

HOPE COLLEGE

S P E R A



SPOTLIGHT ON FACULTY RESEARCH AND SCHOLARLY WORK

| 2019 |

WHAT DREW ME TO SOCIAL PSYCHOLOGY

DAVID MYERS, PH.D. | PROFESSOR OF PSYCHOLOGY

“ Psychology was the most interesting subject I studied in college, even though I had only one course in my first three years. I just thought, *What more interesting subject could there be than human beings?*

Faith is part of my identity, and therefore it is natural for me to ask how religious ideas about human nature correlate with psychological science’s ideas about human nature. I try to bridge those two understandings — to explain to people of faith the value of psychological science, to document interesting correlations between faith and personal and social well-being, and to compare big ideas about human nature found both in psychological research and in religion.

My main calling, however, is to read and teach psychological science through textbooks for introductory and social psychology. My task is to help students appreciate the wonders of their everyday lives and to help them think smarter — to supplement their intuition with critical thinking, and their judgmentalism with compassion.”

Dr. Myers has published 17 books, including *Social Psychology* (now in its 13th edition), *Psychology* (now in a 12th edition) and *What God Has Joined Together: The Christian Case for Gay Marriage* (with Letha Scanzoni, 2005). He’s also an advocate for people with hearing loss (see hearingloop.org). Dr. Myers’ essays about psychological science and everyday life appear weekly at TalkPsych.com



Hope College's motto, **SPERA IN DEO**, means "Hope in God."

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February 2019

Dear Friends,

Welcome to the second issue of *Spera*, an annual publication focused on the research, scholarship and creative performance of Hope College faculty.

The name of this publication comes from Hope's motto, *Spera in Deo*, or "Hope in God." On the following pages, you will read about scholarship that reflects an unyielding spirit of hope that we can do better and be better. You'll find stories about research that is rooted in the belief that life has meaning and the world around us is worth exploring — and saving. And, you'll be inspired by academic accomplishments that are the result of curiosity, inquiry, rigor and the pursuit of excellence.

In the college's most recent graduate survey, 91 percent of respondents from Hope's Class of 2017 said they planned their futures with mentoring from faculty. For those who know Hope College, this level of engagement is not surprising. In fact, Hope has a long-standing tradition of collaborative research. For decades, our students have benefited from Hope's "graduate-level undergraduate experience." This experience is transformational, giving students the opportunity to create work and conduct research with professors, then publish their findings in peer-reviewed journals (sometimes as primary author), present their work at conferences and perform in front of audiences around the world.

As provost of Hope College, I am so proud of our faculty. Because of our professors' dedication to being outstanding teacher-scholars, Hope continues to distinguish itself as a top-tier liberal arts college. Indeed, they breathe life into our mission every day by preparing students for "lives of leadership and service in a global society." Heartfelt thanks to our faculty for all they do to shape and guide our students!

This issue of *Spera* looks back at work that happened in 2018. More has happened since then; scholarship and innovation are ongoing at Hope College. If you'd like to read the latest about faculty work at Hope, please visit blogs.hope.edu/stories-of-hope — and find updates at blogs.hope.edu/sponsored-research-programs about grants and sponsored research.

Happy reading, and *Spera in Deo*!

Best regards,

A handwritten signature in black ink that reads "Cady Short-Thompson". The script is fluid and cursive.

Dr. Cady Short-Thompson
Provost

DEANS' COUNCIL 2018-19



Cady Short-Thompson, Ph.D.
Provost



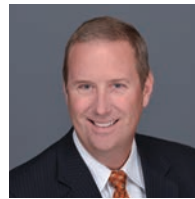
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✝ With fond appreciation, we remember the late Jonathan Hagood, Ph.D., who joined the Hope College history faculty in 2008 and served from 2017 to 2018 as Associate Dean for Teaching and Learning.

GRANT-FUNDED RESEARCH

Grants totalling \$2,763,990 from charitable foundations and government agencies helped fuel scholarly work at Hope College in 2018. More than 57 percent of the grant proposals submitted by the college's Office of Sponsored Research and Programs were successful.

External funding awarded in 2018 includes grants from the Beckman Foundation, National Science Foundation and Michigan Space Grant Consortium, which regularly support work by Hope faculty. Some grants — such as the Fulbright fellowship that Assistant Professor of Music Dr. Christopher Fashun was awarded in 2018 — underwrite professors' study-focused travel; others cover expenses such as research materials, and stipends for student researchers.

Here are thumbnail sketches of a few projects for which Hope faculty received grants in 2018.

Stephen Remillard, Ph.D. | Professor of Physics

U.S. Department of Energy grant: \$142,902

For research on microplasma — electrified gasses — to contribute to improvements in display panels, surgical equipment, and other commercial and biomedical devices in which microplasma is used.

Kristin Dittenhafer-Reed, Ph.D. | Assistant Professor of Chemistry

National Science Foundation grant: \$207,901

For research on mechanisms that control mammalian cell function, to inform other researchers' understanding of mitochondrial cell malfunction as they investigate its link to some genetic and neurological disorders and cancers.

Daryl Van Tongeren, Ph.D. | Associate Professor of Psychology

John Templeton Foundation grant: \$243,746

For research on causes and consequences of religious deconversion.

Jeff Johnson, Ph.D. | Professor of Chemistry

National Science Foundation grant: \$273,855

For research on carbon-carbon bonds between molecules, focused on finding easy, inexpensive ways to produce synthetically-relevant complex molecules.

Natalie Dykstra, Ph.D. | Professor of English

National Endowment for the Humanities Public Scholar Program award: \$50,400

For research and writing of *Isabella Stewart Gardner: A Life in Art*, a biography of the turn-of-the-20th-century Bostonian whose art collection became a world-renowned museum.

Learn about more projects at blogs.hope.edu/sponsored-research-programs/

For All of God's Good Earth

STEVE BOUMA-PREDIGER, PH.D.

LEONARD AND MARJORIE MAAS PROFESSOR OF REFORMED THEOLOGY

According to a recent Yale University survey, only 18 percent of American evangelical and born-again Christians believe that caring for the earth is part of their faith. When environmental theologian Dr. Steve Bouma-Prediger hears a statistic like that, he matter-of-factly responds, "I have a lot more work to do."

That work, which he has undertaken for the entirety of his 25 years at Hope, has already been substantial. In the classroom and in his scholarship, Bouma-Prediger educates others to engage in faith-filled creation care as part of their Christian identity. In 2018 he completed his sixth book on the subject, *Earthkeeping and Character: Exploring a Christian Ecological Virtue Ethic*, which Baker Academic Publishing will publish in 2020.

The term "earthkeeping" may strike some as simply a kinder, gentler riff on the more common term "environmentalism." There's actually a lot more to Bouma-Prediger's word choice. He avoids terms like "environmentalism" because they don't assume that God and faith have been invited into ecological conversations. In Bouma-Prediger's world of environmental theology and ethics, faith is an essential starting point. From biblical references to trees and rivers at the beginning of Genesis to more trees and rivers at the end of Revelation, the Bible is clear, he says: Humans are creatures called to care for what God created, and thus, earthkeeping is an integral part of what it means to be a Christian.

"A term like 'earthkeeping' is more biblical and simply refuses to accept the view that the natural world is a commodity to be used by humans who only manage its resources for our own ends," he explains. "Being a keeper, in the biblical sense, means being someone who serves and protects. So the term 'earthkeeping' creates an image that much more clearly captures the idea that we are creatures called by God to take care of creation."

An outdoor enthusiast, Bouma-Prediger oversees Hope College's environmental studies minor and chairs the Campus Sustainability Advisory Committee. For more than 20 years he also has taught a May Term course in the Adirondacks of upstate New York with fellow Hope alum Kent Busman '82. The three-week course has been an outdoor eye-opener for hundreds of Hope students who now see Christian stewardship as something more than time and talent and treasure given to care for the church. Stewardship also includes keeping and caring for God's good earth. 🌿 — By Eva Dean Folkert | Photo, Jon Lundstrom



Trees, Healing, and Hope

A Meditation on Revelation 22:1-5

by Dr. Steve Bouma-Prediger

Then the angel showed me the river of the water of life, bright as crystal, flowing from the throne of God and the Lamb through the middle of the street of the city.

On either side of the river is the tree of life with its twelve kinds of fruit, producing its fruit each month; and the leaves of the tree are for the healing of the nations.

(Revelation 22:1-2)

Rivers and trees. The Bible begins and ends with rivers and trees. Genesis 1-2 and Revelation 21-22.

Why is this striking fact not more well known among followers of Christ?

In this mind-bending vision of God's good future John the Seer speaks about the river of the water of life, cascading from the throne of God and the Lamb, right smack-dab through the middle of a heaven-on-earth city.

Rekindling the vision of Ezekiel 47, John reminds us that wherever this sacred river flows, every living creature flourishes. On either side of the river is the tree of life, with twelve kinds of fruit, one for each month, sustenance all year long. No more hunger or famine. No more worry about if or when you will get the next meal. And the leaves of this magnificent tree are for the healing of the nations — the soothing, restorative reconciliation of all ethnic groups and peoples.

Can we even begin to imagine what this would be like? No more trees felled to make battering rams to lay siege to medieval cities. No more trees cut to make sailing masts for colonial slave ships. No more trees pulped to make paper propaganda to fuel the fires of ethnic cleansing and human hate. In contrast, this tree brings healing and wholeness to all peoples. Medicinal uses of biochemical compounds extracted from leaves or bark. Beautiful wood used to make melodious guitars and sturdy garden hoes and swift canoes. A generous canopy that offers homes to warblers and bromiliads and tree frogs.

Rivers and trees. The Bible begins and ends with a rich vision of God's good future of shalom — the flourishing of all things.

Adapted from an essay that appears on sojo.net

Complexities of the In-Between

ERNEST COLE, PH.D.

JOHN DIRK WERKMAN ASSOCIATE PROFESSOR OF ENGLISH



Dr. Ernest Cole is a man who doesn't quite belong anywhere.

Cole spent much of 2018 — including a summer trip to the Library of Congress in Washington, D.C. — researching and writing his third monograph, which explores dislocation, displacement and the trauma of finding oneself in different spaces. In particular, he's examining the work of five contemporary African writers: Aminatta Forna, Chimamanda Ngozi Adichie, Helon Habila, Yaa Gyasi and Achille Mbembe.

"I myself am a product of displacement and dislocation. It has given me a sense of what it means to be on the outside, to be other, and the struggle to make sense

of how it impacts identity and sense of self," says Cole. "When I read the works of Forna, Adichie and other postcolonial writers, I am in a better situation to contextualize the struggles of characters, to make sense of what matters to them, of what is meaningful to them and why, of the complexities of belonging, and the dignity of being human — or lack thereof."

These topics aren't abstract ideas for Cole, who was born in the former British colony of Sierra Leone and experienced firsthand the turmoil of the country's civil war (1991–2002). As rebel forces fought toward the capital city, Freetown, they systematically amputated with machetes the arms and legs of some 6,000 of Cole's countrymen.

These amputees became part of the country's national history — and a part of Cole's earlier work. His first monograph, *Theorizing the Disfigured Body: Mutilation, Amputation, and Disability Culture in Post-Conflict Sierra Leone*, published in 2014, explored the trauma experienced by those who had limbs amputated during the conflict.

In his new, as-yet-untitled book, Cole is exploring a different kind of trauma. Not a trauma of the body, necessarily, but the trauma that can come from displacement.

In 1996, within nine months of their wedding, Cole and his wife joined the exodus out of their native land. They lived in The Gambia for seven years before coming to the United States. Cole spent five years in Connecticut, where he earned his Ph.D. from the University of Connecticut, before coming to Michigan and Hope College, where he's taught English for 11 years. In 2017, he became a U.S. citizen.

But carrying an American passport doesn't mean Cole is at home here.

He tells a story about returning to Sierra Leone to visit his family. After a few days, his sister asked him, "When are you going back home?" Cole was taken aback. "No," he said. "I am home."

But he wasn't. Not really.

"What is home for me?" he asks. "In what sense am I Sierra Leonean? Is Sierra Leone my home?"

