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What is research? What is creative scholarship? In a university that is home to specialists in a variety of fields, “research” and “creative scholarship” can mean different things. But they have one thing in common: hard work. The research projects in this brochure represent hours and hours that faculty and students have spent coding tests, analyzing surveys, conducting focus groups, directing operas, visiting libraries, and performing experiments.

For Charles Reid, an Andrews’ professor of voice and artist-in-residence, creative scholarship is directing the St. Matthew Passion or producing his podcast, “This Opera Life.” Not to mention researching his role in an historical opera or working on staging for an oratorio.

Special education professor Luana Greulich has been working on a Response to Intervention (RtI) project with colleagues from across North America. She has examined the effectiveness of a dynamic RtI model, which enables children who are not responding to standard instruction to receive the level of intervention that they need.

Biologist Benjamin Navia has found his research niche in examining the auditory system of house crickets. He is able to expose a female cricket to the sound of a male cricket chirping, isolate the auditory neuron, and track the action potentials.

Architecture librarian Kathy Demsky travels to Northern Italy every summer to lead the Waldensian tour. In addition to her active research on Waldensian history, she also maintains the vast Environmental Design Research Association (EDRA) collection housed on the Andrews campus.

Duane McBride, David Sedlacek, Wendy Thompson, Alina Baltazar, Gary Hopkins and others on their interdisciplinary research team have conducted an extensive study on pastoral stress among North American pastors and their families. The results of their study have implications for pastors and their churches around the world. Using the data they collected, they are preparing recommendations for the North American Division of Seventh-day Adventists.

Chemistry professors David Randall and Ryan Hayes have documented the usefulness of spectroscopy in upper-division chemistry courses. Students in their classes who learn how to operate a spectrometer experience firsthand how scientists discover the composition of a substance.

Joel Raveloharimisy, director of the Community & International Development Program, has researched the use of contraceptives in Madagascar in an effort to understand how couples in collectivistic communities make decisions.

Perhaps Leona Running (1916–2014) best exemplifies the dedication to research here at Andrews University. Leona began her career as a professor of biblical languages in 1956, the first woman faculty member of the Seventh-day Adventist Theological Seminary. Although she retired in 1981, she continued writing and editing until a few weeks before her death. We dedicate this brochure to her and to all our faculty members who demonstrate the same spirit of excitement for continuous learning through research and creative scholarship.

Sincerely,

Gary W. Burdick
Associate Dean of Research, School of Graduate Studies & Research
Leona Running

On January 22, 2014, Andrews University lost one of its most important teachers and scholars. Leona Glidden Running, emerita professor of biblical languages, died at the age of 97. She served as professor of Semitic languages for nearly 50 years at the Andrews University Seventh-day Adventist Theological Seminary. According to Bill Shea, “Leona assisted more students in writing doctoral dissertations than any other faculty member at Andrews University.” In addition, she was a copy editor and technical assistant for the Horn Museum Newsletter, the Near East Archaeological Society Bulletin, the Hesban series, the Madaba Plains Project series, the Assyriological series, Andrews University Seminary Studies and FOCUS magazine, as well as other Andrews University publications.

Leona was born in Flint, Michigan, on August 24, 1916. She became interested in languages at an early age and majored in French and German at Emmanuel Missionary College (Andrews University), graduating as the valedictorian in 1937. She met her husband Leif (“Bud”) Running while working for the Voice of Prophecy in California where she worked as a German, Spanish and Portuguese translator. She got married in 1942, but sadly, her husband died during surgery in 1946.

She published her first book, 36 Days and a Dream, in 1950 that recounted her travel adventures in Europe. She received a Master of Arts in biblical languages from the Seventh-day Adventist Theological Seminary in Takoma Park, Maryland in 1955 and by 1956 she was appointed to a full tenure faculty position teaching Greek and Hebrew. Her second book, From Thames to the Tigris described her adventures while on a study tour where, among other things, she climbed to the top of the Great Pyramid of Giza.

