



# Research and Creative Scholarship

at Andrews University

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Summer 2013, Volume 4

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August 2013

### Research at Andrews

The University is not just a place where knowledge is disseminated from professor to student. Rather, it is where inquisitive minds seek out new knowledge and better understanding of ourselves and the world we inhabit, and where this knowledge may be applied for the benefit of others. At Andrews University, research and creative scholarship is core to our academic life. Faculty and students work together to ask questions, seek answers, and apply what they learn. The following pages present a brief sampling of some of the ongoing research and creative scholarship projects at Andrews.

Psychologist Herb Helm and sociologist Duane McBride explore the relationship between the Adventist subculture and risk behavior among students. They are discovering factors that influence risk behaviors among youth, and what may increase the probability they will make smart life choices.

The linguistic research of English professor Julia Kim explores the ramifications of English being the global language of communication. What she discovers may transform the way English is taught to second-language learners.

Care for humanity as well as the basic rights and freedoms that should be available to all are of deep concern to faculty researchers. Research and service combine in the work of physical therapist Lori Walton, who uses her research to make a difference in the lives of the disabled and vulnerable in Bangladesh. Nicholas Miller, associate professor of church history, shows that First Amendment principle of separation of church and state was inspired by a long history of Protestant Christian thought. Understanding that the First Amendment has roots in Christian theology is important for current discussions regarding the proper relationship between church and government.

The research of biologist Peter Lyons may occur on the microscopic level, but the implications of his genetic research extend beyond the fish tank. Using zebrafish, he studies the effects of modified carboxypeptidases, which can help us understand how these enzymes function in humans.

The creative scholarship of Greg Constantine, emeritus professor of art, challenges us to rethink the meaning and purpose of art. His "artistic licenses" humorously create art out of the sayings of famous artists themselves.

Political scientist Marcella Myers travelled to Germany as a Fulbright Scholar. There she learned firsthand the challenges of the European monetary crisis to the identity of the European Union, which provides insight for her study on the social impact of economic inequality.

As shown in these pages, the research and creative scholarship done at Andrews University engages faculty and students to seek out a deeper understanding of ourselves and the world we inhabit. The process of asking questions, seeking answers, and applying what we learn has transformative power to enhance our teaching and enable us to better serve the world. Please visit us at [andrews.edu/research](http://andrews.edu/research) to learn more about research at Andrews.

Sincerely,

Gary W. Burdick

Associate Dean for Research, School of Graduate Studies & Research

# The Adventist Advantage:

## *The Health Risk Study and Adventist Influence*

In 1989, two former Adventists, Malcolm Bull and Keith Lockhart wrote a book called *Seeking a Sanctuary*, which proposed that the unique subculture of Seventh-day Adventism had successfully replicated the American dream, and had created a world that managed to keep its members protected from many of the risks of the outside world—economic instability, risk behaviors, unemployment and crime.

Much of the research currently being conducted in the Department of Behavioral Sciences is coming to a similar conclusion: there's something about the Adventist subculture that significantly decreases its members' participation in what behavioral scientists term "risk behaviors"—drug and alcohol use, unsafe sexual practices—and increases the number of smart life choices young Adventists make.

Herb Helm and Duane McBride, professors in the Department of Behavioral Sciences, have been working on several studies that demonstrate this phenomenon. The first is a new iteration of an ongoing study examining drug and alcohol consumption at Andrews University.

A number of studies have collected data on drug and alcohol use at colleges and universities, but few investigate institutions with prohibitionist drug and alcohol policies. Prohibitionist policies, such as Andrews University's, maintain "a conservative, religious policy against substance use and prohibits use of tobacco, alcohol, or mind-altering drugs" (H.W. Helm et al., 2009). And while a prohibitionist policy radically decreases usage, it understandably will not eliminate all instances of use. Enter the Health Risk Study.

The Andrews University Health Risk Study began in 1990 and recurs every five years. It is sponsored and conducted by the Institute for Prevention of Addictions (IPA), which McBride directs. "Over the years, the study has grown from more of an epidemiology of substance abuse behaviors to include more health risk behaviors and to be more theoretically directed," says McBride. The 2012 study included several questions about possibly related circumstances, such as family situation, exercise levels, and past traumatic experiences, that could help researchers theorize possible correlations between risk behaviors and external factors.

The survey reached a large percentage of the Andrews student body—between 450 and 800 usable responses in the 2012 edition. The survey asks questions about the students' health practices such as "Within the past year/30 days, how often have you used [substance]?" "How many drinks do you consume a week on average?" The survey also asked respondents to indicate their reasons for not participating in these behaviors, with reasons ranging from "Concern about my health/academic success/future occupation" to "My commitment to Christ" to "Drugs cost too much money."



Above: Duane McBride, Herb Helm

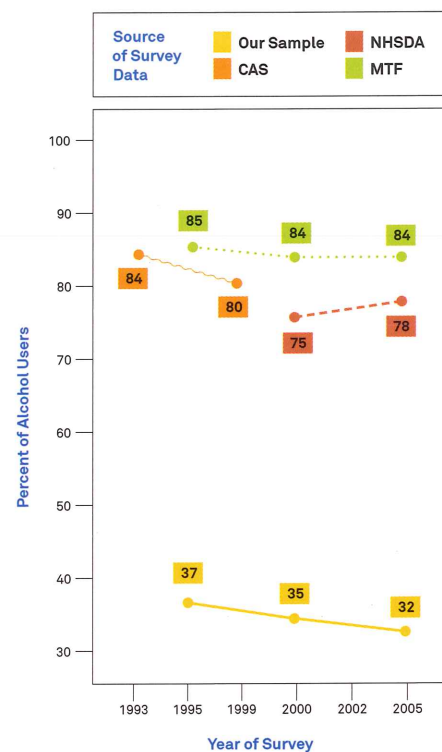


FIGURE 1 Trends in alcohol use. Note. CAS, Harvard School of Public Health College Alcohol Study; MTF, Monitoring the Future; NHSDA, National Household Survey on Drug Abuse.

Past editions of the study suggest that Andrews' use rate is two-thirds lower than the national average, and initial analysis of last year's study seems to indicate that that trend continues to hold. Past surveys have also found that overall, low usage rates exhibit a significant correlation to factors of religion, parental bonding, commitment to health and the future, and a lower incidence of traumatic experiences. Additionally, Andrews' use rates tend to parallel national trends, Helm says. When national drug and alcohol use dips or peaks slightly, so do Andrews' use rates.

Another set of behaviors that interests researchers across the nation is sexual practices and trends associated with the hookup culture. Within the last 20 years or so, hookup culture has become widespread on college campuses, to the point that 60–80% of North American young adults report having had some sort of hookup experience (Justin R. Garcia, February 2013 *Monitor on Psychology*). Andrews is the first Adventist campus to investigate sexual practices on its campus, and may be the first organization to study sexual behaviors in a prohibitionist environment.

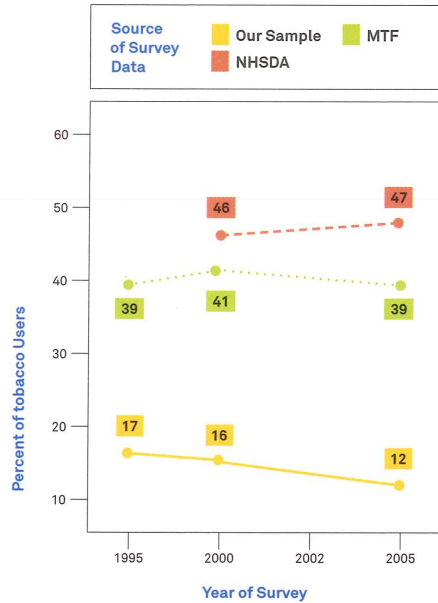
In 2012, part of the AU Health Risk Study included questions about sexual behaviors. The questions measured actual practices as well as comfort levels, with questions such as “Which of the listed sexual behaviors would you feel comfortable doing prior to marriage?” and “With how many people have you hooked up with?”

