a teaching-learning strategy to enhance future nurses' learning, reasoning and clinical judgment. She co-authored an article, published in *Nursing Education Perspectives*, exploring the effectiveness of prerecorded scenarios and a simulated physical scenario to teach safe practice behaviors to nursing students.

### NEW SOFTWARE THWARTS RANSOMWARE CYBERATTACKS

Cyberattacks continue to plague companies and the government, threatening the private and public sectors' security. To combat a burgeoning type of breach, **Henry Carter, PhD**, assistant professor of Computer Science, partnered with University of Florida researchers to build software called CryptoDrop to detect the presence of "ransomware," which holds files hostage until the user sends a sum of money. In experimental evaluations, CryptoDrop proved 100 percent successful in identifying and preventing a ransomware attack.

### CAN DEVICES REPROGRAM THEIR USERS?

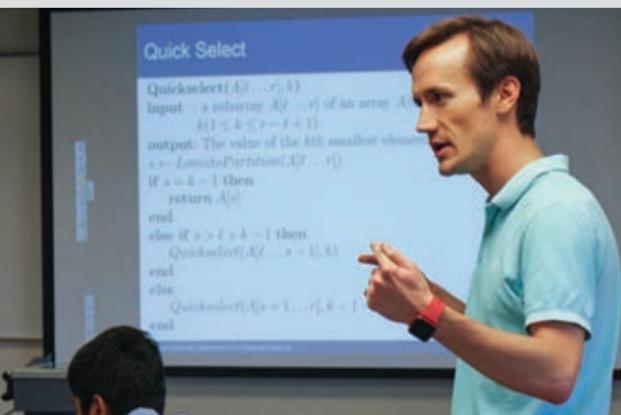
*Re-Engineering Humanity*, a forthcoming book co-authored by a prominent scholar at Villanova Law, is raising intriguing questions about how the technology humans own can own them instead. **Brett Frischmann, JD**, who joined Villanova in 2017 as the first Charles Widger Endowed University Professor in Law, Business and Economics, examines in the book the possibility that human minds are being programmed to act like simple machines. Professor Frischmann, who in his new role at Villanova will promote collaboration, cross-campus research and cross-disciplinary innovation, is also a leading expert in intellectual property and internet law.

### TECHNOLOGY RESHAPES THE WAY OF BUSINESS

A leader and valued expert on critical legal and ethical issues in technology, **Peggy Chaudhry, PhD**, wrote about the risk of malware related to the illegal trade of digital content on the internet for *Business Horizons*. Dr. Chaudhry, associate professor of Management and Operations in the Villanova School of Business, found demand for widespread internet access is generating supply chains of illicit content, which creates opportunities for website builders to infect users' computers with software that can steal personal data or harvest it for others' use.

### UNDERSTANDING TECHNOLOGY'S EARLIEST ADOPTERS

Youth are often the first adopters of new technology, and **Amy Way, PhD**, assistant professor of Communication, is providing essential insights into the complex ways that they interact with the online world. Dr. Way analyzed 700 articles on youth and communication online to evaluate the direction of future research. Her work, published in *Review of Communication*, creates a strong foundation upon which communication scholars can build, diversifying research that will move beyond an adult-centered view of trends and encompass how younger generations engage with technology.



**Bette Mariani, PhD, RN, ANEF, '82**, associate professor of Nursing, enhances nursing education and promotes safe nursing practices through technology. **Henry Carter, PhD**, assistant professor of Computer Science, is working to stop hacking threats to computers.

# HIGHLIGHTS

## Campaign Exceeds Goal While Enriching Educational Experience

The bold vision for the Villanova Campaign to Ignite Change becomes more and more an impressive reality. Even as pledges and gifts continue to come in, faculty and students are reaping the benefits of the highly successful campaign, which continues through May 2018.