In 1957, Leona was accepted into the PhD program at Johns Hopkins University. She was interviewed by the renowned biblical archaeologist William F. Albright, who sat her down and began talking to her in Spanish, switched to French, then German and finally English. By the end of the conversation, Albright told her that she had passed her entrance exam. She completed her coursework while a faculty member at Potomac and later Andrews University, graduating in 1964. Her dissertation was titled, An Investigation of the Syriac Version of Isaiah. In 1965 she returned to Johns Hopkins as Albright’s research assistant and continued to help him complete several books, chapters and articles during the summers until 1971. When Albright died, she and Noel Freedman wrote his biography, William Foxworth Albright: A 20th Century Genius.

Running received many distinguished awards during her career at Andrews University including being awarded alumnus of the year at both her high school (Adelphian Academy) and her college (Andrews University) in 1977. Among her most notable awards, she was given a medal for Women of Excellence (1983), the Weniger medal for excellence in teaching (1989), the J.N. Andrews Medallion for significant achievement in the advancement of knowledge and education (1993) and the General Conference Medallion for excellence in teaching (1997). In May 2012 she was awarded an honorary Doctor of Humane Letters from Andrews University at the age of 96, the same type of honorary degree given to William Albright.

Leona Running published her biography in 2009 titled My Journey and although she retired in 1981 she continued to teach Akkadian, Syriac and Egyptian Hieroglyph as well as edit and chair numerous dissertation committees until 2002. She will always be remembered as an inspiration and an important role model for three generations of ministers and scholars who attended Andrews University. Her wisdom and guidance will be greatly missed by the faculty, staff, students and alumni of Andrews University.

Written by Robert Bates, Institute of Archaeology research associate in Egyptology and student of Leona Running
Opera for Everyone

On the stage of the Howard Performing Arts Center on the campus of Andrews University, the story of the Passion is narrated by a tenor Evangelist as part of a performance of Bach’s “The Passion According to Matthew.” A choir plays both the part of the mocking crowd and the sympathetic followers, loudly calling for his crucifixion in one moment and mourning his impending death the next. The props are sparse: only one wooden beam is used as the cross. Jesus is dressed in pants and the Evangelist is wearing jeans. The choir members are likewise dressed in 21st century garb.

Charles Reid, associate professor of voice, coordinator for voice studies in the Department of Music, and artist-in-residence, directed the production. Reid, who joined the Andrews faculty after many years of experience on the stage, translated the Passion from the original German into common American English with help from undergraduate Aleks Kravig in an effort to make the piece more accessible. “We wanted this story to be as relatable as possible. Jesus didn’t get dressed up to be Jesus,” he said in a pre-performance roundtable.

For his part, Reid is very aware of the relevance and relatability of oratorio and opera. His career includes performances ranging from the sacred to secular at the Metropolitan Opera, San Francisco Opera, Theater an der Wien, and the Frankfurt Opera (www.charles-reid.com/).

Reid began his formal music education at Houston Baptist University as a college student where he fell in love with “classical” music, particularly art song and the music of Benjamin Britten. After college, Reid attended the University of Maryland for graduate studies in opera performance.

For Reid, opera is unique as a live art form. “Hearing the human voice exposed without amplification, accompanied by a huge orchestra and performed on stage with beautiful sets is a new experience for someone who has never been to an opera before,” he says animatedly. “It’s theater without mics.”

Besides his vocal capabilities, Reid is an excellent actor. That’s a good thing, since staging is an important part of opera. Each opera requires several weeks of rehearsals just for staging purposes in addition to the many weeks spent memorizing parts. If the opera is a historical piece, extra time may be required for research since, as Reid exclaims, “you would be a fool not to research about the real guy!”

Reid takes the characters he plays very seriously. “I have to be able to feel like I can be honest in the role,” he says. He has no problems with the characters having flaws or imperfections. “All characters are flawed,” he says, “including biblical characters.” The larger question for Reid is whether or not he can walk in the shoes of a character with integrity. “There are some roles that I have tried where I spent the whole time feeling like an imposter,” he admits.