Data on sexual behavior is harder to correlate across the nation, Helm says, “because researchers are asking the questions in different ways and approaching it from various angles.” The Andrews researchers approached it from an angle of risk, investigating possible connections between major life trauma and sexual practices. Initial analysis of these results suggests similar trends as the drug and alcohol study—while some behaviors do occur, their incidence rate is much lower than the national average of 60–80%.

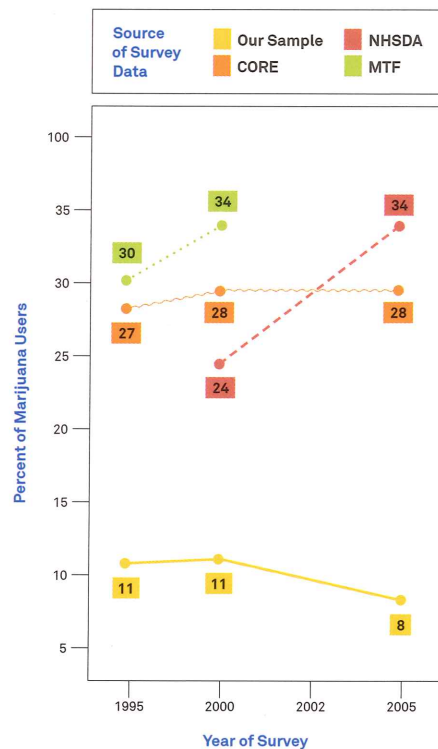
The Health Risk Study investigators originally expected their results to reflect the phenomenon of “cultural leveling,” which occurs when subcultures within a larger society become more like the dominant culture. “That doesn’t appear to be occurring in terms of substance abuse,” Helm says. Adventist college students maintain their low substance abuse rates, even as the American college culture continues to party.

The fact that Adventist college students consistently seem to be making better life choices than many of their peers suggests that Adventist culture does something to shield its young members from harmful behaviors, an intriguing possibility to both the Adventist church and researchers across the nation. The lack of much cultural leveling in Adventist college culture is an anomaly that McBride believes is of further interest: “Sociologically, we’re a functional subculture in a competitive marketplace,” he says. “What we’re doing seems to be working for us, and spiritual involvement seems to be the most important factor in many of these behaviors.”

**“Adventist college students maintain their low substance abuse rates, even as the American college culture continues to party.”**



**FIGURE 3** Trends in tobacco use. Note. MTF, Monitoring the Future; NHSDA, National Household Survey on Drug Abuse.



**FIGURE 4** Trends in marijuana use. Note. CORE, Core Institute; MTF, Monitoring the Future; NHSDA, National Household Survey on Drug Abuse.

# One

What we know as the English language started as a handful of Germanic tribes chatting to each other about a country called Britain that might be a fun spot to invade. Now, Julia Kim, associate professor of English, believes it’s become the lingua franca of the world. English is the language of business, international relations and much of literature. And while English has gone through a number of changes since the invading Germans first spoke it, it continues to intimidate many second-language speakers who fear they may not be understood.

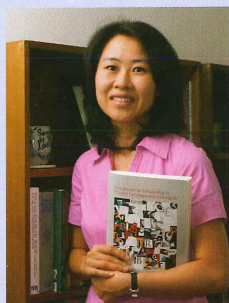
Kim is currently working on research that might help second-language learners feel more confident about their ability to communicate—and her findings demonstrate that we manage to understand each other regardless of what kind of English we speak. English is a language used to change, after all.

A second-language speaker of English herself, Kim’s research interests in social linguistics led her to test whether certain common pronunciation differences actually affected listener understanding. Certain languages such as Korean, Japanese, Chinese and Russian normally do not include articles (a word that specifies the definiteness of a noun—the cat, meaning the one currently climbing the curtains, or an apple from the orchard). When speakers from these countries learn English, they often leave articles out and pluralize non-count nouns (advices, informations). This is a “mistake” many English language learners struggle with, but does it really make a difference in whether they can convey their message?

She assembled three non-native English speakers: one Korean, one

# World Tongue

English as a  
Lingua Franca



Julia Kim

Russian, and one Chinese and had them read two standardized passages to six groups of composition students, most of whom were native speakers. One passage had no grammatical errors; the other had

minor errors such as omitted articles and pluralized non-count nouns. Each speaker read to two separate groups: the grammatically perfect passage as a control, and the changed passage to a second group of listeners.

The listeners were then asked several comprehension questions as well as perception questions: was the speaker accurate, pleasant to listen to, and easy to understand? Kim found some very interesting results: not only was there no difference among the speakers in comprehension, there was also very little difference in perception: meaning that each of the speakers was clearly understood regardless of minor grammatical errors. The strength of a speaker's accent affects how the listener *perceives* his speech, but not enough to make a difference in comprehension.

## ENGLISH, COLONIALISM AND THE THREE CIRCLES

Much of English-language learners' fear of not speaking well enough derives in part from a phenomenon linguists have titled Kachru's Three Circles of English, named after Braj Kachru, a professor emeritus of linguistics at the University of Illinois at Urbana-Champaign. He suggested that there were three different groups of English speakers, who formed a hierarchy of sorts. The central "circle" comprises speakers from countries where English is the first and main language: the United Kingdom, the United States, Australia. The second circle—called the "outer circle" represents countries where English became a dominant language through colonization,

such as India, the Philippines, and many countries in Africa. The third or "expanding" circle contains countries that are voluntarily adopting English as an additional language but haven't developed their own English yet—such as China, Korea, Japan, and many Middle Eastern and South American countries.

According to Kachru, the inner circle produces the norm for language speaking. This practice still holds traces of colonialism, when the native people—and their languages along with them—were considered backward and forced to adapt to the English way of life. Recently, however, many English-language learners "resist sounding like inner-circle speakers. They want to retain their own identity, and want to colonize English rather than be colonized by it, to make it their own rather than follow the standard thrust upon them," says Kim.

## IN THE CLASSROOM AND BEYOND

A similar movement in the field of linguistics has been emphasizing the focus on who "owns" the language and gets to make the rules from the native speakers to all users of English. "If we think English is actually a global language, then we need to level things out so that those in the expanding circle and outer circle are not disadvantaged by the things they have trouble mastering," says Kim.

In actuality, users of English manage to communicate quite effectively "through all these three circles," says Kim. "Researchers have been finding common features that seem to indicate that when English is planted in another soil,

similar pronunciation and grammatical simplification occurs." Speakers seem to be able to sense what is essential about the language and what's not important, but removing the perceived pressure to speak an arbitrarily "perfect" form of English may lend new speakers a dose of much-needed confidence. Language teachers tend to spend the most time on the hardest areas, which are often minor mistakes like article omissions and non-count pluralization. Realizing these small errors make no difference in how well speakers make themselves understood, "learners can be more confident in their ability to communicate," says Kim.

After all, if English is a global language, shouldn't all speakers feel that they own it? Unlike French, a previous lingua franca that has its own organization to moderate it, English has been changing and adapting ever since it first hit the British mainland. As English goes global, it has the potential to include all its speakers in the first circle and truly become the language of the world.