Cole's questions are voiced by thousands of Sierra Leoneans throughout Guinea, The Gambia, the United States, Canada, Australia, England and other "homes" that aren't quite home. "We're all wrestling with these questions of identity, space and place," Cole says. "What does it mean to occupy a space? To move from one place to another?"

It's here that spatial theory impacts his work. If you ask Cole to explain spatial theory, he'll take out a pen and sketch a quick diagram on a scrap of paper. In the middle of the page, a circle.


"You can be on the inside," he says, scratching a mark in the circle, "or the outside." Another mark. "You can be on the periphery or in the center. In front or in back." If you're on the outside, he says, it represents exclusion, otherness. But at the center are control, power, authority and privilege.

"It's not so much the nature of these places themselves, but the position we occupy in relation to those spaces," Cole says. "Positionality creates binaries — us and them, inside and outside, inclusion and exclusion."

It's not just true of circles penned on legal pads; it's also true of geographical space, of institutions, of structures, of countries. And so Cole finds himself occupying the position of "the other" in both America and Sierra Leone.

"I'm looking at writers whose work represents for me the complications of occupying this in-between, this third space, and the impact of that on trauma and identity," Cole says. He puts a premium on the writings of his countrywoman Aminatta Forna. He explored her work in his 2016 book *Space and Trauma in Writings of Aminatta Forna* and in a 2018 article in the *Journal of the African Literature Association*, "Decentering Anthropocentrism: Human-Animal Relations in Aminatta Forna's *Happiness*."

He hopes his work can prove helpful as the people of Sierra Leone — those who stayed in the country and those dispersed throughout the world — continue the difficult task of reimagining the way forward for a new Sierra Leone. This already daunting task is made all the more challenging by the fragmentation of the Sierra Leonean identity and the various perspectives held by those in the diaspora.

"I try to be an active voice in the reconstruction process," Cole says. "I don't think the fragmentation is in itself a hindrance; I think it's what we do with the multiple perspectives. It should be a strength if we can use it for the betterment of self and society." 

— By Josh Bishop | Photo, Jon Lundstrom

Meet Dr. Cole at spera.hope.edu/cole

A Poet's Sojourn in Camden, New Jersey

WILLIAM PANNAACKER, PH.D. | DUMEZ PROFESSOR OF ENGLISH



Most people think of Walt Whitman, if they think of him at all, as that 19th-century poet from high school English Lit who penned *Leaves of Grass*.

However, Dr. William Pannacker thinks about Whitman a lot. And when he does, his thoughts fill with superlatives.

"Walt Whitman is, in many ways, the preeminent literary figure of the United States," Pannacker maintains.

"Almost no one else has his stature, certainly not in the realm of poetry. He threw away most of the rules of conventional verse form, pioneering — if not inventing — free verse, giving poets the freedom to say things they could not say before. He is certainly the most original poet the U.S. has ever produced — maybe the world, since classical times."

Whitman's life ended where Pannacker's began, in Camden, New Jersey, across the Delaware River from Philadelphia. After the poet suffered a stroke in 1873, he moved in with his brother there to recuperate. The poet's relatively underreported final years are the focus of Pannacker's ongoing research for a book with the working title *Whitman's Philadelphia*.

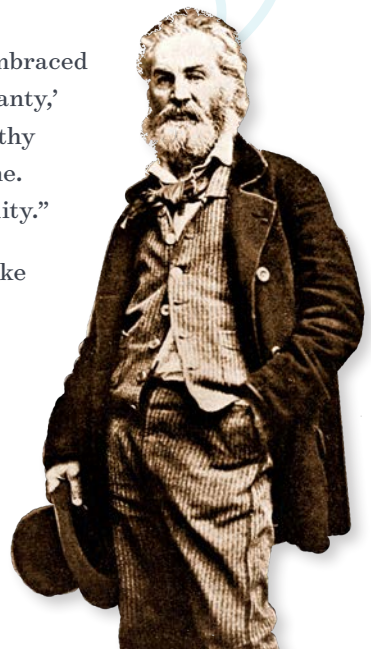
He has written six chapters so far, three of which have been published in scholarly books and journals. In 2018 he pursued background research "to get a handle on everything that was around Whitman during those Camden years," he says. "I was born in Camden and grew up in Philadelphia. Perhaps that's one reason I chose this project — because of deep familiarity, a love for that place, and a desire to go back there regularly to do research. It brings me home."

One surprising finding from his research is how some members of Philadelphia's cultural elite embraced Whitman after his stroke. "Though he presented this image of being very poor and living in 'a shanty,' as he called it, wandering around like a homeless man, he hobnobbed with some of the most wealthy and powerful people," Pannacker says. "Much of that came through powerful women of his time. Ladies' literary societies embraced Whitman because of his lifelong commitment to gender equality."

Pannacker calls Whitman "a blue-chip stock" in terms of literary scholarship. Whether they like him or not, American poets — and even those around the world — must reckon with the impact of his poetry and persona. "One of his novels, *Life and Adventures of Jack Engle*, just came out recently," Pannacker notes. "It first appeared in a newspaper, unsigned, and now we know it was him. So he's still publishing. With Whitman, all things are possible." ✍️

— By Jim McFarlin | Photo, Jon Lundstrom

*Dismiss that
which insults
your soul.*



Inheriting the Trauma of *la Guerra Civil Española*

BERTA CARRASCO, PH.D. | ASSISTANT PROFESSOR OF SPANISH

The war ended 80 years ago, and yet in Spain its wounds feel fresh. That's what happens when painful memories are held in check until one day the floodgates finally open.

"The Spanish Civil War is still alive. We still live it and sense it in the 21st century."

Dr. Berta Carrasco says this with intensity. A granddaughter of the Spanish Civil War, as she puts it, she has made the conflict's cultural and psychological consequences her professional focus. She analyzes peninsular literature that explores the war's impact in works of memoir, history and fiction. With the passage of time between experience and publication, the line between the genres blurs; some Spanish books about the war are best called "testimony novels," Carrasco says.

La Guerra Civil's profound impact on Spanish women is her scholarly niche. Just years before the war began in 1936, they won the right to vote and other rights. At the war's end in 1939, those rights were gone — stripped by new dictator Francisco Franco. He jailed women who pushed back. "Franco thought that women who were into politics and liked to fight for their rights were mentally sick," says Carrasco.

For decades afterward, few Spaniards spoke about the war — first for fear of government reprisal, and later, after Franco's death, because they tacitly agreed to forget the past so that the country could move forward. But Carrasco says their loss and trauma resonated in their children's generation, whose identities were shaped amid silence and repressed pain. In a 2018 article in the journal *Michigan Academician*, one of three essays she published last year about female Spanish authors' work about the war, Carrasco analyzed Maria Barbal's novel *País Intimo* ("*Intimate Country*"), in which it takes decades for a daughter born in the 1950s to grasp that her mother's coldness stems from wartime experiences.

Much has changed, Carrasco says, since passage of the Ley de la Memoria Histórica, a 2007 law that recognized the victims of the war. Some monuments to Franco have come down; some streets that bore his name have new ones now. Roadside mass graves are being excavated, and political prisoners' bones are being given to their families. Books written years ago in prison or in exile are joined by newer work about the war by contemporary authors.

"I know in centuries coming, this is not going to be as personal," Carrasco says. "This will become part of history. But for me, when I still have living grandparents who fought in it, it is not. It is my present, actually." 🇪🇸

— By Ann Smith | Photo, Steve Herppich



Read Dr. Carrasco's article about *País Intimo* at spera.hope.edu/carrasco-trauma

Confronting a Threat in West Michigan Forests

KATHY WINNETT-MURRAY, PH.D. | PROFESSOR OF BIOLOGY

K. GREG MURRAY, PH.D. | T. ELLIOTT WEIER PROFESSOR OF PLANT SCIENCE

VANESSA MUILENBURG, PH.D. | ASSISTANT PROFESSOR OF BIOLOGY

It's enough to make a grown man cry.

And Dr. K. Greg Murray admits he shed a tear upon discovering that the dreaded hemlock woolly adelgid had been spotted on hemlocks in Michigan. The invasive, destructive insect (pronounced *a-DELL-jid*), which sucks the sap from North American hemlock trees and dooms many of them, has taken hold in the 55-acre Hope College Nature Preserve.

"I knew they were going to get here sooner or later," Murray laments. "It did not surprise me. But having seen forests in the Northeast and the effects they have ... This patch of forest Hope College owns is really special to me because we've spent a lot of time there, over 32 years. So yes, it did bring a tear to my eyes."

His "we" includes Dr. Kathy Winnett-Murray. The veteran husband-wife educators have teamed up with Dr. Vanessa Muilenburg, an entomologist, to assess the extent of the adelgid infestation and determine the importance of hemlock trees in West Michigan forests. They spent summer 2018 doing field work with three Hope students: Katelyn DeWitt '21 and biology majors Analise Sala '19 and Micaela Wells '19.

The researchers spent many hours amid the hemlocks in Hope's nature preserve about five miles southwest of the campus, near the Lake Michigan shoreline, and at three other sites in Allegan and Ottawa counties. Winnett-Murray says that because of Lake Michigan's unique influence in creating moisture-rich and canyon-like dune troughs, West Michigan is one of the few places in the Great Lakes region where hemlocks thrive amid forests of beech and maple trees.

"I've been an ecologist for a long time, but I'm hoping to learn more about why it makes a difference how diverse a forest is," she says. "When we lose some of the diversity, what are the consequences?"

Hemlock woolly adelgids are black and smaller than the

head of a pin in their "crawler" stage. The pests attach themselves to the base of a hemlock's needles and suck sap from the tree. Once they've laid their eggs — up to 300 at a clip — they cover themselves and the eggs with a white, woolly, sticky secretion.

Adelgids have infested hemlocks on both coasts of the United States for years. They can't fly; scientists think interstate transit of nursery trees introduced the insects to Michigan. Their sticky egg masses also can adhere to passing birds or animals and be transported to a new location. Scrupulous attention when moving yard waste, firewood and the like helps rein in the insects' spread, Muilenburg emphasizes. But there is no practical way to eradicate them from an infested forest.

Identifying the infested trees in the Hope nature preserve required binoculars and much patience. "Lots of infestations start at the top of trees. They're easy to miss," Muilenburg reports. The team estimated in mid-2018 that roughly 13 percent of the hemlocks in Hope's preserve were infested, but the effects were not yet severe. They'll monitor the area indefinitely, and students in the Department of Biology's Advanced Topics in Ecology class may engage in that effort. Other scientists will continue to assess the infestation and its rate of spread at other locations.

"We expect the trees to start showing signs of stress over the next several years, as the infestations develop," Dr. Murray says.

He speaks of stress rather than destruction because while the insects are the trees' downfall, their sap-sucking behavior typically doesn't strike the fatal blow. "Over time, when you get enough of them, a tree becomes weak. It can't tolerate a drought, say, so it will die," Muilenburg explains.

It's impossible to estimate how long it might take for hemlock woolly adelgids to destroy much of the hemlock population in Hope's nature preserve.

“This area doesn’t have a lot of evergreens,” Wells says. “It’s sad to know that probably in a few decades, we’re not going to have these hemlocks anymore.”

Sala adds, “I just really hope our work will help show what these trees contribute to the forest structure, so that when they do go, we can mitigate the impact of losing them.”

Winnett-Murray expects that impact to center in unique microenvironments that hemlocks create on the forest floor of the beech- and maple-dominated forests near Lake Michigan, which are different from forests a bit further inland.

“Because hemlocks are interspersed among the deciduous trees, those unique microenvironments are patchy,” she says. “One of the goals of our project is to understand how those patchy conditions on the forest floor affect other organisms, and thus the characteristics of these coastal forests in general.” Winnett-Murray and her colleagues want to learn more about how individual hemlocks influence the ability of other plants to establish near them — which is key, in the long run, to which species become established in a forest. 🌲 — By Jim McFarlin | Photo, Jon Lundstrom

To keep up on efforts to battle the hemlock woolly adelgid in West Michigan, visit savemihemlocks.org



From left: Micaela Wells '19, Dr. Vanessa Muilenburg, Katelyn DeWitt '21, Dr. Kathy Winnett-Murray, Dr. K. Greg Murray and Analise Sala '19

WHERE EARLY MODERN BRITISH LIT CROSSES PATHS WITH ASIAN STUDIES

MARLA LUNDERBERG, PH.D. | ASSOCIATE PROFESSOR OF ENGLISH

“After college, I taught English in Taiwan, and years later I had the opportunity to teach in the Hope College–Meiji Gakuin University faculty exchange program in Japan. Those experiences ignited my interest in intercultural relationships.