While the music and the stories of opera are a natural draw for Reid, the production aspect of opera seems to be a particular source of excitement. Opera “requires a huge number of people,” he says. “Behind the scenes you have set builders, designers, costumers, lighting engineers, makeup people and directors, in addition to the people you see on the set.” The audience never sees most of the 500–600 people required to put on an opera.

Reid recognizes that people might feel that opera is intimidating, so in 2011 he started his own podcast, “This Opera Life” (http://thisoperalife.charles-reid.com/), in which he interviews internationally recognized musicians and conductors. The podcast helps to demystify opera, and those who perform it, and serves as an excellent resource for up-and-coming musicians.

Since coming to Andrews, Reid has expanded his list of skills to include director and teacher. He directed his first opera, “The Bremen Town Musicians,” last year and the oratorio, “The Passion According to Matthew,” this past spring. For advice, he turned to some of the directors he had worked
with in the past. “They said follow your instincts. Be organized. If you call a rehearsal, actually use the people you called. Tell them in advance what they are going to rehearse so they can be prepared,” he remembers. “And those tips worked out really well.”

As a teacher, Reid uses his own experience in the field to help his students understand the joys and challenges of being a musician. “I think that my being active in the performance field makes me a much more valuable addition to the faculty,” he says enthusiastically. “It is a constant source of inspiration in my teaching.” Reid also has contacts in most of the major opera companies and when his students go to a performance, they are often able to meet the cast backstage.

Reid plans to scale back from working with opera and focus on doing concert work, which involves less rehearsal time. This will enable him to spend more time on campus and at home with his wife, Julie, and their children. Julie is a mezzo-soprano and has performed on numerous occasions with her husband. They have already performed once together since moving to Andrews in an evening celebrating the centennial of Benjamin Britten’s birth.

Reid is now gearing up for a busy year at Andrews. In addition to performing “love songs” with his wife, he will prepare a fall Christmas concert and direct “An Evening at the Opera,” which will include a selection of opera scenes performed by his students. Reid’s goal is to encourage students to discover their vocal talents and to mentor them, whether they decide to pursue a career in voice or not. He also hopes to broaden his students’ understanding of God in relationship to the art of music. For Reid, the amazing compositions that he performs and directs are “God-breathed” and should not be dismissed solely as “secular works” just because they were composed for a concert hall or theater. “I see art as art, whether it’s oratorio or opera,” he says. “And I hope that the generations of students who work with me will leave with a broader understanding of God and music.”

Response to Intervention in Elementary Schools

The kindergartners sat at their desks, writing as many lowercase letters of the alphabet as they could in one minute without erasing. This was not a contest. When the students were finished, researchers took their work and coded it.

This is an example of one of the many assessments administered by Luana Greulich, her lead professor, Stephanie Al Otaiba, and a group of other researchers from Florida State University (FSU)/Florida Center for Reading Research. Their research was part of a five-year Response to Intervention (RtI) project funded by a grant from the National Institute of Child Health and Development that began at Kindergarten and followed students into third grade.

The grant was given to five different research centers throughout the United States and funded projects in Response to Intervention, twin studies, dyslexia, learning disabilities and other areas of education. Greulich, who has since moved to Andrews University and is now associate professor in the Department of Graduate Psychology & Counseling and the Special Education program director, worked at the Florida Center for Reading Research along with other graduate researchers in the area of reading.

RtI is a fluid model in which public school children who are doing poorly in reading or math are moved from the basic tier of general instruction to higher tiers of additional instruction, or intervention. Students in Tier 2, for example, receive 90 minutes of basic instruction (at Tier 1) with the rest of their classmates and an additional 30-45 minutes of tailored instruction twice a week (Tier 2). If students continue to struggle they are moved to Tier 3, in which they receive 45 minutes of additional instruction four-five times a week.