KACHRU'S THREE  
CIRCLES OF ENGLISH

Expanding Circle (e.g. China, Russia and Vietnam)  
Outer Circle (e.g. Singapore and India)  
Inner Circle (e.g. UK and US)

# Changing the Face of Disability in Bangladesh

**In the lowlands of Bangladesh, six hours away from Dhaka on winding dirt roads, Lori Walton walked into a tiny tin-roofed hut. Inside, “Ayesha,” a woman with a spinal cord injury, lived alone in a room just bigger than her bed. Her tin roof was full of holes, and when it rained, the holes would let in so much water that her bed barely kept her above it. Unable to move her legs, the woman could neither move around her house easily nor leave it quickly in case of an emergency. “I had been a student missionary and traveled on many volunteer medical missions before, but I wasn’t prepared for this,” says Walton, professor and research coordinator in the Department of Physical Therapy. This was her third time in the country, and she was accompanying a group of doctors, physiotherapists, and other medical volunteers on a home care visit from the mobile clinic of the Centre for Rehabilitation of the Paralysed.**

Walton and her colleagues gave the woman physical therapy, provided her with forearm crutches and a custom wheelchair, and taught her how to safely move in and out of her small living space. They also fixed her roof. That same philosophy of active, practical service inspires her ongoing work with rehabilitation hospitals in Bangladesh, including the Centre for Rehabilitation of the Paralysed (CRP) in Dhaka and the Hope Foundation for Women & Children of Bangladesh in Cox’s Bazar.

CRP was founded in 1979 by British physiotherapist Valerie Taylor, a woman so

committed to changing the face of disability that she still, in her 70s, lives the same life as her patients—staying on the hospital’s campus and refusing any amenity her patients wouldn’t have. It began as a small spinal cord injury facility, and has since grown into a full-service rehabilitation center and hospital with nine locations throughout Bangladesh, plus a school, orphanage, physical therapy school affiliated with the University of Dhaka, and mobile clinic. From the very beginning, CRP had social as well as physical importance: it began as a pediatric spinal cord injury center. Many children climb into mango trees, working from a young age, and falls are disastrous but common. It’s a vicious cycle: the children work because their families need the money, but if they become disabled they are abandoned or sent to the streets to beg.

Several hundred years ago, physically disabled persons in most cultures were social outcasts—condemned, disposed of, considered possessed by the devil. A similar mentality remains in Bangladesh, India and other caste-based societies, and as a result, disabled persons are often left without care to suffer alone on the fringes of society. CRP provides an alternative to street life by teaching patients a trade and how to be independent even if their families have abandoned them. Taylor’s work through the CRP—work that Walton continues to participate in—has helped many communities realize that

disabilities, now treatable, do not doom a person to life as an outcast.

Walton, who first began working with CRP in 2009, learned about the center through Bangladeshi professors she met at the 2009 World Confederation of Physical Therapy Congress in India. When her colleagues found out that her research interests centered around maternal and fetal health issues, they insisted she take two days to visit the complex. When she saw it, Walton knew, “I had to come back. They’ve done great things on completely volunteer efforts and help from the outside world.” Since 2009, she has returned to Bangladesh roughly every six months, teaching classes to physical therapy students, helping young mothers learn how best to care for themselves and their



Lori Walton



babies, and continuing her research and project development aimed at reducing maternal mortality and morbidity rates for those most vulnerable. She has also developed an online education forum in collaboration with other professors and Andrews University graduate students to provide much needed educational instruction in physiotherapy.

For women of low economic status in Bangladesh, the maternal mortality rate is staggeringly high, 240 deaths for every 100,000 live births (compared to a 9:100,000 ratio in the United States). Many of the issues these women suffer from can be prevented with “simple education programs or health-care,” Walton says. Poor women of all ages are at risk because of inability to access health-care, poor living conditions, and nutritional deficiencies. Walton helps CRP conduct a holistic education program, providing therapy and other related maternal health programs to the women, many of whom come from hours away to receive care. “My research has been a part of the motivation for a new women’s health physiotherapy program. It has been exciting to see other professors from Dhaka and across the world becoming actively involved in the development of this initiative.”

Walton also helped develop curriculum at the Bangladeshi Health Professions Institute, affiliated with the University of Dhaka, to transition from a bachelor’s to a master’s degree program at the physical therapy school, and teaches classes there when she is on campus.

In Bangladesh, the working day for Walton starts at 8 a.m., in meetings with clinicians, professors and research collaborators, and proceeds in a cycle of classes and consultations that extend until 9 or 10 p.m. CRP’s mobile clinic travels up to six hours from

Dhaka, but often patients come in to be treated from even longer distances—one student’s mother traveled seven hours by rickshaw.

**“My research is always related to service, because I don’t see a purpose in doing research unless it’s going to make a difference. Clinically, if I’m going to do a research project, I want to see that it is beneficial and is meeting a particular need.”**

Ten hours south of Dhaka in Cox’s Bazar is the Hope Foundation, a women’s hospital specializing in pediatrics and women’s health-care. Walton recently took several students with her to the Hope Foundation, visiting the facility and training Hope’s nurses and physicians. Walton and the directors of the Hope Foundation are also hoping to institute more educational sessions for mothers where physical therapy graduates and professionals can do long-term volunteer service.

“My research is always related to service,” says Walton, “because I don’t see a purpose in doing research unless it’s going to make a difference. Clinically, if I’m going to do a research project, I want to see that it is beneficial and is meeting a particular need.” And Walton has chosen to put her skills to good use in a population that desperately needs her help.

The more time Walton spends in Bangladesh, the more she becomes attached to its people, its beauty, and its problems. She and the other teachers at CRP want to open an

**Facing page:** Staff at Cox’s Bazar Hospital for Women and Children

**Above, from L–R:** Mothers wait with their children; students at the physical therapy school; the Centre for Rehabilitation of the Paralyzed (CRP) in Dhaka

educational forum for SAARC nations (South Asian Association for Regional Cooperation, of which Bangladesh is a member), where professors from around the world can post healthcare-related materials available for teaching at CRP and similar institutions. “I’m only one person, but if we each distribute our information and have a lot of people contribute without having to travel, then we have a wealth of information that [these schools] are in desperate need of,” says Walton.

It’s the contributions of physicians, therapists and professors that continue to allow CRP and the Hope Foundation to offer their life-changing services. Although these hospitals have always had good help, running on volunteer efforts and a shoestring budget means the hospital doesn’t have as much autonomy as it would like. “I cannot emphasize enough the importance of healthcare professionals going in for research and service,” encourages Walton, “but also more importantly education to keep this as a lasting effect.”

Centers like CRP and the Hope Foundation don’t just need healthcare professionals—they welcome anyone: graphic artists for promotion and development, ESL teachers, physical therapists, speech and language pathologists, occupational therapists, nurses and more. “If you want to volunteer, and you’re ready to go, they’re ready to take you,” says Walton.

To find out more about these missions and how you can get involved, visit [www.hopeforbangladesh.org](http://www.hopeforbangladesh.org) and [www.crp-bangladesh.org](http://www.crp-bangladesh.org).

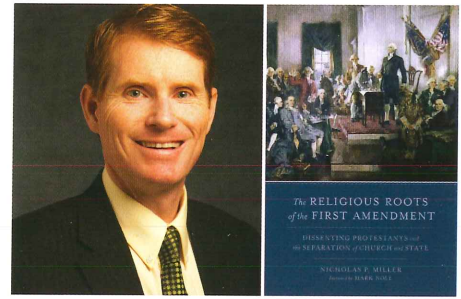
Amidst all the recent debate over the U.S. Constitution's meaning, one thing you often don't hear is a discussion of the historical context that prompted the Constitution's authors to write the document and its amendments. One amendment at the center of much controversy is the famous First: "Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances." Nicholas Miller, associate professor of church history and director of the International Religious Liberty Institute, published a book last year that explores just that question, and reframes the controversy.