I love teaching Shakespeare, especially with a focus on Shakespeare’s view of how society imagines outsiders. Take a play like *The Tempest*. Shakespeare writes in a way that really problematizes the relationship between Europeans and others. He’s acknowledging the real interest that Europeans had in ‘otherness.’

Our thinking about God seems shaped by the time and place that we’re in. When I think about how God is so much bigger than I, as a human being, can imagine, I want to say with deep humility, *This is the vision of God I’ve been given in this time and place. This is the way I have of living out my Christian faith in this time and place.*”

The English metaphysical poet John Donne (1572–1631) is Dr. Lunderberg’s primary focus as a scholar; she’s at work on an analysis of his satirical dream vision “Ignatius His Conclave.” Another writing project will lay out how she integrates the history of a 14th-century Chinese maritime leader into her cultural heritage course. Dr. Lunderberg has led three Hope May Term trips to Japan. In 2018, the college honored her for her dedication to the students she advises.

Meet Dr. Lunderberg at spera.hope.edu/lunderberg



Human Form and Function in Costume Design

MICHELLE BOMBE, MFA | PROFESSOR OF THEATRE

The silken bodice of Cinderella's gown, the furry makeup on the Big Bad Wolf's face, the crimson woolen cape over Little Red Riding Hood's shoulders — each element helps bring to life Stephen Sondheim's amalgamated fairy tale *Into the Woods*. Professor Michelle Bombe and two student assistants designed every character's costume from head to toe for Hope's 2018 production of the musical. In doing so, she accounted not only for the story's historical and literary context but also for each actor's body type and how that actor would need to move on stage.

To Bombe, muscle and bone and sinew, under frills and fur and frock, tell a play's story as much as the script and scenery. It's been that way for more than 200 productions for which she has designed costumes during her 28 years at Hope.

"Costume design is creating moving sculpture," says Bombe, who is the college's resident costume designer and oversees theater productions. "I'm not only concerned about what an actor wears but also how an actor wears it. I'm very interested in looking at different body types and determining how a design can affect what the audience may think about a character."

Her first steps are to study the play's text and delve into what clothing was like in the period in which the play is set. "I love working with especially incredible playwrights like Shakespeare who have really rich descriptions of who these people are, what they think, what their bodies are like, what their characteristics are like," she says.

For *Into the Woods*, she started with the original illustrations of Grimms' fairy tales and moved to some modern artists for inspiration. She does this kind of reconnaissance for every production she designs. "There's always some kind of record of what people looked like," reasons Bombe, whose academic specialty is the history of costume design. "Artists have always drawn the human body and the way that we adorn it.

It's fascinating to delve into that history." She based the costumes for each fairy tale's group of characters on a different historical period, after assessing which era's clothing best fit each story.

Bombe also scrutinizes the posture and poses that inspirational art portrays. The way people carried themselves or used body language during a certain time period determines how she designs a costume for the modern stage. This "human movement of the era," as she calls it, was often dictated by undergarments. If a period costume will include a corset, for example, she knows it will change the way an actor can move, gesture or turn.

Historical human kinetics quite likely never enters the minds of audience members accustomed to wearing comfortable, comforting clothing.

"In the 1600s, 1700s, even the way women sat was different in those garments," Bombe says. "Our young women today don't have as much practice." She and the director coach actors about how to sit, stand, and go up and down steps in costume.

It takes Bombe about three months to design the costumes for a Hope production. Following her research, she sketches ideas and collaborates with the scenic designer, lighting designer and director to arrive at a cohesive creative plan. She paints renderings of her vision for each costume and decides which costumes should be built from scratch and what items can be pulled from stock and dyed or remade to fit the designs.

Costume shop manager Darlene Veenstra and the student staff make patterns and construct costumes while rehearsals are underway. Each actor visits the costume shop in the DeWitt Cultural Center about three times for fittings. "I'll look at my renderings and then see how a costume looks on the body, and make new adjustments as needed," Bombe explains. "Maybe we need to drop a hemline about two inches or put a waist seam in at a different place. Making all



those changes can only happen when you can put the body with a costume.”

Of course, Bombe — who is also the national vice chair of the Kennedy Center American College Theater Festival — passes these important design considerations on to her students, not only in the costume shop or on stage but also in the Costume Design class she teaches every other year. While design elements of color, line, shape, texture and silhouette are addressed, so too are the skills it takes to artistically create full-length human renderings. For a month at the start of the semester, in studio sessions with a human model, all Costume Design students first learn to draw the body.

“Then we start putting clothes on those drawings like you would with a paper doll,” Bombe says. “They have to learn from the inside out so that they can understand how to draw the clothing. They first, though, have to understand the form of the body.” 🎨

— By Eva Dean Folkert | Photo, Jon Lundstrom

View more photos from the costume shop at spera.hope.edu/costume-design



Helping Oncologists Choose a Medicine That Will Work

MARIA BURNATOWSKA-HLEDIN, PH.D.
THE FREDERICH GARRETT AND HELEN FLOOR DEKKER PROFESSOR
OF BIOMEDICINE AND CHEMISTRY

When mixing a drug cocktail to treat cancer, the more information an oncologist has, the better. As part of an army of cancer researchers inching toward a cure one complicated detail at a time, Dr. Maria Burnatowska-Hledin has zeroed in on a gene that she hopes can help doctors assess whether a particular drug will work for a specific patient.

That drug is thalidomide. Introduced in the 1950s to control pregnant women's morning sickness, it was pulled off the market because it caused birth defects. Since then, research has shown that derivatives of thalidomide work well in other ways. In 2006, the FDA approved a derivative for treatment of multiple myeloma (cancer of the white blood cells).

While this drug can't cure multiple myeloma, it can extend patients' lives by slowing cancer's growth and spread — but only for those who respond to thalidomide. Previous research by other scientists indicates that's less than one-third of patients.

Why does thalidomide work in some patients' bodies, but not others? Burnatowska-Hledin and her students sought to answer that critical question.

For 20 years, Burnatowska-Hledin's research group has focused on the gene CUL-5, which is part of a system that "cleans" cells on a daily basis. It's one of many genes that control cell growth and, consequently, cancer. The group's long-term research goal is to identify the chemical compounds that regulate expression of CUL-5 — that is, that use information from the gene to synthesize the protein CUL5 (no dash!), which does the actual work of regulating cell function.

The gene is present in every human's DNA. However, the protein is not expressed in every individual — and when it is, its properties can vary.

In grant-supported experiments over several years, Burnatowska-Hledin's research group found that CUL-5 appears to be key to thalidomide's cancer-fighting mechanism, specifically in the cells that comprise blood vessels.

A quick briefing on how cancer cells work may be helpful here. Cancer cells can stimulate the growth of new capillaries, which is bad news in two ways; first, additional blood vessels increase the flow of blood to tumors, which helps them grow, and second, they also extend the pathways through which cancer can spread. Thalidomide fights back by inhibiting the growth of endothelial cells, those that line the inside walls of blood vessels. Without them, blood vessels can't function.

Burnatowska-Hledin and her students used the gene-silencing technique known as siRNA to remove CUL-5 from cells that can form capillaries. Then they treated edited and unedited capillary cells with thalidomide. They discovered that thalidomide didn't kill the cells from which they'd stripped CUL-5.

Doctors can put this new knowledge to work. Through a biopsy, a doctor can establish whether the protein CUL5 is expressed in a particular patient. If it is, thalidomide may be a good choice for treatment — and if it's absent, just the opposite.

This research was supported by a grant from the National Cancer Institute, and by grants to specific student researchers from the Arnold and Mabel Beckman Foundation, Schaap Endowed Fund for Undergraduate Research, and American Society of Biochemistry and Molecular Biology. Burnatowska-Hledin and her students reported their findings in 2018 in the journal *PLOS-ONE*. 🍷

— By Ann Smith | Photo, Jon Lundstrom



Dr. Maria Burnatowska-Hledin (left) is one of 14 tenure-track faculty in Hope's Department of Chemistry and Biochemistry, a department that has generous support for long-term research that advances scientific inquiry and engages Hope students in authentic research as undergraduates. One example of this support is the **Schaap Research Fellows Program** endowed by A. Paul Schaap '67 and Carol Schaap, which provides supplemental funding to Dr. Burnatowska-Hledin and six other professors whose work also is supported by major grants from foundations and other agencies.

Learn on the facing page about Dr. Burnatowska-Hledin's work — and below, read about the other Schaap Fellows' research. For more detail, follow links from spera.hope.edu/chem-research

Dr. Kenneth Brown's work contributes to development and improvement of glucose biosensor test strips for diabetics and (in collaboration with Dr. Leah Chase) methods to study compounds implicated in mental disorders. Instrumentation to train Dr. Brown's student assistants has been purchased through the Schaap Fellows program.

Dr. Jason Gillmore makes and studies organic dyes for photoresponsive materials (such as ophthalmic lenses that darken in sunlight, or plastic actuators that reversibly bend in response to a laser beam). One way he uses Schaap funds is to travel with student researchers to national and international meetings, such as the 2018 Reaction Mechanisms Conference in Vancouver, Canada.

Bonds between carbon atoms are the framework of all organic molecules. **Dr. Jeff Johnson** develops new chemical reactions to advance understanding of the reactions that break those bonds — and develops new methods for synthesizing complex molecules.

Dr. Brent Krueger applies the tools of physics — lasers, microscopes and computer models — to a variety of problems in biology, including nerve regeneration, the interplay between microbes in bodies of water, and the improvement of a scientific technique for studying the structure of DNA, RNA and protein.

Dr. Will Polik and his students use lasers, mathematics and computers to study chemical reactions. Lasers energize molecules in different ways; math models how the energy flows within the molecules; and computers predict how other chemical systems will respond when energized.

Dr. Joanne Stewart is assessing how the international inorganic chemistry organization IONiC enables faculty to teach more effectively — and the impact of such shifts on students' learning, self-confidence, interest and effort. She serves on IONiC's leadership council. 🍷

Abstract Visions of the Human Body

KATHERINE SULLIVAN, MFA | PROFESSOR OF ART

You are, by choice and training, an abstract artist. Because, in your words, “There is an inherent and permanent interest in creating bodies,” your work frequently features the human form. Professor Katherine Sullivan, do you ever feel you need to explain your “body art” to viewers?

“Yes, yes I do,” admits Sullivan with a laugh. “I think you deal with that in representational painting as well, but more so in abstraction because there isn’t that identifiable hook the viewer can grasp onto. But I tell my students all the time that really powerful painting should be able to communicate the essence of what it is to any viewer.”

Sullivan’s 2018 show at Hope’s De Pree Gallery included works from her collection “Docile Bodies” — the title taken from the late French philosopher Michel Foucault’s groundbreaking prison study, *Discipline and Punish*, the images evolved from the mythological female-snake figures that occur across cultures. “The forms in the paintings reference the internal body as much as the external, visible body,” she explains.

Currently she is creating a series of 30-by-22-inch works on paper based on her research into another written work, *Mother Courage and Her Children*, the 1939 drama by German playwright Bertolt Brecht. The title has taken on a double meaning as she creates and teaches while raising two children under the age of 3.

Her new works, she says, are heavily influenced by her experiences during a year in India as a Fulbright-Nehru scholar. “It dramatically changed my sensitivity to color, and my awareness of the language of paint I’m using,” she says. However, Sullivan acknowledges that creative decisions like choice of paint or medium may not bring patrons any closer to fully understanding her visions.

“To paint the way Michelangelo did can be really tempting because it’s beautiful, but it doesn’t speak to today’s audiences in the same way,” Sullivan says.