Children who do not respond to intervention are called “non-responders” and are considered to be “at-risk.”

The study performed a randomized controlled trial in which two groups of students received intervention: the regular treatment group, who went through the typical 1-2-3 model; and the dynamic group, who went directly into the indicated tier in August and moved either up or down the tiers during the school year as necessary, versus the typical RtI model of moving sequentially through the tiers.

Children who do not respond to intervention are called “non-responders” and are considered to be “at-risk.”

Typically, students are required to go sequentially through Tier 1 and Tier 2 in order to reach Tier 3. This can take some time, and students who would have benefited from Tier 3 instruction in August may not reach Tier 3 until April. The purpose of this study was to identify the non-responders and see how they performed if they were placed directly into the indicated tier in August and moved either up or down the tiers. The study followed more than 500 children in 34 classes across ten schools in Florida. The 90-minute Language Arts instruction was videotaped and coded for quality and the amounts of instruction that each child received in each area of reading. The types of instruction received (code-focused instruction and meaning-focused instruction...
paired with teacher/student directed or student directed instruction) were recorded across the five main areas of reading. The instruction was shown to be of consistently high quality to rule out the possibility that students were being identified as “at-risk” due to poor instruction.

The students were assessed for their needs and then separated by criteria based on prior research into the appropriate tier according to either the typical or dynamic model. The instruction in the Tier 2 and 3 intervention groups was also videotaped and coded for quality to measure fidelity of instruction. The research team routinely assessed students as the school year continued.

Greulich met with administrators on a regular basis to go over data from the assessments and intervention sessions. Once it was clear that students were not progressing, she worked with the administration to get the children into a referral system where they were assessed for special education services. Typically, children with learning difficulties do not receive services until the 3rd or 4th grade, by which time many will have developed avoidance behaviors. In a follow-up study, Greulich examined the behavior exhibited during intervention sessions of “at-risk” students. A surprising result was that marginal non-responders exhibited avoidance behaviors (such as shame, hopelessness and anxiety) to a much greater extent than the very low non-responders.

In 2004, the reauthorization of the Individuals with Disabilities Education Improvement Act (IDEA) mandated that public schools identify children who may have disabilities or be in need of special education services. This has sparked widespread use of Response to Intervention programs that start at the kindergarten and 1st grade level. RtI has been implemented at all grade levels, including high school, but the RtI needs are quite distinct at these different levels. Currently, there is no consistent criteria that is used for RtI. Researchers are trying to develop an assessment system that is consistent across the board and takes into consideration the differences between elementary and secondary needs with RtI.

The data collection was completed in 2012, and Greulich and her colleagues have shifted their focus to publishing their results. Since 2007, the research group has published 16 articles in journals such as Reading and Writing: An Interdisciplinary Journal, Journal of Learning Disabilities, Exceptional Children and Early Childhood Research Quarterly. While most of the research team has moved on from Florida State, they have been able to continue collaborating thanks to email and Skype. The study has been extended for another five years to follow these students longitudinally to assess their writing skill development, under the direction of the principal investigator, Dr. Young Suk-Kim.

Greulich is continuing her research interests with RtI and following up with Young-Suk Kim to extend Greulich’s dissertation that was just published in Journal of Learning Disabilities in a special two-part RtI edition. Locally, Greulich is now working with the Berrien Regional Education Service Agency (RESA) to provide quality field experience for her special education courses working with students of all disabilities in the surrounding school systems. Greulich also hopes to work with the Berrien Springs School System, which has a unique special education population. Sixteen different languages are spoken in the Mars and Sylvester Elementary Schools of Berrien Springs, and Greulich wants to know how this impacts the special education and English language learners. “We have a lot of students who come to the school that might appear to need special education, when in fact English is their second language,” she says.