*The Religious Roots of the First Amendment: Dissenting Protestants and the Separation of Church and State* (Oxford University Press, 2012) began as Miller's dissertation at the University of Notre Dame. "I wanted to see if I could point to specific theological ideas that influenced the founders' idea of not having a specific state religion," he says. His book explores those religious and theological influences on the first amendment's formation, contrary to the popular belief that the amendment grew out of Enlightenment suspicion of religion.

The ideas behind the First Amendment

have a rich history, dating back to the Protestant Reformation or before. Martin Luther, John Milton, the early Baptists—all these leaders championed the idea of "a priesthood of all believers." The idea that God was directly accessible to every believer carried with it a responsibility to study the Bible for oneself. Careful study led to decisions about how to lead one's life—but that also implied that church leaders making religious rules were also basing their decrees on a potentially fallible interpretation. "The Protestants believed that no one else had the right to make religious rules for you, and so left the Catholic church because of it," says Miller. "At least some Protestants realized that if they were to try and pass religious laws themselves, they'd be doing the same thing as the Catholics." Many Protestants did establish a state religion, Miller notes, but the majority of Protestants who came to populate American churches were what Miller calls "dissenting Protestants," those who believed that church and state should remain separate.

But this isn't always the way the First Amendment is understood. Conventional understanding of the First Amendment's origins place it in the Enlightenment, when many thinkers proclaimed the triumph of reason over the superstition and irrationality of religion. "It's often thought that separation of church and state is a product of the Enlightenment's prioritization of reason over the teachings of the ancients and biblical



truths. Because science is led by reason, and religious people are led by ancient truths/biblical teachings—so popular thought goes—the Founders wanted to keep them out of running the state." Many people assume the First Amendment was written for one of two reasons, both of them pragmatic: "either that there were so many religious groups that it was impractical to establish one as official; or to avoid state persecution of religious minorities," he says.

However, this wasn't the Founders' intention at all, Miller argues. Although some, including Thomas Jefferson, did subscribe to French Enlightenment beliefs about the outmoded nature of religion, many of the Founders read deeply in theology and were religious themselves. "Many of them had this belief in a dissenting theological Protestant idea, and understood their reasons as theological; a theological idea that can be expressed in philosophical terms," says Miller.

At the University of Notre Dame, Miller took a series of courses in Reformation and

# Exploring the Religious Roots



**Oct. 31, 1857**  
Martin Luther nails 95 Theses to the door of Wittenberg Church



**Jan. 28–May 25, 1521**  
Luther's "Here I Stand" speech at the Diet of Worms



**1641**  
John Milton publishes the pamphlet "of Reformation" praising the effects of the Protestant Reformation



**1689**  
John Locke publishes *Two Treatises of Government* (his most famous book)



**1681**  
Pennsylvania is founded and William Penn drafts *The Frame of Government* on the principles of complete religious freedom

American history, where he realized that the First Amendment represented a culmination of the history of an idea. “The book contains a certain amount of philosophy, but it also has its share of action and adventure—Martin Luther and the Diet of Worms; John Milton and John Locke having to flee England to get away from the Catholic king,” says Miller.

He structured his book around 10 individuals, put into contrasting pairs, and traces the development of the idea of dissenting Protestantism through their lives and writings. From Martin Luther and Milton to John Locke and William Penn—who were actually connected in real life—to James Madison and his mentor John Witherspoon, these writers were concerned with the role of religion in society, and their works influenced the way the First Amendment looks today.

For example, John Witherspoon, president of Princeton University and signatory of the Declaration of Independence, was a leader of the Presbyterian church. In 1787, while his student James Madison was in Philadelphia drafting the United States Constitution, Witherspoon was also in Philadelphia writing the Presbyterian Constitution. Witherspoon’s Presbyterian Constitution “said that the civil [state] magistrates couldn’t be involved with the church, which actually tells us more about what the common religious people were thinking at the time,” Miller says. Miller also notes that churches can change: the Presbyterian church, who held a Calvinist

view of combined church and state, in 1789 changed its mind and argued against the combination of church and state to reflect the will of its members.

But to hear the heads talk, you wouldn’t know this rich and deeply contextual history existed. “Nowadays, people tend to argue either extreme and ignore the central position,” says Miller. Working as a lawyer in Washington, D.C., Miller often dealt with issues of church and state. “I always felt like the argument over church and state took

**“I wanted to see if I could point to specific theological ideas that influenced the founders’ idea of not having a specific state religion.”**

place between two extremes—there were the religious people who took religion seriously and wanted to bring the two together; and the secular people wanted the two separate, often penalizing church people. There needs to be a better understanding that views church and state as equals, partners keeping a respectful distance, rather than the church in the shadow of the state.” His book attempts to show a “more moderate middle position that avoids extremes of either a theocratic right or a completely skeptical, secular left,” he says.

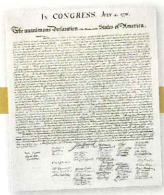
Much of the controversy today, he believes,

arises from a misunderstanding on both sides of the intent and history of the Amendment. Many denominations—including Seventh-day Adventists—believe in the separation of church and state, and “we’ve taken that to mean there should be a complete separation between the state and morality. Today, the conventional wisdom is that the state has to stay out of morality altogether, which is both a historical and philosophical misunderstanding.”

It’s important to understand the story behind the First Amendment, Miller says, “because today religious people ask why we should separate church and state. If they think the primary reasons were put forward by secular thinkers, then they see no reason to keep that separation, because it doesn’t have a religious background.”

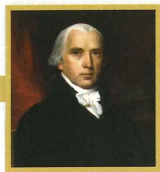
Miller’s book has received positive scholarly attention, including a review in a leading journal of American history. *The Religious Roots of the First Amendment* also made *Christian Century Magazine’s* list of best-selling religious books in the fall of 2012, and Miller gave an invited talk at the University of Notre Dame on the book’s argument in April 2013. “People seem to be accepting the argument, and that’s good. It really makes a difference in our discussions today—because we can tell other Christians that the separation of church and state isn’t a skeptical, religiously hostile idea, but that it actually flows out of Christian theology.”

# of the **First Amendment**



**July 4, 1776**

Continental Congress adopts the final draft of the *Declaration of Independence*



**1787**

James Madison, student of John Witherspoon, helps to draft the *U.S. Constitution*



***U.S. Constitution* formally ratified on June 21, 1788**



**1789**

The Reformed Presbyterian Church adopts the *Presbyterian Constitution*, which Princeton president and Presbyterian clergymen, John Witherspoon, helped draft

# Rise of the Mutant Zebrafish

## Exploring the Genes Behind Disease

In the back of Peter Lyons' office sits a tank of zebrafish. Tiny black-striped fish from the pet store. Zebrafish are popular pets, especially the ones that glow, but these aren't family pets. They're model organisms for genetic research that could eventually help cure diseases like epilepsy, and they're a vital part of the research Lyons is initiating at Andrews.

Lyons has been working on a set of particular enzymes, the carboxypeptidases, for the past few years. He first started working on the enzymes while completing his doctorate at Dalhousie University in Nova Scotia, and continued the research at Albert Einstein College of Medicine in New York. He then brought his research with him, in the form of preserved cell lines he brought in liquid nitrogen from Einstein.