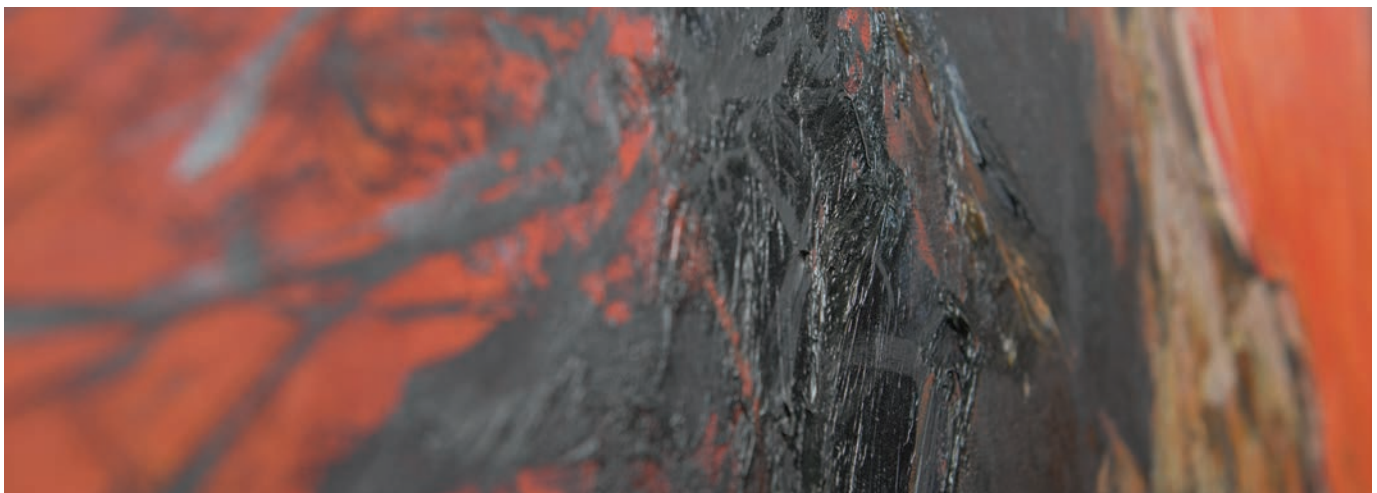
“The way we see bodies today is very different — in part because of the internet, in large part because of modern photography that distorts and is deceptive even though viewers treat it as true,” she advances. “Trying to answer the question *How do you paint the body in a way that speaks to audiences now?* is almost always behind the work of figurative painters.”

“Anyone can walk into the Sistine Chapel or the Ajanta Caves and be moved,” Sullivan suggests.

“You may not know the exact narrative being referenced, but you get a sense of what the work is. When my paintings are working, they do that. Would I expect the viewer to get everything I’m doing? Absolutely not. But you want your work to speak to anybody interested enough to come see it. You want them to have a response, an experience.” 🌱

— By Jim McFarlin | Photo, Jon Lundstrom

See more at katherineasullivan.com





Nursing Research on Mother's Milk

ANITA ESQUERRA-ZWIERS, PH.D. | ASSISTANT PROFESSOR OF NURSING

EMILIE DYKSTRA GORIS, PH.D. | ASSISTANT PROFESSOR OF NURSING

Across the board, the research is clear: Breastfeeding is healthy for infants and nursing mothers, has a positive long-term impact on children's intelligence, and can benefit families and communities. Yet many mothers who decide in advance to breastfeed their babies stop sooner than they'd planned.

"We know that the number one reason that mothers don't reach their stated breastfeeding goals is that they feel like they don't have enough milk," says Dr. Emilie Dykstra Goris. She and her Hope colleague Dr. Anita Esquerra-Zwiers launched research in 2018 to explore the psychological and biomedical components of the issue.

Mothers' milk supply — or more accurately, a mother's perception of her milk supply — is the primary focus of what they call the Mother's Milk for Michigan Infants project. Their modified behavioral study combines survey research with analysis of human milk and DNA to investigate why some women's bodies are unable to produce enough milk, and the extent to which women who believe that is the case have an accurate sense of their bodies' physical limits.

"The really unique thing about our study is that DNA component," says Esquerra-Zwiers.

The mothers who are participating in the study are asked to complete three surveys: one while they are pregnant, another 10 days after giving birth, and the final survey 60 days after the birth. Each participant is asked to provide a saliva sample for DNA testing, plus a sample of her breastmilk. Dykstra Goris and Esquerra-Zwiers are correlating survey results and laboratory data to find out how each woman's perceptions line up with what lab analysis of the samples reveals about her body chemistry.

"Anita is using her expertise in human milk and feeding, and I'm bringing my knowledge about genetics and genetic analysis," Dykstra Goris says. "We complement each other pretty well." They plan to collaborate on other human milk research in the future.

Dykstra Goris received training at the Summer Genetics Institute, part of the National Institute of Nursing Research in the National Institutes of Health. In the past she has researched how the oxytocin receptor gene functions in people who have dementia; this project with Esquerra-Zwiers leverages that knowledge to explore whether that gene may play a role in human milk production, too. Past studies by other researchers indicate that the oxytocin receptor gene may be related to milk production for such animals as cows, water buffalo, swine and mice.

During Hope's 2018 summer break, Esquerra-Zwiers traveled to the Hartmann Human Lactation Research Group at the University of Western Australia to learn human milk analysis methods and test the 34 milk samples she and Dykstra Goris had collected by that point. Her travel, training and research in Australia were funded by a grant from the International Society for Research in Human Milk and Lactation.

By fall, the researchers had enlisted 82 participants, well on their way to their target sample size of 100 women. Back at Hope, Esquerra-Zwiers got to work analyzing the lab and survey data of the 34 women whose samples she had tested in Australia.

The survey responses indicated that 10 days after they gave birth, 92.5 percent were breastfeeding their babies without supplementing with formula, and nearly all of them perceived that their milk had come in and they had enough milk to satisfy their babies. Analysis of milk samples indicated that some mothers, although they thought they were making enough milk, might discontinue breastfeeding earlier than planned. However, Dykstra Goris and Esquerra-Zwiers found no correlation between the lab data and survey responses.

Their analysis of additional surveys and samples continues, and DNA analysis is still to come. Once the first round of research with 100 mothers is complete, they plan to fine-tune their survey and recruit another group for a second round in 2019 or beyond.

The researchers hope their study will have practical



From left: Emilie Dykstra Goris and Anita Esquerra-Zwiers

impact in at least three areas: the field of clinical nursing, public health, and mothers who choose to breastfeed.

“This is a nursing project because nurses are in the role of lactation support,” says Esquerra-Zwiers. The outcome of this research could influence the design of clinical interventions to help mothers reach their breastfeeding goals — such as some future device that might allow medical professionals to analyze a small sample of mother’s milk at a woman’s bedside soon after she gives birth.

And if that meant more mothers could breastfeed longer, from a public health standpoint that would be a plus. “The more infants we have receiving more mother’s milk, the better the health impacts for that

individual and for the community as a whole — across socioeconomic statuses,” says Esquerra-Zwiers.

The project also could ease the pressure that some mothers feel. Dykstra Goris and Esquerra-Zwiers note that an inability (or even a perceived inability) to breastfeed can trigger guilt and shame. Mothers worry that decisions they make are the driving force in the difficulty they experience in breastfeeding. Knowing that a range of factors are in play might encourage them to reach out for help.

“Don’t beat yourself up over not being able to make enough milk,” says Esquerra-Zwiers. “And more importantly, seek support. Don’t do it alone. There are trained professionals that can help you along the way.”

✍️ — By Josh Bishop | Photo, Jon Lundstrom

Sleep and Body Chemistry

ANDREW GALL, PH.D. | ASSISTANT PROFESSOR OF PSYCHOLOGY



Getting a good night's rest isn't always as easy as counting sheep. We might need to rethink our diets, too. Dr. Andrew Gall has investigated whether a high-fat diet may play a role in irregular sleep patterns, and based on lab results, he thinks the answer may be yes.

This 2018 research was part of the behavioral neuroscientist's focus on sleep and circadian rhythms — physical cycles that are the body's responses to light and darkness. Another of his 2018 projects related to sleep disturbances and neuropsychiatric illnesses such as bipolar disorder.

To explore food's impact on circadian rhythms, Gall and students in his Hope College research group teamed up with Western Michigan University biomedical sciences professor Dr. Peter Vollbrecht to see whether lab rats' sleep patterns would change if their diet did. For six weeks they fed plain rat chow to one group of Nile grass rats, but added cookies, potato chips and peanut butter to the chow a second group received. (Unlike most rats, Nile grass rats sleep at night, so they're ideal for sleep research.) Infrared sensors on the animals' cages showed that rats fed the high-fat diet became more active at night. Gall and his students presented their findings at the 2018 annual meeting of the Michigan Chapter of the Society for Neuroscience and at other conferences.

"I see this research as the first step in understanding some of the very basic mechanisms that underlie how sleep and circadian rhythms develop and how they get expressed," Gall says. "One day, new research can extrapolate that to understanding human behavior."

Gall also collaborates with Hope biochemist Dr. Leah Chase. (See page 40 to learn about her work on Parkinson's disease.) Chase's research has established that in rats, high levels of the natural compound homocysteic acid can cause manic and depressive behaviors that mimic the symptoms of bipolar disorder in humans. With support from a Nyenhuis grant from the college, in 2018 Gall explored how those bipolar-like behaviors affect sleep. The study found that rats displaying symptoms similar to human bipolar disorder had disrupted circadian rhythms — they woke up earlier each morning than a control group.

Gall and another group of students then tested whether lithium, a drug used to treat bipolar disorder in humans, would reverse those disrupted sleep patterns. They ground up lithium and rat chow and fed the doctored food to the rats in which bipolar symptoms had been induced, plus to a control group. Over four weeks, the experimental group's sleep patterns became more similar to the control group's.

"We're showing that circadian rhythms are being improved by lithium treatment, which is very exciting," Gall says. 🌱 — *By Stephanie Mouw | Photo, Jon Lundstrom*



CULTIVATING PURPOSE IN SCHOLARLY WORK

Relating compassionately to students and teaching them effectively: Those are easy to recognize as meaningful expressions of a college professor's personal faith. It can be trickier, though, to find purpose and value in one's research.

Hope College's **Continuum Scholars Faculty Development Program** invites young faculty into conversations about how to integrate their vocation and their faith. *How do you see your work as a calling? Where does your "deep gladness meet the world's deep needs"?*

Are these easier for a poet to answer than a geneticist? Not necessarily. For early-career professors in every field, the notion of teaching and doing scholarly work in a religiously-affiliated context may be new. Many are fresh from graduate study at universities where liberal arts and confessional faith are completely off the radar.

"We have a wonderful group of faculty who already have a substantial research agenda," says Dr. Andy McCoy. (The director of Hope's Center for Ministry Studies has co-led the Continuum program since it launched in 2015.) "Can they put a framework around it that is meaningful to them? How does it connect to how they're calling students to be competent experts in their fields down the road?"

In the voluntary, week-long, summer Continuum workshop, up to eight professors discuss a hefty reading list and share reflections on how faith and scholarship intersect in their disparate professional fields. They discover cross-disciplinary points of convergence — such as engineer Dr. Courtney Peckens' and economist Dr. Steve McMullen's common concerns about resources and ethical decision-making. Talking with colleagues also helps the professors grasp the breadth of Christian traditions and understanding at Hope College. During the academic year that follows the summer workshop, Continuum Scholars speak on campus about how their faith enriches their research or other scholarly endeavors.

View Dr. Steve McMullen's Continuum lecture, "Why Economics Needs the Christian Tradition and the Liberal Arts," at spera.hope.edu/mcmullen-lecture

HOW THE WATTS MAY TERM EXPANDS OUR FUTURE TEACHERS' VISION

JOHN YELDING, M.A.

SUSAN M. AND GLENN G. CHERUP ASSOCIATE PROFESSOR OF EDUCATION

“The Watts Learning Center in Los Angeles includes elementary and middle school charter schools. Every May, we immerse Hope students in working with children there in a culturally diverse urban setting. The first year was 2013. We've taken anywhere from seven to 11 students.