In the future, Greulich would like to establish a research center at Andrews University that would attract grants and implement significant changes in the community. “It could be a center where our graduate students could come and learn how to do research in a way that would set them up for a doctorate,” she says. One of the main goals of her research projects is to give back to the teachers, providing them with fresh ideas for instruction and piloting programs for the students. “That’s what I appreciated about our grant,” she says, “we were out with the teachers and the students working together.”

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Luana Greulich

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**Cricket to Cricket**

**Cricket Calling Songs and Neuronal Behavior**

Thousands of crickets have lived and died in the Andrews University Department of Biology. If one were to stand still in Price Hall and hear the high chirp of a cricket, it is probably not a stray, outdoor cricket lost in the maze of biology classrooms and offices. In all likelihood, it is a lab cricket that has ventured outside of the plastic bin where it was raised.

Every Tuesday, a new shipment of *Acheta domestica*, also known as the house cricket, arrives from Flikker’s Cricket Farm in Louisiana. The crickets are placed in a temperature- and light-controlled chamber until they have molted. A student, or “cricketeer” as the undergraduate cricket researchers call themselves, then examines the newly-molted insects and picks out the females, which are easy to spot because of the long ovipositor, or egg-laying organ, that extends from their abdomen. The females are placed in separate bins until the researchers are ready to begin an experiment.

As an Andrews biology professor, John Stout first started researching cricket behavior in the 1970s. In the 1980s, the research focus was expanded to include the neurophysiology of the crickets. The research continued to grow as faculty members Gordon Atkins and David Mbungu became interested in the project.

More than 30 journal articles have been published by the research group in journals such as the *Journal of Comparative Physiology A, Physiological Entomology* and the *Journal of Experimental Zoology*. Since Stout began his research, the main focus has been to understand the auditory system of crickets. While his research has been primarily concerned with female crickets, David Mbungu has begun working...
Crickets exhibit acoustic communication. In other words, male crickets chirp a specific kind of calling song to attract females. The song has a set of syllables for each chirp and females respond to the song by moving in the direction of the sound in what is called "phonotactic behavior." The fact that they are able to respond to sound (phonotaxis) means that they have a nervous system. The nervous system is simple, nothing as complex as the human nervous system which contains somewhere around 85 billion neurons. Whereas a single human neuron cannot easily be examined, researchers can study a single cricket auditory neuron. This "enables us to perform meaningful experiments when attempting to study and describe a nervous system," says Navia.

The goal of Navia's research is to understand the underlying neuronal mechanisms that allow female crickets to respond to a specific calling song. A female responds to a male calling song by walking towards it, which is observable. However, not all females respond positively, indicating that there is a preference in the quality of the song. Crickets' "ears," or tympanic membranes, are on their two front legs. They walk toward a sound in a zigzag motion, rather than in a straight line, depending on which leg picks up more sound. Navia, and the undergraduate students who work with him, can track the movement by placing a cricket on a specially made "cricket treadmill." The cricket's back is attached to a small rod with a bit of wax. It is then placed on a foam ball that rotates as the cricket moves. Sensors detect the movement and track it on a computer program. A speaker in front of the ball plays a computerized calling song composed of three chirps, which the female cricket then responds to.

If the female responds by walking toward the sound, she is then placed tummy up on a block of wax. Using a microscope, Navia or a student researcher finds the auditory nerve and attaches a suction electrode to it, close to the neuron. The calling song is played again and a computer records the neuronal response. "It was initially thought that cricket phonotaxis was a fixed behavior," says Navia, "in other words, that the female cricket would always respond the same way to the calling song of a male." But there is variability in the behavior and recent studies have shown that female crickets do not always respond in the same manner. "Some females are very selective in terms of what call they respond to within that range of variation, while others tend to be more unselective and may respond to a wider spectrum of calls. A third group may only respond to calls that fall on either end of the range." This variation is called "phonotactic plasticity" and is likely regulated hormonally and neuronally.

A 2010 article by Stout, Navia, Atkins and others in Physiological Entomology concluded that age contributes to a reduction in syllable period selectiveness.