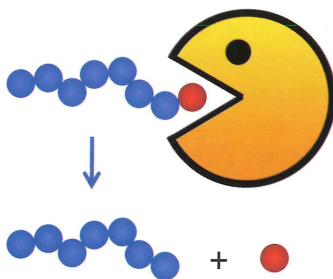
### A BRIEF HISTORY OF ENZYMES

Enzymes catalyze the millions of chemical reactions that propel the body, and carboxypeptidases are a type of enzyme that chop off little pieces from proteins or break down old proteins. Carboxypeptidases have a very specific function—they only clip amino acids at the end of a protein chain, and they're often found at very specific locations in the body. The carboxypeptidase that scientists know most about is a pancreatic enzyme, mostly involved in digesting your dinner. Although many carboxypeptidases' molecular function is known, their larger role in the body is still a mystery.

Carboxypeptidase-A6, for example, appears to be linked to epilepsy. Researchers have observed a group of families in Morocco that have both temporal-lobe epilepsy and a number of genetic mutations. "We're quite sure that it's the mutation of CPA6 that's causing epilepsy because only the affected family members have the mutation," he says. "It's not entirely clear what the regular gene is doing to prevent epilepsy normally—there's a possibility that it could be involved in modi-

fying neuropeptides, but we haven't worked out which ones and where." Carboxypeptidase-O is even more elusive: it seems to have a function in the digestive system, but Lyons and other researchers are still in the process of narrowing its function down.

For these highly specialized enzymes, these gaps in knowledge are what keep researchers up at night. "The big question for many of these enzymes are what are their substrates,



Proteins are made of many amino acids linked end to end (red and blue balls). A carboxypeptidase enzyme (yellow pacman) cuts specific types of amino acids (e.g. only "red" amino acids) from one end of a protein, thus modifying the protein's structure and function.

where do they function, what happens if they're messed up, and what's the result in an organism?" says Lyons. That's where the zebrafish step in (or swim in) and serve as model organisms to study the function of these enzymes.

### BEHOLD THE ZEBRAFISH

The tiny zebrafish are remarkable organisms. They're small and easy to raise, they produce lots of embryos on a weekly basis, and these embryos contain organ systems that are fully functional in a matter of days. Since zebrafish are vertebrates, scientists often use them as model organisms when exploring genetic function and expression. "They have many of the same organs as we do," says Lyons, "and scientists use the zebrafish model system to figure out all aspects of health and development."

Zebrafish and humans have about 20,000 genes in their genomes, and scientists have sequenced both genomes. We share many of the same genes with the little fish—including the 25 or so types of carboxypeptidases. Because it's neither practical nor ethical to do exploratory genetic research on humans, zebrafish provide the perfect model organisms to understand more about what carboxypeptidases do.

Much genetic research involves isolating a gene, modifying or mutating it in some way, and returning it to an organism to observe how the changed gene is expressed. The expressed mutations help determine what the consequences might be if the gene naturally mutates, but may be analyzed within the



controlled context of a model organism. In general, “enzyme functions in the fish might indicate what it does in the human,” says Lyons. So if Carboxypeptidase-O shows up in a zebrafish’s intestine, researchers know where to begin looking for that same enzyme in humans.

#### IN THE LAB AT ANDREWS

Lyons is in the process of setting up Andrews’ labs to do this kind of genetic work on zebrafish. Zebrafish are quite finicky, and require well-controlled temperature, light and clean water, in addition to a defined night and day cycle. So the zebrafish research is on hold while he sets up the proper equipment. The tank in the back is just to see if his zebrafish can produce the quantity of embryos he will need—and they’re also fun to watch.

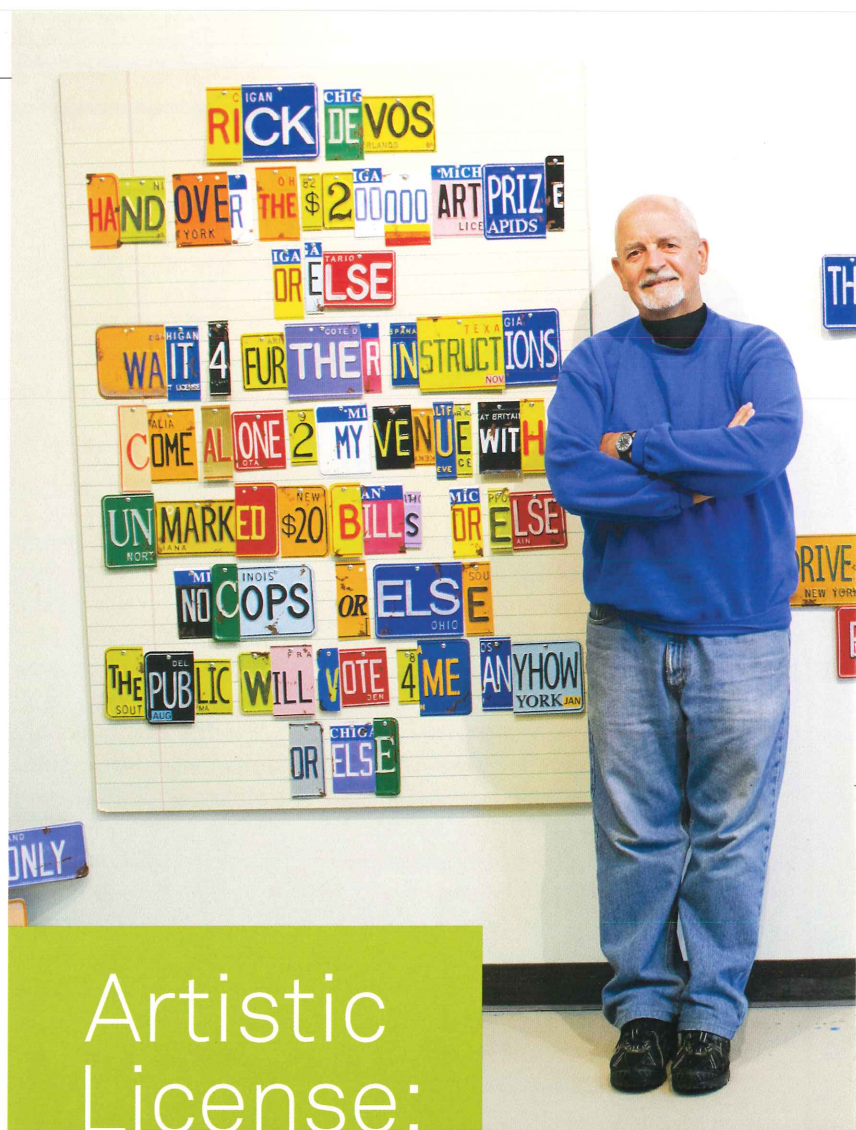
Once he gets the zebrafish installed in their research tanks, he’ll begin collecting their embryos. Under a dissecting microscope, he inserts a gene encoding a modified carboxypeptidase enzyme into the embryo with a fine-tipped glass capillary to create what will become a transgenic zebrafish. Transgenic zebrafish, modified to express a fluorescent gene, are sold as “glofish” in pet stores. Lyons is doing something similar, but his fish express effects of modified carboxypeptidases rather than fluorescence.

At the moment, he’s having some problems with his fish. Every morning, he puts them into a tank with a slotted bottom to separate out their eggs. Zebrafish will eat their eggs if they aren’t removed from the tank just after birth, and Lyons’ fish are managing to get through the slots and eat all the embryos. “I need a finer filter,” he says ruefully, looking at the complacent little cannibals.