As of Dec. 31, 2017, **the campaign reached \$732.4 million**—far exceeding its \$600 million goal—thanks to generous gifts and pledges from more than 74,000 donors, 49 percent of whom made a gift to Villanova for the first time. Undergraduate alumni participation hit an all-time record of 28 percent by May 31, the end of fiscal 2017. In addition, \$27.9 million in gifts and pledges were designated to the endowment in fiscal 2017. Ongoing support brought the campaign's total contribution to the endowment to \$308 million in gifts and pledges by Dec. 31.

The confirmation of these campaign dollars hard at work abounds and amazes. With the help of 38 new endowed scholarships in fiscal 2017, Villanova can attract even more outstanding students. And new and renovated spaces around campus were dedicated, among them, the Dugan Polk Family Reading Room, a 24-hour study area in Falvey Memorial Library; the Kevin M. Curley Family Exchange, a multifunctional venue in Bartley Hall; and the Andrew J. Talley Athletic Center, an addition to the Jake Nevin Field House.



## Celebrating 175 Years

In January 2017 Villanova launched a celebration of its founding by Irish Augustinian friars in 1842. What followed was a yearlong series of special events, programs and exhibits that honored the generations of Villanovans who came before and recognized those working today to ensure a bright future for the University. Throughout the year, the entire community—students, faculty, staff, alumni and friends—had opportunities to reflect on Villanova's remarkable history of transforming minds and hearts, and its impact as the nation's Augustinian Catholic university.

## Student-Athletes Excel in All Arenas

Villanova Wildcats notched another outstanding year of achievements in the classroom and in competition:

- In the NCAA's latest Academic Progress Rate data, a record 15 Villanova programs earned public recognition awards for ranking in the **top 10 percent** of their sport nationwide.
- A total of **320 Wildcats**, Villanova's highest number ever, were named to the 2016–2017 Big East All-Academic Team, leading, for the second straight year, all conference schools with the most selections.
- For the 28th consecutive semester, Villanova's student-athletes maintained a **GPA above a 3.0**.
- With a **95 percent Graduation Success Rate**—a measure of academic performance among Division I athletic programs—Villanova continued to rank among the nation's best; 14 programs posted a 100 percent GSR.
- Patrick Tiernan '17 (pictured below) won the **NCAA Division I Men's Cross Country Championship**. Previously, Tiernan had become the first athlete in conference history to win the Big East cross country title four times.
- The Women's Swimming and Diving team clinched its **fourth consecutive Big East title**, and sophomore Darby Goodwin was again named the Big East Women's Most Outstanding Swimmer.
- Men's Basketball captured the **Big East regular-season and tournament titles**. In addition, the Wildcats held the No. 1 ranking in one or more major national polls for eight weeks.



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## VILLANOVA HOSTS VATICAN-SANCTIONED CONFERENCE

Following the 2016 Pontifical Council for Culture's "Sport at the Service of Humanity" global conference, Villanova was selected to host the first Vatican-sanctioned regional follow-up. The two-day event convened higher education delegates from across the US to discuss **faith in the context of intercollegiate sports**.

## FACULTY EARN PRESTIGIOUS NSF EARLY-CAREER GRANTS

Two rising teacher-scholars received CAREER awards from the National Science Foundation: **Jacob Elmer, PhD**, assistant professor of Chemical Engineering, who seeks to improve gene therapy by modifying the innate immune response to therapeutic transgenes in cancer cells; and **Janette Herbers, PhD**, assistant professor of Psychological and Brain Sciences, who studies developmental processes among infants whose families experience homelessness and extreme poverty. (Read more about Dr. Elmer on Page 19 and more about Dr. Herbers on Page 7.)

## DIRECTOR OF WOMEN'S LEADERSHIP INSTITUTE NAMED

Villanova appointed **Teresa "Terri" Boyer, EdD, '95**, an innovative leader in economic and social equity for women, as founding director of the Anne Welsh McNulty Institute for Women's Leadership.

## NIH IMMUNOLOGIST ACCEPTS MENDEL MEDAL

The director of the National Institute of Allergy and Infectious Diseases, and pioneering HIV/AIDS researcher **Anthony Fauci, MD**, was awarded Villanova's Mendel Medal for his decades of research on infectious and immune-mediated illnesses. This accolade honors groundbreaking scientists who highlight that science and religion do not intrinsically conflict.