Some of the students have very little experience with diversity, but they know that it's going to be a big part of their future as teachers and social workers, so they choose to participate to hone their skills in working with learners from a variety of cultural backgrounds. We work like crazy in the schools. We also do all kinds of exploration in and around Los Angeles, doing many different things that help program participants better understand the school experiences and the lives of the students that we work with. We want Hope students to have an experience they'll remember for a lifetime — and one that, when they put it on their résumé, is going to be noticed.

I think this program is an incredible match for what Hope College's education program is: a commitment to serving students wherever they are and regardless of what their needs might be. It offers students an experience that is really a living out of our Christian mission. We're going there to help people help themselves, and also to allow them to help us grow and learn about things that we don't know nearly enough about.”

Professor Yelding has chaired the Hope College Department of Education since 2016. The Hope Comes to Watts program was initiated under the leadership of Professor Nancy Cook in collaboration with Madeline Kukla (who served in the department at that time) and with the support of donor Dr. Darell Schregardus. Professor Yelding joined the program the year before it was implemented and works closely with Professor Cook and newest team member Dr. Susan Brondyk. He and Professor Cook co-direct the program, which offers Hope students in any academic field opportunities for cross-cultural experiences, intensive work with children in an urban setting, exploration of social justice issues and discovery of their Christian calling.



Finding Meaning in the Storms

DARYL VAN TONGEREN, PH.D. | ASSOCIATE PROFESSOR OF PSYCHOLOGY

“Why did this have to happen to me?”

Where is God?

How could God let this occur?

What am I going to do?

Who am I going to be?”

Those massive life questions — uneasy, uncomfortable, overwhelming — are smack dab at the heart of Dr. Daryl Van Tongeren’s prolific research and writing. The scholar of experimental social psychology does not shy away from queries often deemed too unwieldy to ask and too hard to answer. He has embraced them for close to a decade in order to help others make sense of their lives in lemons-into-lemonade kinds of ways, publishing over 130 articles in scholarly journals on the topic of finding meaning in the midst of suffering.

Now a forthcoming book by Van Tongeren and his wife, Sara, addresses just that. Intended as a resource for clinical psychologists and counselors who work with individuals experiencing chronic, persistent distress, *The Courage to Suffer: A New Clinical Framework for Life’s Greatest Crises* distills Daryl’s research findings with Sara’s experience as a psychotherapist. Blending existential psychology and positive psychology, their book provides professionals with objective data and informed methodology to move people through prolonged pain caused by experiences such as terminal illness, isolation, loss of control or identity, or a loved one’s death. Templeton Press will publish the book this year as part of a series on health and spirituality.

“Our goal is to give clinicians the tools they need to get their clients to face their different causes of suffering not as fears, but as facts,” says Van Tongeren. “If people can get away from viewing some of these existential

realities as threats, and instead engage them as truths, then they can live more authentic and intentional lives.”

The final section of the book suggests ways to help people achieve what Van Tongeren calls “existential resilience.” Simply put, that means not seeing suffering and flourishing as diametrically opposed to each other — but rather as a “both-and” necessity. “We really try to show that you can flourish even in seasons of suffering,” Van Tongeren says. “You can cultivate meaning, you can have rich relationships and you can find strength and resilience even in really tough periods of life. Helping people focus on that can help them live richly and fully in all seasons of life.” The book also makes the case that in the midst of life’s hardships, faith can help make sense of suffering, since adversity is an oft-mentioned and key theme in many religions.

Working with his wife on the project was a unique opportunity and pleasure, Van Tongeren recounts. “Though I write more than Sara does, she knows how to communicate in more accessible language than I do,” he says. “I provided the research, and she really breathed life into the words.”

Given Van Tongeren’s research passion, perhaps it’s not surprising that his professional focus grew out of a personal tragedy. When he was 28, his 34-year-old brother died, leaving behind a wife and three pre-school children, and what Daryl Van Tongeren was studying in the abstract in graduate school at that time became vividly important in practical terms.

“I really wrestled with where God was in that, because it just did not seem consistent with the way that I had viewed God growing up,” admits Van Tongeren. “I think that the biggest thing I gave up was expecting that everything in life would just make sense. I let go of that and said, *I can believe in a God that I can’t always*

explain. I don't always have to be able to figure out how God works. And I can still hold beliefs that God is good and loving. It made my faith and understanding of life deeper, more resilient, more flexible."

Van Tongeren, who received the Association of Psychological Science's Rising Star Award in 2017, had several projects in the works in 2018. In addition to completing the book, he wrapped up a three-year study on how survivors find meaning after natural disasters strike and how those events affect their views about and relationship with God. He engaged Hope student researchers in that project, which included a dozen field studies following hurricanes Harvey and Irma, plus a dozen related lab studies. The project was funded by a \$1.8 million grant from the John Templeton Foundation and also involved colleagues at Wheaton College, Georgia State University and the University of North Texas.

And their findings? "The people who were the most resilient — the ones who really did the best in terms of not being so negatively affected by disasters — were people who were high in what's called 'intrinsic religiousness,'" Van Tongeren says. "Religion is a central part of their identity; they don't just have faith for social reasons. They hold their beliefs because they just believe them to be true, and their religion permeates every aspect of their life. Those are the folks who are really doing the



best. But we need to know more about why. Why are those folks so resilient? Why are those the ones faring so well?"

Van Tongeren has begun another Templeton-funded project, this time exploring what happens when people stop identifying as religious. It is all part of his quest to help others know that there is meaning in the storms.

 — By Eva Dean Folkert | Photo, Jon Lundstrom

A Form for Memory and Grief

SUSANNA CHILDRESS, PH.D. | ASSOCIATE PROFESSOR OF ENGLISH

After a deeply personal experience with grief, poet Dr. Susanna Childress turned to a new-for-her form of writing — one that requires vulnerability, trust and creative risk-taking, both personally and professionally.

Her new collection of essays, *Extremely Yours: Observations on Being Disordered*, will be published by Awst Press, with an anticipated release in 2020.

“I think of the book as a lyric investigation of certain aspects of what it means to be human,” Childress says. “I want to ask, *What happens to us when we have too much of something?*”

For Childress, this question has found focus in the experiences of women, especially in reproduction and child-bearing. The essays, to which she dedicated several months of 2018 and on which she continues to work, are based on her own experiences and those of women she knows. She’s using creative nonfiction to explore stories of hyperthyroidism, hypersomnia, prolonged bereavement disorder, hyperemesis gravidarum (extreme nausea and vomiting during pregnancy) and the maternal healthcare experience of black women.

This mixture of personal narratives with medical and scientific literature is among the reasons Childress turned to creative nonfiction after publishing two volumes of poetry. “An essay has a scope that can handle more cold information,” she says, like the latest research from an obstetrics and gynecology journal. “Essays are more porous; they can move back and forth between modes in a way that the kind of poem I write can’t.”

The genre Childress chose — the lyric essay — seems especially suited to the complex subject matter of the book. “My idea of stellar creative nonfiction is not necessarily narrative and linear and neat,” she says. “I don’t want to represent it as tidy. It needs to be fragmented because that’s truer to the way of experiencing it.”

Her experience as a poet is informing her work as an essayist in valuable ways. “Poetry has trained me to value image and hovering over a moment,” she says. Her lyric essays resist spelling out connections for the reader in favor of “purposeful ambiguity and writing to suggest rather than to state.”

The shift to a new form that demands personal vulnerability, and trust in the reader’s ability to connect dots and find meaning — all of this is stretching Childress in new ways. “You have to take risks beyond what you’re normally comfortable with, and that’s what I’m doing with these essays,” she says. “It’s exciting and uncomfortable.” 🖋️

— By Josh Bishop | Photo, Jon Lundstrom



Age Appropriate

By Dr. Susanna Childress

My sons know I had a baby in my tummy and then, after a surprise trip to the hospital during a blizzard, I didn't. They know the baby died. They call this baby by the name we have chosen, Jericho. They know it happened again, a second time, though that baby was no bigger than a strawberry. That baby didn't get a little yellow hat of yarn or held in our arms or pictures taken. That baby wasn't a boy or a girl, only a strawberry who slipped away in the summertime, so we named it Tiernan, which is a boy and a girl's name at the same time.

My son stands in my closet, stripped down to nothing, piling up oversized pillows to reach for my clothes.

He pulls the orange sleeve of a blouse until it pops off the hanger, then a billowing dress of brown silk. He discards them both on the floor.

Son, I say, what's happening here?

Mama, he asks, Do you have anything for a Fairy Queen?

He is four, his naked body all vine and melon, a shimmering of knees, lobes, belly, knuckles, things he doesn't yet know how to dream. He's never heard of Spenser, and I have no idea where he's come by this phrase, or what he imagines a fairy queen might wear. I gamely paw through the options anyway, remembering the epic poem I'd studied with zero enthusiasm in grad school. How was it spelled, something like, F-a-e-r-i-e?

When I turn around, my son has found the plastic hospital bag I buried in the back of the closet, and, in a foggy, slow-motion sort of stupor, I watch him pull out the small purple sateen box that holds his dead brother's footprints, certificate of death, the only photographs we have of him.

He shakes the box, and it offers the secretive huck-huck of its contents shifting back and forth. He touches the purple ribbon holding tight the box's top. I can see he wants to untie it, his fingers twitching toward the ends of the bow, but something stops him. He looks at me.

What is this, he asks, and then, when I fail to answer, asks again. What is this?

*Excerpted from an essay in the summer 2018 issue of
Relief: A Journal of Art & Faith*

A Philosopher Considers Modern Media, and Is Not Amused

JOSEPH LAPORTE, PH.D. | PROFESSOR OF PHILOSOPHY



Your “inscape” is in need of a total overhaul. You could start by throwing out your TV.

That’s the rather iconoclastic view of Dr. Joseph LaPorte, whose particular focus is philosophy of biology and language. He contends that our “inscapes” — a term he borrows loosely from Victorian poet Gerard Manley Hopkins — are on the brink of total collapse due to modern lifestyle choices.

“Inscape corresponds to the interior life, the mind, as opposed to ‘landscape,’ which we think of as outside ourselves entirely. We are shaped by what goes on outside us. For a typical person that would include a lot of advertising — especially electronic — and would also include socialization and the time we spend with the things that we surround ourselves by.”

He notes that for the first time in history, the world is primarily urban. “If you think of our species’ history as modern humans, going back 100,000 years, 99 percent of that was spent as hunter-gatherers. We were in small groups of maybe 100 — with a lot of face-to-face contact with people and very close interaction with plants, animals and dirt,” LaPorte says. “We’ve come out of that environment quite quickly. Less than 200 years ago you had the Industrial Revolution, which resulted in massive change.”

Today, “people spend decades of their lives in front of electronic screens,” LaPorte laments. “How much of that is good? The answer has to do, in part, with who’s in charge. Are you using technology to grow your own projects — or are designers of information packages getting better use of the technology by reshaping your mind and values? Take a fairly straightforward example: Children are exposed to tens of thousands of commercials a year, all telling them how miserable they are without such-and-such product. That’s not a recipe for happiness.”

LaPorte advocates a return to natural living, but as a philosopher of language he suggests that “natural” has lost its meaning. “The FDA even wants to certify the word,” notes LaPorte, whose 2018 essay on the ambiguity of the phrase “natural foods” appears in the online magazine AEON.

He acknowledges that complete elimination of glowing screens is unlikely, particularly on a college campus filled with cell phones, iPads and laptops. “Tell me about it,” he muses. “I sit in front of a screen, too, or else I wouldn’t be published. But I take breaks. I make sure I spend time with people, get some sunlight, and try to devote as much time as I can to restoring the environment.” ✍️ — *By Jim McFarlin | Photo, Jon Lundstrom*

Read Dr. LaPorte’s essay about “natural foods” at spera.hope.edu/laporte-essay

Bad News Travels . . . Slowly

JAYSON DIBBLE, PH.D. | ASSOCIATE PROFESSOR OF COMMUNICATION

If you've ever put off telling your boss that a project's running late, you've got company. Over and over in his controlled experimental studies, Dr. Jayson Dibble finds the same pattern: If a person has bad news to deliver, it's going to take some time. He's heard of doctors waiting years to convey a diagnosis of Alzheimer's.