Navia is currently studying the role of the L3 auditory neuron in cricket phonotaxis. His experiments so far have demonstrated that the neuronal response is more positive when the three-chirp calling song has a period of 50–70 milliseconds between syllables. While the crickets still respond when the period time is lengthened or shortened, the specific range of 50–70 ms provokes the most significant response.

Navia tracks the responses in histogram software, which enables him to see where the greatest number of spikes in neuronal activity occurs. If the syllable period is longer or shorter than 50–70 ms, the number of spikes remains the same for all three syllables within the chirp. If the syllable period is 50–70 ms, the first syllable elicits the greatest number of spikes and steadily decreases for each following syllable within that chirp.

The results will soon be submitted for publication in a manuscript that Navia is working on titled "Selective Processing by the L3 Prothoracic Auditory Interneuron in Response to Model Calls in the Cricket Acheta domestica."
High up in the mountains of Northern Italy, nestled in the Piedmont Valleys, are the settlements and ancient structures of the Waldensian people. In early June, students from Andrews University can be seen wandering around the ancient complexes that rest on the slopes and valleys of the Cottian Alps, sketching the simple architecture of the devout Waldensian people.

The modern Waldenses are descended from Italian refugees who were forced to flee from their homes for preaching the gospel. The ancient Waldenses had apostolic roots and emphasized simplicity and poverty in their daily life. They rejected a number of prominent Catholic teachings and were consequently persecuted. To escape the persecution, many fled to the wild mountains and valleys of Northern Italy, where a Waldensian community still survives today.

While much of their history has been obscured by conflicting accounts and many of their early historical documents have been destroyed, some records of their origins remain. Records from the Inquisition and other sources confirm the pure and simple Christian lifestyle that they sacrificed their lives for.

Professor Kathleen Demsky, director of the Architecture Resource Center (ARC), began leading the Waldensian tour in the late 1990s after she traveled to Italy to visit a friend. During her trip, she became convinced that the Andrews University architecture program would benefit from a study abroad opportunity, in which students could experience firsthand the grand architecture and history of Europe.

“I kept bringing up the idea of a study tour in faculty meeting,” Demsky explains, “and finally, Lew Seibold, who was then the director of the Division of Architecture, agreed. He had received a research grant and he sent me to Northern Italy to develop a plan for a new study tour.”

Demsky spent a month in Italy with her husband, making arrangements. However, as her planning for the tour took shape, Demsky sought to provide some kind of contrast to the richly ornamented buildings of Rome and Milan. “And then it came to me,” Demsky describes excitedly, “Waldensian history! That’s right here in Italy.”

Demsky returned from Italy and checked out all the books concerning the Waldenses that could be found in the stacks at James White Library. Her research and planning eventually led to the curriculum and syllabus for the first tour. For the inaugural tour, she arranged for a pastor from Rome to come to Villa Aurora for six weeks and teach the students about Waldensian history. The tour then continued, with Demsky, up to the Piedmont Valleys.

Demsky now teaches the students herself. She has visited two of the three repositories of Waldensian original documents and has become a veritable expert on Waldensian history. She continues to research their history and publishes an annual “Waldensian Tour Guide,” as part of a continuing effort to spread the story of the Waldensian Christians.

Since Demsky’s first tour, the Europe architecture trip has been split into two tours: the Architecture Summer Abroad class, now led by Andrew von Maur, and the Waldensian tour, led by Demsky. Andrews architecture students often do the two tours back-to-back. The large cities of Europe, with their monumental and embellished architecture, provide a stark contrast with the hand-built, vernacular homes of the Waldenses, perched on the mountains of the Piedmonts.

The small, stone houses and churches built next to high mountain streams and on rocky ledges speak of an appreciation for nature, fresh air, light and color.
It was such a beautiful little church and I couldn’t ever imagine a more perfect church setting,” the student shared animatedly.