## SIGNAL PROCESSING EXPERT APPOINTED A FULBRIGHT DISTINGUISHED CHAIR

**Moeness Amin, PhD**, professor and director of Villanova's Center for Advanced Communications, was named the 2017 Fulbright Distinguished Chair in Advanced Science and Technology, a prestigious appointment that will take him to Australia. He also received the Institution of Engineering and Technology 2016 Achievement Medal for his significant contributions to signal analysis and processing.

## Financial Summary 2016-2017

The commitment to academic excellence is the foundation of Villanova's growing array of educational and research opportunities. So is its practice of financial discipline.

As a nationally ranked doctoral university, Villanova continues to devote resources to its academic mission and priorities, including a range of scholarly activities across its six colleges, some of which are highlighted in this publication. The University also has made significant progress on initiatives that will enhance Villanova's living and learning environments.

In fiscal 2017, the University strengthened its financial position and reached several new thresholds. One of these was in the area of financial aid. Making a Villanova education accessible to high-achieving and diverse students is one of the University's strategic priorities. This year, for the first time, this assistance exceeded \$100 million. It is helping more qualified students to realize their dreams of coming to Villanova.

At the same time, Villanova's sustained financial discipline was recognized by Standard & Poor's in a recent affirmation of the University's A+ credit rating and upgrade of the outlook from stable to positive. Thanks to the continued success of the Villanova Campaign to Ignite Change, net assets surged past the \$1 billion mark for the first time. Additionally, the endowment reached an all-time high of \$640 million.

The University's solid financial footing also provided the foundation for capital projects that are creating and reimagining spaces on campus where Villanovans will live, work, study and gather. A new 1,135-bed residence hall community and pedestrian bridge spanning Lancaster Avenue have taken shape over the last year, and construction of a state-of-the-art Performing Arts Center will begin in the coming months. The Finneran Pavilion is also undergoing a complete renovation.

### Other highlights from fiscal 2017 include the following:

- Cash and investments increased by \$120 million to an all-time high of \$875 million, primarily as a result of endowment growth and benefiting from a robust return of 12.5 percent.
- Pledges increased by \$13.4 million to \$107.7 million, a result of the continued success of the Villanova Campaign to Ignite Change, which exceeded the \$600 million goal.
- Land, buildings and equipment value grew by \$69.5 million to \$460.9 million as a result of continued Lancaster Avenue development and renovation of the Finneran Pavilion.
- The University's operating income of \$44.8 million resulted in a 10.2 percent margin.

More detail about the University's financial statements and rating reports can be found at [www.villanova.edu/finance/office](http://www.villanova.edu/finance/office).

Sincerely,



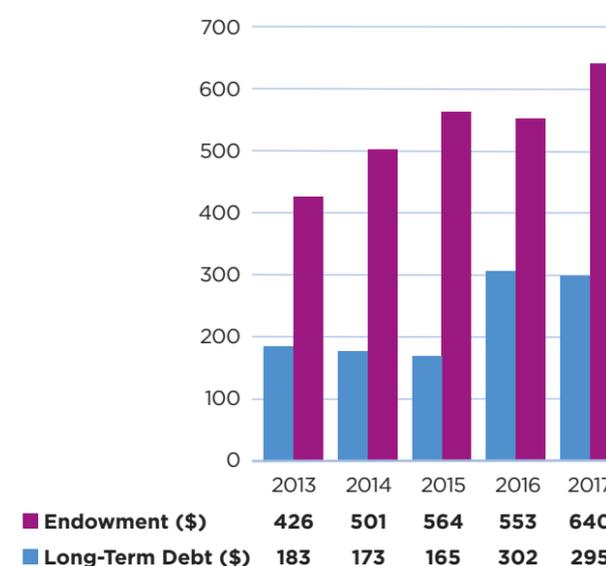
**Kenneth G. Valosky '82**  
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### Balance Sheets (\$ in thousands)