Studies show that most people think they behave this way because they don't want to hurt the listener's feelings. But Dibble and other communication researchers have another explanation. They think people are afraid that the person who gets the bad news will blame them for it or consider them insensitive.

Dibble thinks motivations differ depending on people's contexts, a point of view he detailed in a 2018 article in *Communication Research Reports*.

The context Dibble looks at most is medicine. Conveying bad news is an everyday thing for many doctors. "They need to give accurate information to a patient so they can make important decisions. But they also need to communicate empathy, and the recognition that the patient is a person," he says.

As a pre-med undergraduate, he noticed that "patients were happier with the doctor who related to them, even if they didn't have all the answers." Great bedside manner trumped diagnostic expertise. He found this so fascinating that he switched career plans, to teach and do research about communication. Some of his professional writing focuses on helping doctors improve their person-to-person skills.

Dibble stages situations and asks study participants to share news, both good and bad; then he analyzes videos of the interactions. No matter what variable he tests for — friends or strangers? text, email or conversation? — the results are consistent. Bad news drags its feet.

And that, in and of itself, isn't necessarily bad. (In his experiments and many real-life situations, the delay may be just a few seconds long.) It's okay to pause while you speak, he tells doctors; it's a nonverbal clue that tough news is coming, and it gives a patient time to prepare for it. But body language should convey concern for the patient, not one's own uneasiness. He coaches doctors to calm their anxiety through "self-talk" — to remind themselves before each difficult meeting that they aren't to blame for the bad news they must deliver. Dr. Dibble's prescription might be good medicine for all of us. 🦋 — By Ann Smith | Photo, Jon Lundstrom

Read about more of Dr. Dibble's research at spera.hope.edu/dibble-micro-cheating



What's Stressful in Your Work?

MARCUS FILA, PH.D. | ASSISTANT PROFESSOR OF MANAGEMENT



Of course college students feel stress. Grades. Tuition. Peer pressure. Choosing the right table at Phelps Dining Hall.

But what about college faculty? How does the pressure they feel at work compare to their corporate counterparts? Those are some questions Dr. Marcus Fila is examining in the latest of his studies on workplace stress, and they're a window into what employees value in other fields, too.

"From what I've read and observed, academics tend to have a lot more autonomy than even those in fairly high-level business positions — vice presidents of Fortune 500 companies," he says.

"People are naturally creative, and they want mastery over what they're doing — some, obviously, more than others. But almost everyone likes to feel a sense of being autonomous, and being asked their opinion, and being given freedom about how they go about it."

The rub is that professors really have two quite different jobs, as teachers and as researchers, Fila says. (He should know.) Teaching overflows with autonomy, but research, not so much. Professors get to pick what they'll research, but they lose all control when they submit papers to journals. At liberal arts colleges like

Hope, "you're probably judged 70 to 80 percent on your ability to teach," he says. At research universities, on the other hand, jobs may hinge on frequent publication. Cue the anxiety.

Workplace stress presents differently in each profession and culture, Fila says. An earlier 10-year career as an executive headhunter gave him a front-row seat on what can go awry. Now a specialist in occupational health psychology, he conducts research to identify job-specific flashpoints in hopes it will help human resource professionals avoid non-essential stressful elements as they design positions. The upshot can be a win-win: happier staff, and lower employee turnover.

One strategy he thinks may decrease professors' stress is for colleagues to talk not just about what they're researching, but also why. This helps each researcher focus on what's great about the project, not just the hoped-for publication. "Research is a very lonely game sometimes. To talk with people about why you're interested in it can help," Fila says.

In the study he began in 2018, he's asking American and British professors how demanding they perceive their work to be, and their sense of control and support as teachers, as researchers, and in administrative and committee work. In late 2018 he was analyzing 288 surveys received from faculty at 12 U.S. and U.K. schools, and he plans to mine 10 times that many by the time he's through. 📖 — *By Jim McFarlin | Photo, Jon Lundstrom*

STANDOUT STUDENT-FACULTY RESEARCH

How does a swimmer's degree of balance outside the pool correlate to faster race times in backstroke and freestyle? When copper or cobalt is added to a nickel-based Prussian blue analogue film, what happens to its ability to store charge? What do In-Group/Out-Group theory and analysis of speeches reveal about whether both sides in the Syrian civil war have intentionally created foreign enemies and internal cultural divisions?

These topics students tackled with professors were among those showcased at Hope's 2018 **Celebration of Undergraduate Research and Creative Performance** — the largest, broadest event of its kind at an American undergraduate institution. Twenty-eight departments and programs, 382 students, and all four of Hope's academic divisions were represented in the 247 projects presented. Supporting students' research and artistic work were faculty mentors who in many cases were research partners, too.

The strength of Hope's collaborative faculty-student research is honored regularly for its high quality and astonishing numbers. For each of the past 17 years — every year since the category debuted — the "Best Colleges" guide published by *U.S. News & World Report* has included Hope on its list of institutions that are exceptional for their emphasis on undergraduate research and creative projects. Hope was one of only 32 national liberal arts colleges to get that shout-out in the 2019 edition, and one of only 90 institutions of all types nationwide. And the college is one of just 11 institutions nationwide (and the only Michigan school) that has received the national Award for Undergraduate Research since the Council on Undergraduate Research introduced it in 2015 to recognize exceptional undergraduate research, scholarship and creative-activity programs.

Hope's Celebration of Undergraduate Research and Creative Performance has taken place yearly since 2001. The 2019 event (renamed the Celebration of Undergraduate Research and Creative Activity) will be on April 12 at the Richard and Helen DeVos Fieldhouse. It's open to the public.



THE ALLURE OF PURE RESEARCH IN NUCLEAR PHYSICS

PAUL DE YOUNG, PH.D. | KENNETH G. HERRICK PROFESSOR OF PHYSICS

“I like the mathematical aspects of physics. How circuits work. Control theory. Understanding how they put music onto a digital disc. I know the mathematics behind that. That’s cool math.

I also like the big questions. *How did we get the elements that we see in the universe? Why does ^{26}O behave the way it does? How can I measure PFAS better?* Nobody knows the answer to the questions that we study. We’re looking at nuclear reactions, nuclear structure — but its impact is on understanding the nuclear force of these nuclei. *How did we start with only hydrogen in the universe, and eventually, with supernovas and neutron star merges, end up with heavy elements?* I think the answer is very incremental, and involves experimentalists and theorists worldwide to put all the pieces together.”

With the particle accelerator at Hope College and at the National Superconducting Cyclotron Laboratory, Dr. De Young investigates the behavior of nuclei to learn more about how the universe works — specifically, how heavy and unstable nuclei are put together and how nuclear physics techniques can serve practical purposes in everyday life. He recently designed a custom β detector as part of an ongoing project to understand how supernovae and neutron star mergers make the heavy elements found in the universe. He also uses his understanding of the nuclear structure of ^{19}F (the only stable isotope of the element fluorine) to develop better ways to screen for perfluoroalkoxy alkanes, more commonly known as PFAS — toxic compounds found primarily at dump sites (like the Wolverine site in West Michigan where waterproofing chemicals polluted drinking water) and at airports (where firefighting foam can do the same). Dr. De Young leads Hope’s Nuclear Group in which students and faculty collaborate on research. Since 1986, when it received its first grant from the National Science Foundation, the Nuclear Group has received more than \$3 million in NSF support.

Photo by Steven Herppich

Finding a Brain Cell Fix

LEAH CHASE, PH.D. | ASSOCIATE PROFESSOR OF BIOLOGY AND CHEMISTRY

About 2 percent of a person's body weight is mostly responsible for the way the other 98 percent of it functions. The complex human brain, which usually weighs in at about three pounds, is the ultimate multi-tasker of human organs — processor of senses, memory and knowledge; coordinator of heartbeats, breaths and motor skills; releaser of hormones; regulator of metabolism; and more. Much more.

But malfunctions happen. Unfortunate abnormalities on a cellular level are the cause of a number of neurodegenerative diseases. These biological and chemical flaws, especially as they pertain to Parkinson's disease, have driven Dr. Leah Chase's neuroscience research agenda in Hope College's Schaap Science Center for 15 years. Determining what mechanisms brain cells use to protect themselves, and how that information gets shared within the body, has made for busy lab operations and a first-time discovery for Chase and her student assistants.

Chase's research has to do with cell oxidation. Every living cell needs oxygen, of course. But there's a delicate balance; when oxidation in cells occurs at rapid, sudden or prolonged rates, the process can subject cells to stress.

Many scientists believe this oxidative stress may be at the root of Parkinson's disease, especially in the brain's basal ganglia, the primary processor for voluntary motor control (which Parkinson's patients lose). The section of the basal ganglia where things go awry in Parkinson's is called the substantia nigra. Its cells have high levels of dopamine, a neurotransmitter. When dopamine breaks down in those cells, oxidative stress goes up. Way up.

"Dopaminergic cells are inherently more susceptible to oxidative damage — and that's why we think that oxidative stress is such an important component of the Parkinson's disorder," Chase explains.

Compounding the issue is the fact that the brain has the fastest-metabolizing cells in the human body ("because those cells are always working, working," she clarifies). Metabolic processes cause oxidative stress, too.

The bottom line: Brain cells inherently need better protection from over-oxidation. That's why we've been encouraged for decades to include more anti-oxidant-laden broccoli and blueberries in our diets.

Chase, however, wants to find out what human cells do naturally to protect themselves against oxidative stress. Grants from the National Science Foundation and Campbell Foundation have funded much of her research during Hope's academic semesters and over a number of summers. She and her students have been conducting studies to scrutinize the naturally occurring antioxidant glutathione, its amino acid reagent cystine, and the molecular "pump" that regulates the two.

The team discovered an interesting phenomenon.

"When cells are in oxidative stress, they want more glutathione, but they can't get that without getting more cystine," Chase explains. Inside a cell, there's a limited quantity. "We were the first to demonstrate that when a brain cell is under oxidative stress conditions, the cell's pump, the one that moves cystine into the cell, went from inside the cell to its surface and stayed put on its membrane."

Their research also documented for the first time that when that pump is working on the cell membrane, glutathione levels within the cell increase rapidly. "And as glutathione levels went up and the oxidative stress in the cells went back down, that pump returned back inside of the cell. That was a really interesting discovery."

In late 2018 Chase and her student research group submitted an article about this research to a scientific journal.



This year, she's exploring another angle: why the glutathione-cystine-pump triad may go haywire. It's made up of 501 amino acids, and she and her students are identifying which of them respond to changes in oxidation states and force the pump to move to the membrane. This will increase their understanding of the molecular players that regulate the pump's response to oxidative stress. Eventually, Chase hopes to team up with other scientists who have access to tissue samples from Parkinson's patients, perhaps at the Van Andel Institute in Grand Rapids. As she compares the cystine pumps in cells taken from people who have Parkinson's disease and people who don't, and considers the molecular players involved in its regulation, Chase will continue to ask that ubiquitous research question: *What's different?*

"There's a variety of things we can look for," Chase says, "but my guess is that for most people, Parkinson's has an environmental cause. My gut tells me it wouldn't be that simple as a little mutation in the cystine pump."

Chase was the founding director of Hope's neuroscience program in 2005 and has directed it ever since. The wonder of cells and how they work makes her marvel at the intricacies of the human brain. As an undergraduate at the University of Michigan-Flint, Chase considered a career as a physician. She chose instead to make an impact on the medical world, and people with Parkinson's disease in particular, from the realm of a research lab. (She also does research on bipolar disorder, which has involved collaborations with Hope psychologist Dr. Andrew Gall, Hope chemist Dr. Ken Brown and retired Hope biology professor Dr. Christopher Barney.)

"It's truly my interest to do research that will eventually be helpful to those who do the translational research," she says. "Our research is the basic science needed in order for somebody, someday to fix the problem with a new drug. If we can find where the problem is, and that can help somebody else who has access to patients, then that would be fantastic." 🍀

— By Eva Dean Folkert | Photo, Jon Lundstrom

Combing Statistics for Clues to Future Mass Shootings

YEW-MENG KOH, PH.D. | ASSISTANT PROFESSOR OF MATHEMATICS

Sandy Hook. Marjory Stoneman Douglas High School. The *Capital Gazette* newspaper. The Route 91 Harvest Music Festival in Las Vegas. Orlando's Pulse nightclub. The First Baptist Church of Sutherland, Texas. The Tree of Life synagogue in Pittsburgh. The roll call and the death toll keep rising, steadily and seemingly unchecked, and random mass shootings are becoming part of the fabric of life in America.