The small, stone houses and churches built next to high mountain streams and on rocky ledges speak of an appreciation for nature, fresh air, light and color. These are also things that Demsky has come to value in her work as the Custodian of the Environmental Design Research Association (EDRA) publication collection.

EDRA is an organization that began in 1968 as part of an effort to change the way architecture is designed. “It began with some ‘maverick students’ in North Carolina who thought ‘Wait a minute, architects are often building grand things to glorify the self. What about the human factor in design? How does what we build affect people?”’ Demsky explains.

Those students, and professionals like them, began to examine how people utilize buildings and are affected by them. They experimented with light, space and colors and, with the aid of behavioral and social scientists, studied how people reacted. For example, they discovered that allowing more light into classrooms increased students’ test scores, and that a patient in a well-lit hospital room recovered more quickly. “It’s a huge, huge story that just excites and fascinates me,” Demsky says enthusiastically.

Each year, Demsky and her husband pack close to 300 books into their van and drive to the annual EDRA conference where they display the latest publications on environmental design. The conference is held at a different venue each year—from the U.S. to Canada, Scotland and Mexico. Demsky inherited the collection, and the responsibility of the EDRA display, through the negotiations of Neville Clouten, former dean of architecture. In 1987, he had arranged for Andrews University to take over the annual book displays, which included purchasing the previous 18 years’ worth of books, documents and technical papers. Those books now reside with the Architecture Resource Center’s collections, along with the new, annual and curated selections of books that are presented at each EDRA conference.

Throughout the year, Demsky and her staff collect the newest publications on environmental design and related areas of focus from hundreds of publishers around the world. They are then displayed at the conference in an area where attendees can sit and read the latest research in their disciplines. “It’s the heart of the conference,” Demsky admits, “There are people who say that if the display was not there, they wouldn’t come to the conference. They discover things they wouldn’t find any other way.”

EDRA conference participants and attendees include both professors and grassroots architects. “And they just think that Andrews University is the most amazing place!” Demsky exclaims. In fact, architects travel from all over the country just to do research in the Architecture Resource Center (ARC), where they can access some of the one-of-a-kind documents and books that make up just a fraction of the expansive EDRA collection.

The ARC houses the EDRA archives as well as two rare book collections donated by Ronald Senseman, Fellow of the American Institute of Architects (AIA), and Vernon Watson, a Chicago Prairie-style architect. Watson designed the original Griggs Hall, which was built in 1938 and served as the original campus library. It later housed the Religion & Biblical Languages and International Language Studies departments before it was torn down in 2010 to make way for the new Undergraduate Learning Center: Buller Hall and Nethery Hall. The collections include rare books, photographs of architecture from the 19th century, and some of Senseman’s original drawings and sketches. Due to the volume of material, the archives are housed at another location on campus. “But,” Demsky says hopefully, “My dream is to have the vault here.”
The North American Division of the Seventh-day Adventist Church (NAD) has recently recognized the importance of academic research on the effectiveness of ministry. In particular, the NAD has become concerned about the wellbeing of its pastoral families. It is not uncommon for pastors to become burned-out after several years of pastoring and some leave the ministry altogether. The NAD-sponsored research on the causes of stress on pastors and their families is an effort to combat these trends.

In 2012, an interdisciplinary team working from Andrews University became interested in the topic of pastoral family stress. This team, based out of Andrews University, includes Social Work professors Alina Baltazar and Wendy Thompson, Behavioral Sciences professors Romulus Chelbegean, Gary Hopkins and Duane McBride, as well as David Sedlacek, professor of discipleship and family life. René Drumm, dean of the School of Social Work at Southern Adventist University, and Elaine Oliver, associate director of the Department of Family Ministries for the General Conference of Seventh-day Adventists, also joined the team. The two-year-long project was jointly funded by the NAD and Andrews University’s Office of Research & Creative Scholarship.