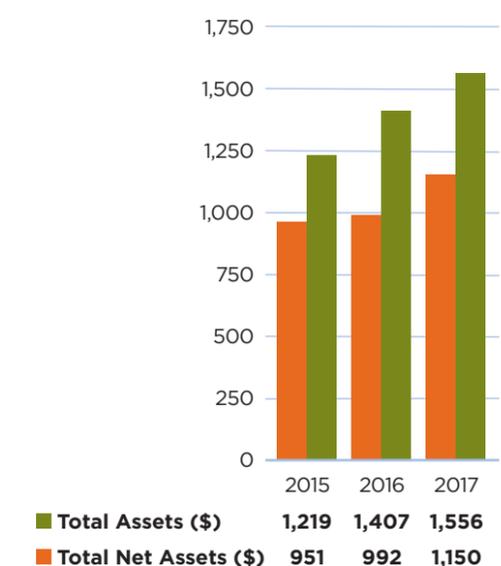
as of May 31

	2017	2016	2015
<b>ASSETS</b>			
Cash and short-term investments	\$ 178,061	\$ 198,916	\$ 188,861
Long-term investments at market	697,265	556,910	568,483
Accounts receivable, net	119,619	107,670	90,407
Other assets	4,491	3,753	4,512
Assets whose use is limited	95,565	137,907	2,106
Student loans receivable, net	10,497	10,864	10,981
Land, buildings and equipment, net	460,932	391,440	353,913
<b>TOTAL ASSETS</b>	<b>\$1,566,430</b>	<b>\$1,407,460</b>	<b>\$1,219,263</b>
<b>LIABILITIES</b>			
Accounts payable and accrued expenses	\$ 66,993	\$ 58,907	\$ 47,758
Deposits and deferred revenue	23,829	19,958	20,229
Long-term obligations	294,532	301,956	164,914
Other liabilities	31,318	34,685	35,019
<b>TOTAL LIABILITIES</b>	<b>\$ 416,672</b>	<b>\$ 415,506</b>	<b>\$ 267,920</b>
<b>NET ASSETS</b>	<b>1,149,758</b>	<b>991,954</b>	<b>951,343</b>
<b>TOTAL LIABILITIES AND NET ASSETS</b>	<b>\$1,566,430</b>	<b>\$1,407,460</b>	<b>\$1,219,263</b>