But what if they are not random? What if an algorithm could be created that would predict not only where and when the next multiple murder might occur, but also the type of person most likely to commit it?

That is the timely and Herculean challenge that Dr. Yew-Meng Koh has undertaken. "Basically, what we want to do is categorize, try to cluster, the different shooting incidents that have taken place in the U.S.," explains Koh, a native of Malaysia who specializes in statistical analysis.

"And when I say 'cluster,' what I mean is to put like shootings — and some become more alike in many ways over time — to put them together. Then once we have achieved that, to look within the clusters we have formed to see if we can identify any patterns that are shared by the incidents. And to compare across clusters to see what differences jump out at us as well. That's the objective."

He's discovering intriguing patterns about how age and ethnicity correlate with two things: some shooters' social media posts that give advance notice of their intentions, and the locations where they commit the crimes.

Funded by a Nyenhuis grant from the college and support from the Michigan Space Grant Consortium, Koh selected students John McMorris '19 and Tyler Gast '19 to perform the bulk of the preliminary research in summer 2018. "While I was away in Malaysia, I Skyped them every day to check on their progress, and also to give them new tasks to do," Koh says.

For the foundation of their research, Koh, Gast and McMorris used statistics compiled by the progressive nonprofit magazine *Mother Jones*, which created a database of mass shootings in America from 1982 to 2018, as part of an in-depth investigation.

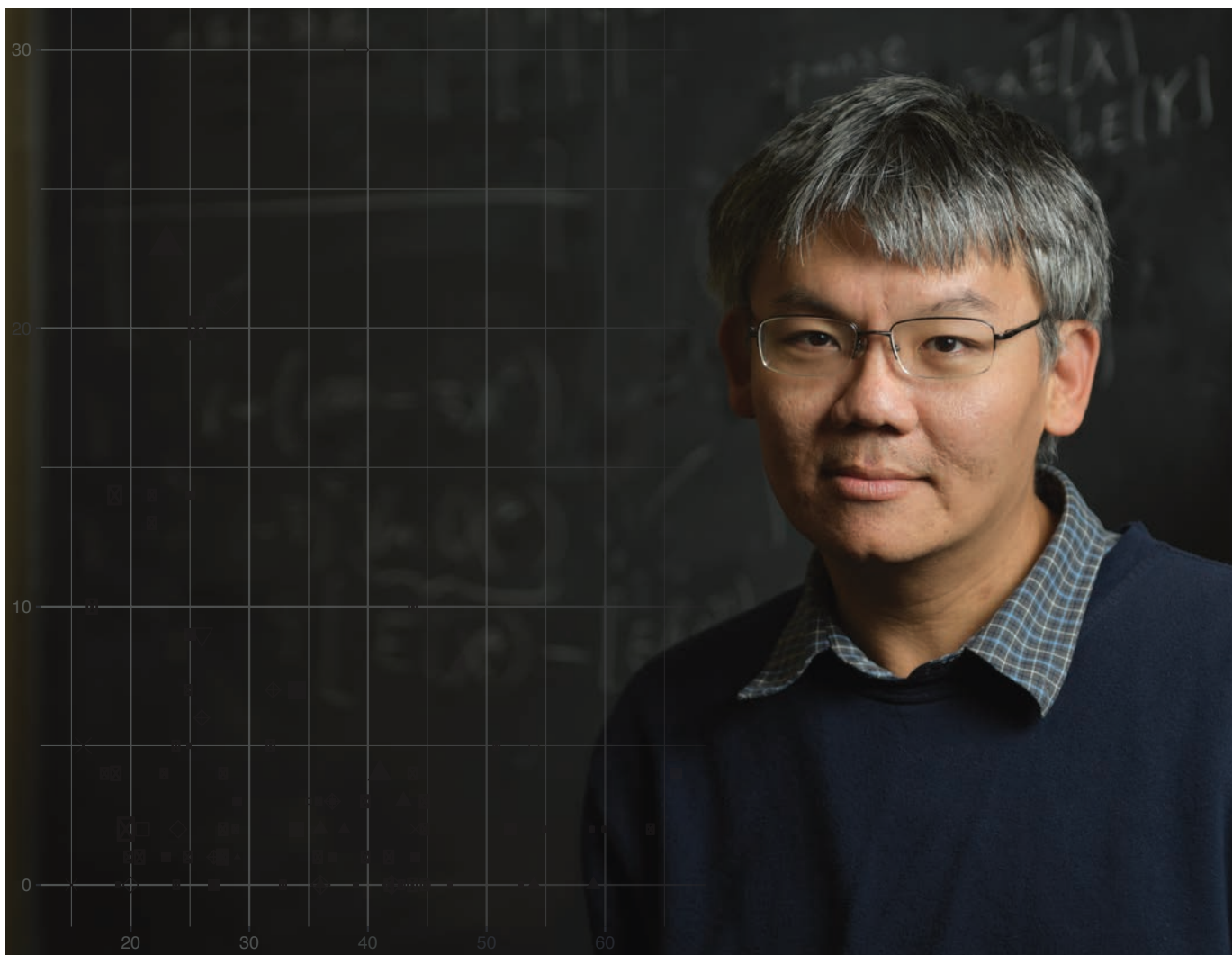
"We had to check that the *Mother Jones* data was accurate, because that data set seems to be open to everyone," Koh notes. "We were wondering whether people had access to make changes. So the first thing I had my students do was ensure that all the data was substantiated. We cross-verified it with the FBI's data set."

Defining terms was important, too. Ideas about what constitutes a "mass killing" vary widely — and consequently, so do the total number of mass killings that various agencies and media outlets report. Koh settled on this definition: "at least three or more killings in a single incident, which may or may not include the shooter." Koh used the FBI definition of "active shooter: one or more individuals actively engaged in killing or attempting to kill people in a populated area."

He considered other variables, too: shooters' age, race, and mental health issues (if any); where incidents occurred; and whether shooters announced their intentions beforehand on social media. "I had my students verify all these facts, and we added in a few other pieces of information like geographic region," Koh says.

Then came the process of summarizing and comparing the variables. "There's a statistical technique called principal component analysis, or PCA, which tries to crystallize information from many variables and basically gives you what you should be looking at as the biggest contributors to your investigation," Koh explains.

Among Koh's preliminary findings is that mental stability does not necessarily play a role in a shooter's desire to announce his or her intentions in advance.



“We have found that people who have, and do not have, mental health issues will post on social media, so that is not an indicator of the mental health of the individual,” he says.

However, in what Koh considers one of his most interesting findings so far, he discovered that a shooter’s race is strongly correlated to whether the individual posts in advance about a planned attack. “The majority of white shooters will post their intentions on social media, whereas the majority of nonwhites — especially Asian and Hispanic shooters — would not.”

Koh has also noticed a correlation between workplace mass shootings and the age of the perpetrator. Older shooters — aged 50 and above — are responsible for the predominant number of workplace shootings. And analyzing the age distribution of shooters, he found

that older shooters more often attack in the workplace than in all other types of locations combined. “And older shooters tend not to post on social media, either,” he adds.

Most interestingly, perhaps, Koh has found in looking across his clusters that the number of victims may correlate to the race of the shooter. “It seems to be that white shooters tend to leave more fatalities, but that could be clouded by the fact that the demographic of the U.S. is majority white,” he says.

This winter Koh has continued to process and analyze data. He’s aware that other researchers also may be scouring data looking for patterns that might help prevent the next mass shooting, but a fresh set of eyes and a distinctive statistical perspective can’t hurt the effort. He hopes to publish his findings this year. 🍀

— *By Jim McFarlin | Photo, Jon Lundstrom*

Clean Water for the Global Greater Good

JONATHAN PETERSON, PH.D.
LAVERN '39 AND BETTY DePREE '41 VAN KLEY PROFESSOR
OF GEOLOGICAL AND ENVIRONMENTAL SCIENCES



If you've gone backpacking, you may be familiar with Sawyer point-of-use water filters — small, easy-to-use devices that allow outdoor enthusiasts to drink water safely from streams and other natural sources. But how well do they work, really? And not just in the United States, where their use is primarily recreational, but in countries where water filters are an absolute necessity for everyday life?

Dr. Jonathan Peterson and two of his Hope College colleagues are investigating the efficacy of Sawyer Corporation water filters — with the goal of helping to improve drinking water quality in less developed nations around the world.

His collaborators are geneticist Dr. Aaron Best, chemist Dr. Mike Pikaart and 24 students. "It's a classic liberal arts research project because it's interdisciplinary and it is addressing many different aspects of the problem," Peterson says. "Students are observing scholars working together and learning from one another. You can't lecture that."

First, Peterson and his colleagues send Sawyer water filter kits to non-governmental organizations (NGOs) in communities in 30 countries, including Kenya, Papua New Guinea, the Solomon Islands, Costa Rica and Senegal. (Sawyer reports its filters are used in 80 countries

worldwide.) NGO employees use the filters to make local water drinkable, and then ship the used filters back to Hope College. On campus, the research team examines them to find out what the filters contain.

"We remove the captured material and categorize three components: suspended load (that is, the solid particles which were in in the water); the bacterial population; and the dissolved metals in the water," explains Peterson, whose past research on pharmaceutical contamination of groundwater dovetails well with this project.

Sawyer Corporation will use the data to fine-tune its products. The manufacturer supported this research with grants in 2017 and 2018.

Lab analysis at Hope also expands environmental scientists' knowledge about what's in the water at each test site. "We're collecting a huge data set on the water that's there," Peterson reports.

The team also is gathering information on antibacterial contamination in the water and conducting an epidemiological health study in collaboration with statistician Dr. Nathan Tintle, a former Hope professor who now teaches at Dordt College in Iowa.

The group presented its research at the Geological Society of America conference in November 2018, where Peterson and Best chaired a special session dedicated to global water. They will also publish their findings related to particulates, bacteria, heavy metals and epidemiology. 🌱 — *By Josh Bishop | Photo, Jon Lundstrom*

What Alternative High Schools Are Getting Right

LAURA PARDO, PH.D. | EVERT J. AND HATTIE E. BLEKKINK PROFESSOR OF EDUCATION

Flexibility. Low student-teacher ratios. Valuing relationships more than attendance.

Dr. Laura Pardo is finding that successful alternative high schools have these features, among others, in common. She wants to equip aspiring teachers to replicate their impact in traditional schools, too.

“There are some things that we can pull from, as a profession, that can help any kind of school be more supportive for all students,” she says.

Pardo prepares Hope education majors to teach middle school and high school. She has a keen sense of the competing interests of two goals: rigorous preparation for the college-bound, and social and emotional education of all students.

She’s concerned that the first crowds out the second in many traditional high schools. “Some kids aren’t motivated. They say stuff’s boring. They don’t see applicability to their lives,” she explains. For some of them, alternative high schools — parochial, charter and technical schools — can turn things around.

Alternative schools, Pardo says, have more bandwidth for social-emotional learning that builds “soft skills” employers look for. For instance, they help students learn to advance their own ideas without alienating others, and grasp that talking with a neighbor isn’t cheating — it’s collaborating.

Curriculums are emerging that teach these things, she reports. “I want my students, as future teachers, to know that that’s part of what they’re signing on for. That’s what Christ commissioned us for,” she says.

During her 2018 sabbatical, Pardo began research about how alternative high schools in Michigan motivate and educate students. Combing through data, speaking with students and asking how districts assess the impact of their social-emotional strategies, she is looking for trends and patterns.

She asks nuts-and-bolts questions, but subjective ones, too. *How do you know your teachers care? How did you learn about setting goals?* “Kids will tell you whether this school is supporting their physical, academic and social needs,” she says.