Once the lab is up and running, Lyons can begin investigating physical expressions of mutated carboxypeptidase. In the meantime, he’s doing his experiments on his cell lines. A cell line is a group of cells that “have been immortalized—in theory,” says Lyons. His cells, all genetically identical, can be stored indefinitely and reproduced in petri dishes. For some kinds of genetic research, “it’s easier to look at a single cell type in a dish rather than a whole organism,” he says.

The open-endedness of his research has always excited Lyons. “There’s no end to the ideas. I have seemingly limitless ideas of things we could do with the cell-culture system, and transgenic zebrafish available on the market, but there is sadly an end to the money and hands to pursue it,” he says. Thankfully, Andrews is able to help with some of that: Lyons has been assisted by several biology students over the past year, and is optimistic about Andrews’ lab capabilities. “The biology department is set up really well for this kind of research,” he says. “We can pretty easily support the research I do—not all of it requires fancy equipment, and the high-tech stuff is often outsourced to larger laboratories.”

Lyons’ research has also earned him funding from several sources, including the Natural Sciences and Engineering Research Council of Canada, the National Institute of Health, and the neuroscience nonprofit The Grass Foundation.



## Artistic License:

### *The Colorful World of Greg Constantine*

**Greg Constantine is working on a ransom note. A very big one, with very specific demands.**

*Rick DeVos—hand over the \$200,000 ArtPrize or else—wait 4 further instructions—come alone 2 my venue with unmarked \$20 bills or else—no cops or else—the public will vote 4 me anyhow or else*

It’s his submission for this September’s ArtPrize exhibition in Grand Rapids, Mich., and the seasoned ArtPrize participant has gotten to the heart of the competition: “Why else do so many curious people fill the streets of Grand Rapids to observe and enjoy the art buzz? Why else would I be so open and transparent about my motives?” he says in his tongue-in-cheek artist statement. “I believe the voting public will understand. However, if Rick DeVos or the FBI take this too seriously, I’m in trouble.”

Self-referential, clever, and sometimes outrageous, Greg Constantine, emeritus research professor of art and artist-in-residence, has made a career of helping people think about art differently. His three

children's books and three humorous "trade books" envision the great artists—and some lesser-known ones like Artemesia Gentileschi and Giotto—on a much more relatable scale. Little Seurat, for example, got measles and was forever fascinated with spots; Picasso goes to Chicago and everything looks slightly twisted.

His most recent series, "Poetic Licenses," revisits a concept from 30 years ago and expands on it in humorous ways. In the 1980s, he created "Artist Licenses," a series of vanity plates for artists, that display their signature style—Christo's was wrapped in plastic; Dali's plate half-melted; Pollock's covered in paint splatters. They were a hit when exhibited in New York. Thirty years later, he had some leftover materials and was thinking about vanity license plates. They're a very consciously public medium, and so are used to say funny or semi-philosophical things about their drivers. Artists, too, are known for saying things as well as making them, and a quick search on the Internet will give you pages of artist quips, many of them wry or witty. Constantine began using the license plates to spell out famous and funny quotes, and quickly had a series of about 45 quotes.

Many of the quotes he uses are from mod-

"My motto has been never to say no to myself—I'll let someone else do that. I've gotten plenty of noes, but I've also gotten some yeses."

ern artists—Picasso is a particular favorite of his, famous for saying things like "Good artists borrow; great artists steal" and "When I haven't any blue I use red." Andy Warhol has contributed to the series as well—his famous statement "In the future, everybody will be world-famous for 15 minutes" fits rather too well with the idea of vanity plates.

To create the pieces, Constantine uses a vacuum-former to melt plastic over a series of moveable letters and numbers, reminiscent of the Gutenberg printing presses. He then paints the plates and proceeds to make them look used, painting rust on them, distressing or melting them, and even adding bullet holes—which he quickly notes "aren't real."

The plates are incredibly realistic—they fool many of Constantine's viewers at first glance. "The most common question I get is, 'Where did you get all these plates?' I usually

say, 'I have friends all over the world that send them to me,'" he jokes. He then goes on to explain that he handcrafts each one, which usually clears up the confusion and leaves the viewer with a greater appreciation for the pieces.

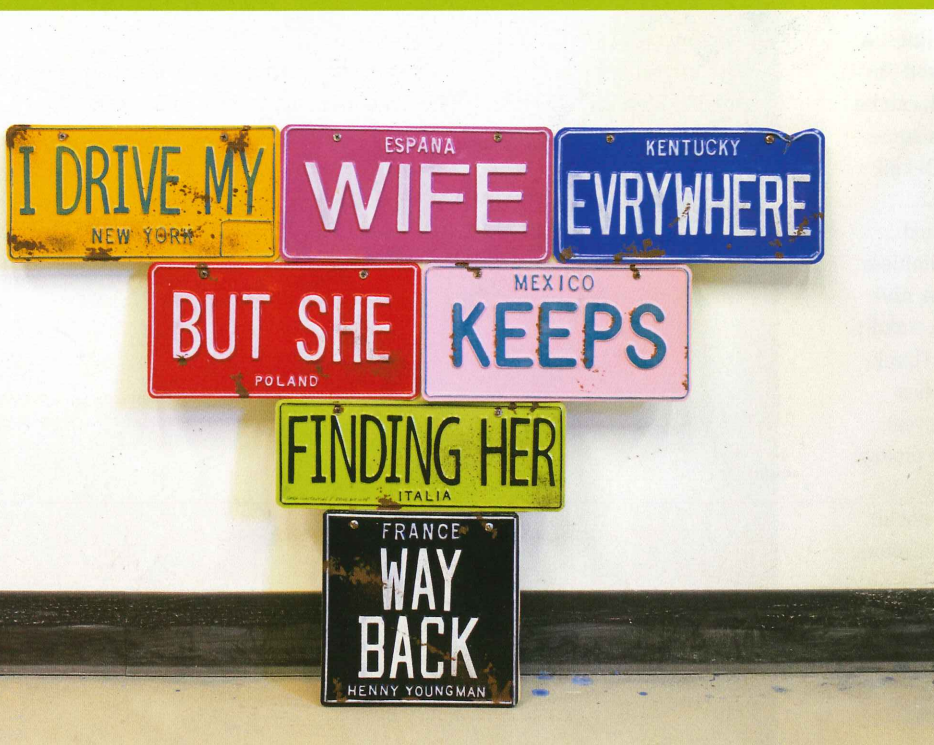
After creating the artist quotes, Constantine moved on to famous quips from movies: "Badges? We don't need no stinkin' badges." The vanity plates of film, the quotes he's chosen stick in our minds and sneak into our conversation. Most recently, he's begun a license-plate series of quotes about cars, including this gem from Henry Youngman: "I drive my wife everywhere but she keeps finding her way back."

"I have more ideas than I have time to create them," he says. His many works over the years have been about seeing "old" art in new ways. He regularly exhibits in New York City and Chicago, and is an active participant in local art exhibitions and contests. "My motto has been never to say no to myself—I'll let someone else do that. I've gotten plenty of noes, but I've also gotten some yeses."

And whether or not he places or gets arrested at ArtPrize, Constantine loves the art awareness that the annual citywide exhibition generates. During the three-week exhibition, people from all over wander around the city, peek into museums and other venues, and have opinions about art. Last year, he waited two hours in line to see the prizewinner. "I was standing in line with Mr. and Mrs. Joe Blow in bib overalls, and they were curious—they'd probably never been to the museum before." The exhibitions draw huge crowds, and get comprehensive coverage in local media.

He's currently searching for inspiration for future projects. "I kind of like this ransom note thing," he says without a hint of a smile, revealing nothing about any questionable possible career intentions.