### Endowment vs. Long-term Debt (\$ in millions)



### Net Assets (\$ in millions)

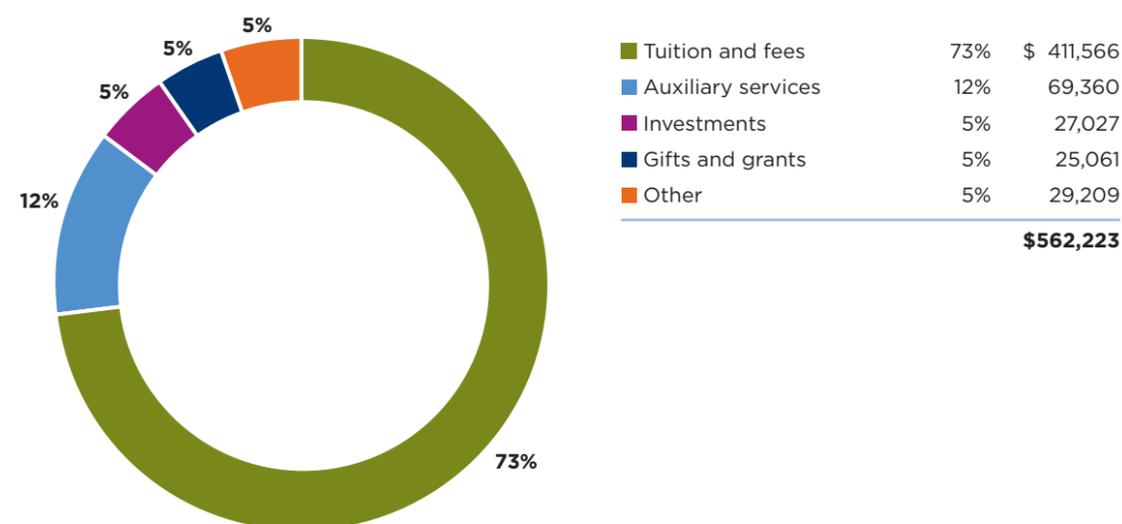


**Unrestricted Revenues and Expenses** (\$ in thousands) as of May 31

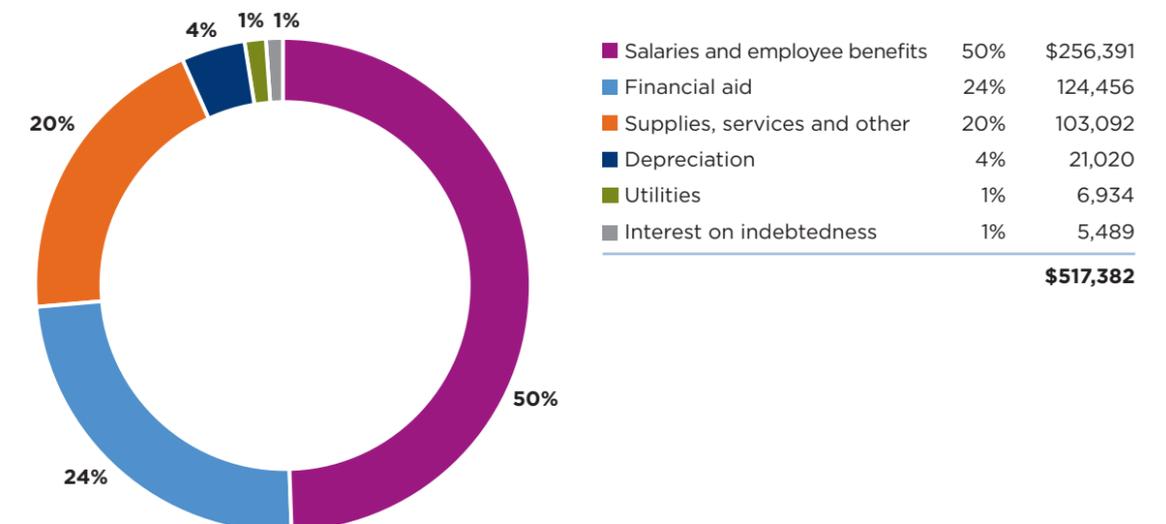
	2017	2016	2015
<b>Operating Revenues</b>			
Student-related revenue:			
Student tuition and fees	\$ 411,566	\$ 391,658	\$ 377,257
Sales and services of auxiliary enterprises	69,360	69,282	67,173
	<b>\$480,926</b>	<b>\$460,940</b>	<b>\$444,430</b>
Private gifts and grants	18,129	16,423	14,974
Government grants	6,932	6,326	6,822
Endowment resources	13,025	11,421	10,514
Investment income	2,283	1,226	148
Other sources	19,584	21,531	18,198
Net assets released from restrictions	21,344	17,020	16,132
<b>TOTAL OPERATING REVENUES</b>	<b>\$ 562,223</b>	<b>\$ 534,887</b>	<b>\$ 511,218</b>

	2017	2016	2015
<b>Operating Expenses</b>			
Salaries and employee benefits	\$256,391	\$249,385	\$ 240,711
Financial aid	124,456	117,051	109,202
Supplies, services and other	103,092	100,455	103,848
Depreciation	21,020	19,434	18,983
Interest on indebtedness	5,489	6,373	5,814
Utilities	6,934	7,024	8,188
<b>TOTAL OPERATING EXPENSES</b>	<b>\$517,382</b>	<b>\$499,722</b>	<b>\$486,746</b>
<b>AMOUNTS RESERVED FOR CAPITAL EXPENDITURES, DEBT PRINCIPAL PAYMENTS AND STRATEGIC INITIATIVES</b>	<b>\$44,841</b>	<b>\$35,165</b>	<b>\$24,472</b>

**Sources of Operating Revenue 2017**



**Distribution of Expenses 2017**



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