One marker of a high school’s success is its graduation rate. Pardo notes that in West Michigan and nationally, most alternative high schools have graduation rates close to the conventional schools in their home districts. She’s found it troubling to learn, though, that some alternative schools have “dismal” rates as low as 10 to 30 percent. Pardo has found some research that suggests that schools “might be ‘encouraging’ students who are not likely to graduate (and thus have the potential to lower the traditional high schools’ graduation rates) to attend an alternative high school.” She’ll explore this further as her research continues. 🍷 — By Ann Smith | Photo, Jon Lundstrom



Bolstering a Line of Defense in the Battle Against Sex Trafficking

LLENA CHAVIS, PH.D. | ASSISTANT PROFESSOR OF SOCIAL WORK



Michigan has the sixth-most reported cases of human trafficking in the United States. Dr. Llena Chavis is teaching people on the front lines how to recognize the signs of trafficking — and how to intervene.

In 2016, when one of her students was doing research about trafficking, Chavis and the student learned that health professionals are often the first line of defense against sex trafficking. “Trafficked individuals will be brought in either injured or sick, and will face a health professional who could be the ‘make or break’ in getting them help,” Chavis says.

But when she and her student, Ashley Krause ’17, looked at data regarding who reported incidents of sex trafficking in the Grand Rapids area, it wasn’t health professionals.

“We were curious about that gap,” Chavis says. “If groups are saying ‘health professionals are the ones,’ why are they not?”

Chavis and Krause wanted to know whether health professionals felt able to recognize and respond to sex-trafficked individuals. Krause interviewed 12 local medical professionals — physicians, psychiatrists and dentists — to gauge their preparedness.

“Unless they had actually come face-to-face with a sex trafficking victim, they felt very incompetent,” Chavis says. “They knew what to do medically, but not what to do in terms of resources.”

The researchers realized they could apply their social work expertise to the problem. Funded by a Hope College Nyenhuis grant, they developed a training module based on a step-by-step process called the “generalist intervention model.” Over three hours, trainees become acquainted with data about trafficking in their region and learn best practices: how to assess whether patients may be victims of sex trafficking, how to show empathy and how to intervene effectively. Together, Chavis says, these steps can “turn pain into power.”

She has conducted training sessions three times in West Michigan so far and will present another this spring. They enable health professionals to earn continuing education units that count toward renewal of their state licensure, and are open to others, too. Krause has made presentations at three conferences about the training module, which she and Chavis hope others will use elsewhere.

“We often think of trafficking as being this international problem, when that’s not always the case,” Chavis says. “It’s eye-opening for people to realize this is happening in their own backyard. But I think — and hope — it’s becoming less of a secret.” 🗍 — *By Stephanie Mouw | Photo, Steven Herppich*

View Dr. Chavis’ 2016 lecture about her research at spera.hope.edu/chavis-lecture

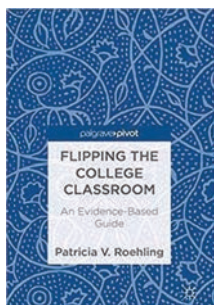
A CROSSROAD FOR REFLECTION AND ACADEMIC EXPLORATION

Finding the intersections between one's faith and vocation needn't be a solitary task. At a yearly conference sponsored by the Lilly Fellows Program in the Humanities and the Arts, faculty from Christian institutions work through nuanced issues together — each refining their personal sense of how their faith relates to their teaching, their scholarly work, and relationships with colleagues. In 2018, this conference took place at Hope College for the first time.

“It's an enriching environment, because you're talking to people at different kinds of institutions and other disciplines and learning how they think about their faith,” says Professor of Religion Dr. Steve Bouma-Prediger, who was among the Hope faculty and staff who brought the event to fruition. “More people have likely thought about faith and teaching than about faith and scholarship, but the lights are going on.”

The meeting drew about 200 Christian college faculty and administrators to Hope from a broad range of Christian colleges and universities. Some of the 101 institutions in the Lilly network are nondenominational; others are affiliated with a specific denomination. The keynote speakers were equally diverse: a Westmont College art historian from the Reformed tradition, a Roman Catholic scholar from Detroit's Sacred Heart Major Seminary, and a Baptist theology professor from Gardner-Webb University in North Carolina. Interacting about the conference theme “Robust and Receptive Ecumenism,” participants considered how to work at genuinely understanding others' perspectives, and how to speak willingly and openly from their own Christian perspectives within academia.

In July, Hope will host another Lilly conference — this time for Lilly Graduate Fellows, grad students who are exploring various issues in Christian higher education through a multi-year Lilly program. Other conferences taking place in 2019 on the Hope campus include gatherings of chemists, teacher accreditation specialists and philosophers.



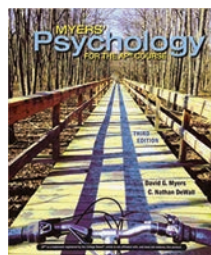
PATRICIA ROEHLING, PH.D.
PROFESSOR OF PSYCHOLOGY
*Flipping the College Classroom:
An Evidence-Based Guide*
Palgrave Pivot

Screen-savvy college students are quite at ease with “flipped classrooms” in which professors prerecord lectures for students to view on their own time, and use class meetings for more active learning: discussion, activities and other learning experiences. To help professors consider whether — and how — to employ this newly-popular strategy, Dr. Patricia Roehling draws on emerging research to advise educators about the types of courses and objectives that are most effectively flipped. She also offers evidence-based guidance about how to create engaging recorded lectures, develop and implement in-class exercises and projects to help students meet course objectives, and assess the strategy’s effectiveness.



KENDRA R. PARKER, PH.D.
ASSISTANT PROFESSOR OF
ENGLISH
*Black Female Vampires in
African American Women's
Novels, 1977-2011: She Bites Back*
Lexington Books

Vampires are powerful characters — and metaphors — in a number of 20th- and 21st-century novels by African American women. Examining five such books (by L. A. Banks, Octavia E. Butler, Jewelle Gomez and Pearl Cleage), Dr. Kendra R. Parker explores how the authors respond to the social construct of African American women as predators by making their protagonists black female vampires. She unpacks how these black female vampires differ from the garden-variety vampires of TV, horror movies and popular literature, and how the authors dismantle that stereotype to present a holistic picture of African American womanhood.



DAVID MYERS, PH.D.
PROFESSOR OF PSYCHOLOGY
Psychology for AP
3rd ed. (with C. N. DeWall)
Worth Publishers
*Exploring Psychology and
Exploring Psychology in
Modules*
11th ed. (with C. N. DeWall)
Worth Publishers

Social Psychology 13th ed. (with J. M. Twenge)
McGraw-Hill

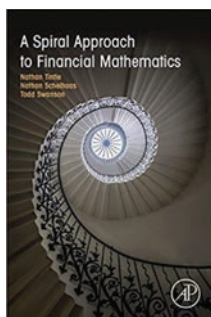
Dr. David Myers and his co-authors have given each of these textbooks, which are on three-year revision cycles, a stem-to-stern revision and updating featuring the latest psychological science, with new figures, photos and cartoons. *Psychology for AP*, *Exploring Psychology* and *Exploring Psychology in Modules* each include more than 1,000 new citations and many new visual illustrations. Previous editions of these texts have been published in 19 other languages for study in most major nations.

Learn more about Dr. Myers on page 2.



RICHARD RAY, Ed.D.
PROFESSOR OF KINESIOLOGY
*Management Strategies in
Athletic Training*
Updated 5th ed. (with Jeff Konin)
Human Kinetics

Youth sports safety, professional licensing, legal standards and OSHA requirements are among the many issues in athletics today that require athletic trainers to double down on administrative knowledge. In response to that need, Dr. Richard Ray and his co-author have updated their textbook with new chapters on the profession and on legislative advocacy, plus added content about topics including ethical practices, emergency planning and health care financial management. The first edition of this widely-used textbook was published in 1994.



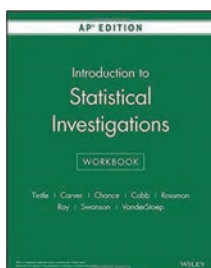
TODD SWANSON, M.A.

ASSOCIATE PROFESSOR OF
MATHEMATICS

*A Spiral Approach to Financial
Mathematics* (with Nathan Tintle
and Nathan Schelhaas)

Academic Press / Elsevier

Financial decision-making is, in part, a numbers game. The textbook Professor Todd Swanson co-authored with another mathematician and an actuary “spirals” between material at two levels: for students who’ve taken calculus and want to equip themselves to make prudent personal and professional decisions, and for students with advanced math training who plan to seek actuarial certification. Walking readers through practical examples about key sectors such as saving, loans, and stocks and bonds, the authors build statistical literacy and conceptual understanding of the real-world financial dynamics represented in the mathematical formulas on which professionals base their projections and choices.



TODD SWANSON, M.A.

ASSOCIATE PROFESSOR OF
MATHEMATICS

JILL VANDERSTOEP, M.S.

ASSISTANT PROFESSOR OF
MATHEMATICS

*Introduction to Statistical
Investigations AP Edition* (with Nathan
Tintle, Ruth Carver, Beth Chance, George
Cobb, Allan Rossman and Soma Roy)

John Wiley and Sons

To support high school students tackling the AP statistics course, professors Todd Swanson and Jill VanderStoep and their co-authors have crafted a high school textbook based on their award-winning 2015 college statistics text. The AP version includes content written specifically for AP students, AP exam tips and practice exercises, two full-length practice exams and 300 instructional videos. Their college text, which is used at Hope, received a Most Promising New Textbook award in 2017 from the Textbook and Academic Authors Association and the 2018 Daniel Solow Author’s Award from the Mathematical Association of America.



BRUCE BENEDICT, M.Div.

CHAPLAIN OF WORSHIP ARTS

Songs for the Sojourn

Bellwether Arts / Cardiphonia

Original music and art weave together with liturgical components in this portfolio of worship materials focused on the Psalms of Ascent (Ps. 120–134). Executive producer Bruce Benedict gathered more than 40 collaborators to bring these psalms to life for Holy Week or for worship series at other times. Contributing writers include Hope College Chaplain Rev. Dr. Trygve Johnson, Professor of Kinesiology Dr. Rich Ray, Lecturer in English Dr. Josh Banner, and Benedict, who coordinates Dimnent Chapel worship services and teaches the Ministry Studies course Introduction to Theology of Worship and Music. In all, 16 writers, 12 visual artists and 25 individual musicians or musical groups contributed to this resource, which includes a book, artwork, and two CDs (below) of new musical settings of the Psalms of Ascent. Sample the music at spera.hope.edu/highlighted-books



WHAT DREW ME TO LATIN AMERICAN POLITICS

ANNIE DANDAVATI, PH.D. | PROFESSOR OF POLITICAL SCIENCE

“My undergrad degree was in history; we focused a great deal on Indian history. My master’s was in African politics: the diaspora — the Indian people who had undergone British imperialism and therefore transferred their wages and their livelihood — living in Anglophone Africa. For my Ph.D., I wanted to pick a region of the world that I knew nothing about.

When I learned about Latin America I saw the similarities between Indian and Latin American politics and economics. We, too, have been grappling in India with alleviating poverty. We have talked about development and about the role of religion. All these struck me as being similarities between two very specific regions of the world that were not naturally having a proclivity towards each other. I have a natural curiosity to try to master things that I don’t know about, and that I want to learn.

What has been of particular interest to me is the role of women. Women everywhere are finally flexing their muscles, not only as participants in the economy but as equal participants in politics and culture. Historically, in Latin America women had a hard time finding a seat at the decision-making table. This is one area people should be watching, and seeing that Latin American women are finally coming into their own.”

Gender and development, human rights, and Latin American politics are Dr. Dandavati’s professional passions. She co-leads a program to help Hope faculty increase the global scope of their work and has led or co-led study-abroad programs to countries including Mexico, Chile and Rwanda. This semester she’s on sabbatical in Chile, researching whether sustainable development efforts are making an impact on indigenous women’s lives.



ON THE COVER

Daubs of oil paints form a vibrant bas relief on the work table in Dr. Katherine Sullivan's studio in the De Pree Art Center — a geography of years of imaginative activity.

See more and read about her painting . . . pages 22–23

IN THIS ISSUE






More than two dozen articles about writing, research, and visual and performing arts by Hope College faculty — all of it creative in its own way.

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