If you want to see this year's ArtPrize submission before it's impounded as evidence, Constantine's piece will hang in the Ford Museum in Grand Rapids. ArtPrize runs from September 18 to October 6, 2013. A full listing of events and participating locations is available at [www.artprize.org](http://www.artprize.org).





## Investigating the Eurozone: Policy, Politics and a Fulbright

For a political science professor with an interest in European politics, nothing could be more exciting than traveling to Germany right in the middle of the Eurozone crisis. That's exactly what Marcella Myers did when she received a Fulbright Scholarship to attend a German studies seminar in June 2012.

Myers and an interdisciplinary group of American scholars traveled to Berlin for a 10-day German studies seminar organized by the Fulbright Institute of International Education. Most of their time was spent in Berlin, discussing the viability of the European Union, the shifting nature of European identity, and some of the monetary issues facing the European Union. Myers and her colleagues also visited Brussels, Belgium, to speak with politicians, representatives, academics and reporters on the issues facing European countries.

Myers first heard about the German studies seminar through her professor at Western Michigan University, who had participated in the summer seminar in 2011. In addition to semester- or year-long programs for students,

**“I’m very interested in issues of inequality, particularly in terms of economics, wage inequality, and income inequality.”**

Fulbright Program runs short-term summer seminars for professors, one of which caught Myers’ eye in the catalog. She contacted her professor, who advised her on the application process.

One stipulation of the seminar was that the participants needed to provide evidence of dissemination. Myers taught a class in comparative politics in fall 2012 which allowed her to incorporate much of what she learned, she says, “and the Fulbright group put together a proposal for the German Studies Review (published by the German Studies Association). Each of us wrote a short essay about the European Union crisis in Germany, which served as evidence of dissemination.”

As higher education continues to excise German language and literature programs, Fulbright’s German seminars aim to keep an interest in Germany alive among academics. Given the recent prominence of Germany and the rest of Europe in the news, “for better or worse, it was great timing to be there, in the middle of the financial crisis and as they negotiated the European Stability Mechanism (ESM),” says Myers. “We spent a lot more time discussing monetary issues and the future of the European Union than we did talking about European identity.”

For the last four days of the trip, the Fulbright scholars spent their time in Brussels, meeting representatives from EU countries, states and interest groups. “We talked a lot about how European identity developed, and how it’s possible for Europeans to create a

**Above, from left clockwise:** Brussels Town Hall is located on the famous Grand Place in Brussels; the Stasi files in Berlin, Germany; the European Commission building in Brussels, Belgium

common identity,” says Myers. “The sense we got from the politicians, academics and reporters we talked to was that no matter how bad the crisis was, the European Union was here to stay,” she says. In general, the European Union is moving towards further integration, although there are some problems along the way.

One question on academics’ minds is whether or not Europeans identify as Europeans or as citizens of their respective countries: “What’s been happening in the last 10 years or so is that people are identifying less with their national governments and more with their regional governments—so in a way it compounds the identity problem,” she says. How do you get people to think of themselves as Europeans rather than Berliners or Dubliners?

“It was very eye-opening to sit there and talk with people who are trying to navigate

identity, policy and crises, and to get their perspective,” says Myers. For example, the group asked a representative from Ireland why Ireland



Marcella Myers

hadn't yet signed the Schengen Agreement, which allows for the free movement of people across borders within member states. He said, "We would love to, but that would cause us a problem with the United Kingdom [which has not yet signed] so we probably are never going to." It makes you think about the complexities of the European Union, and changes how you view the EU a bit.

Myers' time in Germany has also influenced her other research projects, one of which is a paper for the Midwest Political Science Association that examines the effects of privatization of the National Health Service in the United Kingdom. "In some ways it's an extension of the discussion about austerity measures," she says. "When people start talking about austerity measures, they often start looking for private solutions to public problems, and there's high pressure to contract out government services." What happens when a country runs long-term private contracts like those of the National Health Service, Myers says, is that the money usually ends up in private hands, thus contributing to income inequality.

Public policy, the system of environmental, housing, educational, welfare and healthcare policies that provide for the public good, has interested Myers since her graduate studies at Western Michigan University. "I'm very interested in issues of inequality, particularly in terms of economics, wage inequality, and income inequality. I think if we as scholars understand those things better, then hopefully we can educate people to understand them," she says. "It's very easy as an academic to write to your field, but if you can write in a way that non-specialists understand what you're talking about and educate students to understand the real consequences of policy choices, then you can really make a change.

## Andrews Hosts Human Subjects Research Conference

**In November 2012, Andrews University hosted the first Conference of Seventh-day Adventist Human-Subject Researchers, titled "Towards New Horizons in Adventist Research." About 50 attendees from Andrews University and other Adventist universities gathered for two days on Andrews' campus for a number of presentations in fields including psychology, sociology, Christian leadership and informatics.**



The conference was sponsored by the General Conference of Seventh-day Adventists' Office of Archives, Statistics & Research and organized with the help of Andrews University's Office of Research & Creative Scholarship. The General Conference has commissioned several research projects in the past, but this conference marked the first GC-sponsored partnership with Adventist researchers around the world. Many of the projects presented focused on describing the behavior of Adventist youth populations, global church communities, or pastoral families. These projects can provide valuable data for the General Conference, and can help them institute new

policies or modify existing ones to promote the wellbeing of their members.

The General Conference of Seventh-day Adventists funded many of the researchers who presented, a "validation that what we're doing is important," says David Sedlacek, professor of family ministry and discipleship and director of masters' programs in the Seventh-day Adventist Theological Seminary. Sedlacek presented the preliminary results of his own study, titled "Role Demands, Family Stressors, and Strategies for the Alleviation of Stressors in Pastors' Families." His research has immediate applications to how the church cares for its pastors—his study reported a high rate of depression, anxiety, addictive practices, loneliness and isolation in Seventh-day Adventist pastors and their families. With new interest in Adventist researchers' work, trends like those Sedlacek has observed can be counteracted. "Our research provides a systematic way to make evidence-based changes, and to create best practices for the church," says Sedlacek.

Alina Baltazar, director of the Center for Substance Abuse Education and Master of Social Work program director, also presented the preliminary results of her research, which investigates the reasons for participating—or not participating—in typical risk behaviors. [See "The Adventist Advantage: The Health Risk Study and Adventist Influence" on page 3.]

Conference attendees reported being inspired by the chance to connect with other Adventist colleagues and discover a network of Adventist researchers, and were "happy to know that their research is becoming a basis for church policy and decision-making," says Galina Steele, research and program evaluation assistant in the Office of Archives, Statistics & Research.

A second conference has been planned for November 2013, to be held at the General Conference Headquarters in Silver Spring, Md. Its focus is "Discipling, Retaining & Reclaiming: Summit on Nurture and Retention," and will include Adventist scholars, church leaders, and representatives from all 13 world divisions of the church.

## Fernando L. Canale

### Religion & Theology

Fernando Canale, emeritus professor of theology and philosophy, joined the Department of Theology & Christian Philosophy at the Seminary in 1985.

Considered by many colleagues as a pioneer Adventist philosopher, Fernando has dedicated his academic career to explaining how good biblical and philosophical principles are crucial to support Adventist doctrines and beliefs.

Before coming to Andrews, Canale worked as an instructor and then professor at River Plate Adventist College in Argentina, as well as a pastor for the Uruguay and Central Argentine Conferences.

He has published six scholarly books—three of which have been translated into other languages—and authored 49 scholarly articles in journals including *Andrews University Seminary Studies*, *Evangelical Quarterly*, and the *Journal of the Adventist Theological Society*. Fernando is a member of the Adventist Theological Society, Evangelical Theological Society, and American Academy of Religion.

With other colleagues he has recently established the Sola Scriptura Research Group, dedicated to assisting the Seventh-day Adventist Church in the development of a methodology for its theological work. Fernando's desire and dream is to provide the church with a desperately needed and useful tool for the study of theology.

## Winston Craig

### Pure & Applied Sciences

Winston Craig, professor of nutrition and chair of the Department of Nutrition & Wellness, has taught at Andrews University since 1987.

Under his leadership the department has grown considerably. Craig also directs the dietetics internship program. He is a registered dietitian and holds membership in the American College of Nutrition, the American Society of Nutrition Sciences, the American Dietetic Association and Sigma Xi.

Winston has authored 20 articles for scholarly journals and more than 225 nutrition articles for health publications. He is a regular contributor to *Vibrant Life Magazine* and the *Lake Union Herald* and has written seven chapters for various nutrition books. In 2009, he coauthored the American Dietetics Association position paper on vegetarian diets. He is a regular speaker at national and international nutrition conferences. His research interests include the health-promoting properties of phytochemicals, the role of plant-based diet in preventing chronic diseases, and the disease-preventing properties of herbs and spices.

Before coming to Andrews University he was a faculty member at Loma Linda University, California and at the University of Massachusetts in Amherst.

## Tevni Grajales

### Arts, Humanities & Education

Tevni Grajales Guerra is professor of research and statistical methodology in the School of Education and has taught at Andrews University since 2006.

Prior to teaching at Andrews, Grajales worked as secretary of the Panama Conference of Seventh-day Adventists from 1980 to 1983. He has also worked as the educational supervisor, lay activities director and ADRA director for the Central American Union, and served as president of Central American Adventist University until 1995, when he became the Educational and Research Center Director for Montemorelos University in Mexico, where he worked until 2006.

Grajales has made a reputation as a prolific scholar both in Spanish and in English. He has written five books and has a sixth forthcoming. His many articles have been published in Spanish-language journals such as *Revista Internacional de Estudios en Educacion* and *Enfoques*, and he has given presentations at conferences around the world. He serves as the statistician on several Andrews-run health and wellness research projects, including the walnut study of 2011 and

a recent publication, "Food Safety Attitudes of College Students," published in 2013. He recently authored an article in the *Journal of Research on Christian Education* entitled "Christian Education in Chile: Seventh-day Adventist System at Risk?" Grajales is also a member of the American Educational Research Association and the National Educational Council.

Grajales has a reputation for being a very patient and knowledgeable professor who makes graduate-level statistics understandable rather than intimidating. One student says he exudes "an excitement for his subject and advocacy that statistics can be conquered."

He won first place in the State Contest of Health Research of Mexico in 2003 and 2004, as well as the Juliaca City Medal awarded in 1999, and several other honorary awards.

## Øystein LaBianca

### Professional Programs

Øystein LaBianca, professor of anthropology and associate director of the Institute of Archaeology, has taught at Andrews since 1981.

Before coming to Andrews, LaBianca worked at a number of other universities including Harvard University, Loma Linda University, Atlantic Union College, St. Mary's College in Notre Dame, Ind., and the New England Deaconess Hospital in Boston. He chaired the Department of Behavioral Sciences for

LaBianca is an active researcher, spending many of his summers in Jordan at archaeological excavation sites like Tall Hisban. He has published almost every year since 1975, completing over 100 peer-reviewed articles, one monograph and dozens of volumes edited and coedited. His work on ancient food and water systems has major implications for food systems management today. He has also published numerous articles in journals such as *Current Anthropology*, *Andrews University Seminary Studies*, *Social Work in Health Care*, and *American Journal of Archaeology*. He is a member of 12 professional organizations including the American Schools of Oriental Research (ASOR), the Archaeological Institute of America, and the Society for International Development. He has also served as a committee chair for ASOR since 2008.

LaBianca has obtained external funding for research and community service from the National Endowment for the Humanities, the McGregor Foundation, the U.S. Department of Education, and the Norwegian Academy of Sciences and Letters.

In the classroom, LaBianca encourages his students to engage in productive and innovative research, and teaches both Honors and general education courses. One student says, "His breadth of knowledge is stunning, and he inspires me to the same level of research productivity and excellence in teaching."

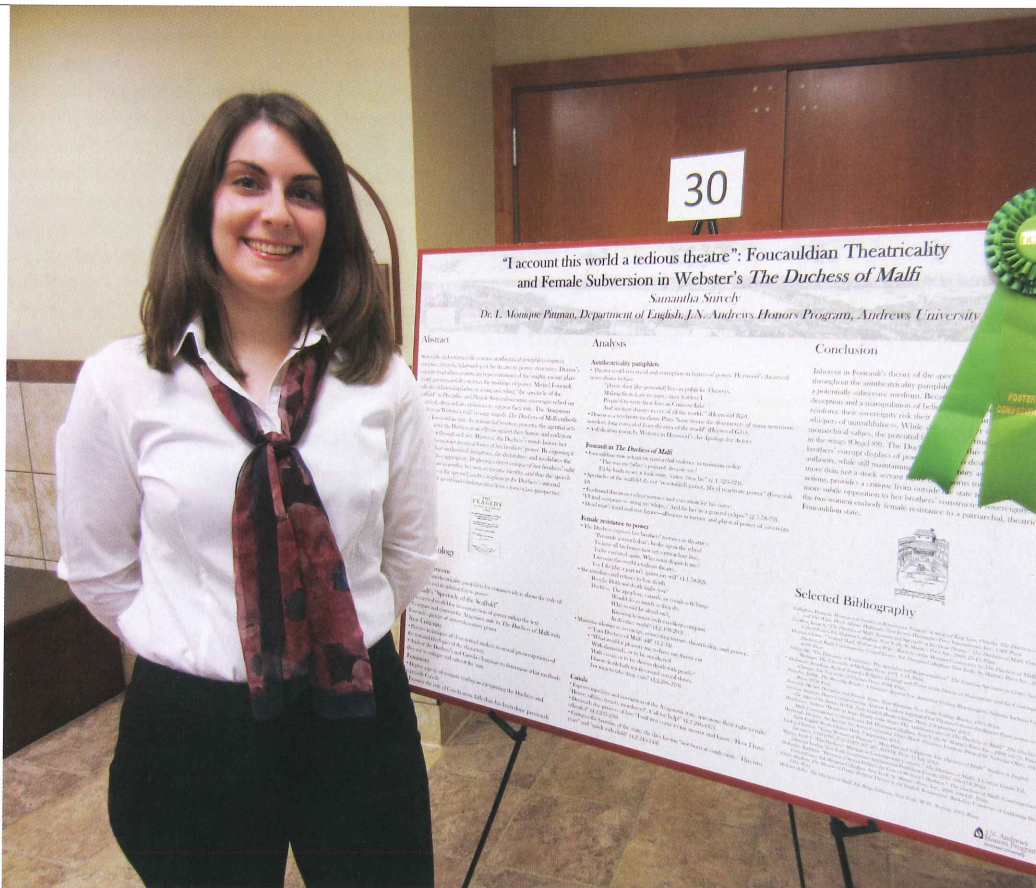
2013 Recipients, L-R: Øystein LaBianca, Fernando L. Canale, Winston Craig, Tevni Grajales



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## RESEARCH AT ANDREWS

Summer 2013, Volume 4

Samantha Snively, writer of the first four volumes of Research at Andrews, presented her senior Honors project research poster at the National Collegiate Honors Council Conference held in Boston, Mass. It won first place for Best Poster in the Arts & Humanities category.