The study included all regions of the United States and was divided into a quantitative and a qualitative study. The quantitative study used a questionnaire based on other studies that had been completed in other Christian denominations as well as the Adventist Church. “We decided that we would use some of the survey instruments that had been used previously and that had already been validated,” explains David Sedlacek, “but we didn’t find one that really captured what we needed from what we would call a ‘challenge perspective.’ In other words, what were the challenges to pastors, their spouses, and their children? We designed that survey instrument ourselves.”

Once the surveys were developed, they were sent electronically to the NAD. The NAD then sent the surveys to the Unions who sent it on to the Conferences. The conferences contacted the pastors directly. Spouses were contacted through Donna Jackson, the ministerial spouses leader for the NAD. Pastors’ adult children were surveyed at Andrews University and Southern Adventist University. The surveys were designed to protect the confidentiality of the pastors and their families, who might have been afraid to report honestly, and did not include identifying parameters, such as the union to which they belonged. A total of 389 pastors out of 4,500 who were presumably contacted by the conferences completed the survey, along with an additional 313 spouses and 171 adult children of pastor’s families, for a total of 873 respondents.

Almost half of the pastors who responded were 50 or older, which led the team to believe that they might be the ones most concerned about pastoral stress and its effects on their lives and their families. The responses indicated that the pastors were being transparent and honest about their challenges. “There is something called ‘face validity.’ In other words, we saw things in the survey responses that the literature suggested we would see,” explains Duane McBride. Financial concerns, such as retirement benefits and the cost of college education, were highest on the list of stresses. Spiritual struggles, such as finding time for prayer and Bible study, were ranked as the second most challenging aspect of being a pastor. Political challenges were also high on the list and pastors reported stress caused by the congregation or by the conference and union.

The reported side effects of stress included depression, anxiety and addictive practices (pornography, media addiction and overeating). “One of the most fascinating things was that in almost every situation, it was the pastors’ adult children who rated the specific problem more severely,” says Sedlacek.
Seventy-one percent of the pastors’ kids and 45 percent of the pastors reported a concern about media addictions. Seventy-two percent of the kids reported struggling with unhealthy foods, compared to 61 percent of the spouses and 54 percent of the pastors.

The pastors’ adult children also reported some abuse. While the percentage was quite low, with verbal abuse being the highest percentage at 25 percent, this indicates yet another aspect of stress in the life of a pastor’s child. Typically, children do not feel that their parent’s job depends on their behavior. However, pastors’ children know that what they do may impact their parent’s career.

Children that experienced abuse indicated that it affected their spirituality, particularly the aspect of personal prayer. “One explanation is that the father, in some ways, represents God. If the father abuses the child, the child doesn’t want to have anything to do with a God who they consider to be like their abusive father,” says Sedlacek. The abuse that children experience is also related to the lack of privacy in a pastoral family. “Everything they do is in the fish bowl,” says McBride.

The qualitative studies, performed in focus groups, revealed other interesting aspects of pastoral family stress. There were three categories of focus groups with five or six groups in each category: pastoral focus groups, pastoral spouse focus groups, and pastors’ young adult kids (over 18 years). In addition, five different pastoral families (including children younger than 18) were interviewed as a group.

According to Sedlacek, pastors in the focus groups reported a “struggle to trust their local conference. There are expectations that the conference has of them, but they don’t feel that the conference has their back. Some pastors believe that conference administrators expect a lot, but do not give a lot.” However, the pastors’ children reported that it was the congregation they struggled with the most. “The congregations are demanding and demonstrate a lack of understanding,” says Alina Baltazar. “The parents tried to be understanding, but it was the congregation or the friends of the pastors’ kids who told them they shouldn’t act a certain way because they were pastors’ kids. The congregation has these high expectations for their behavior.” Pastors’ children also reported that the congregation disrupted family vacations or the pastor’s day off.

During the family interviews, participants raised the issues caused by frequent moves. Because pastors are often moved from district to district with only a few years in each place, they have difficulty maintaining friendships. The pastor’s spouse is particularly impacted because his/her job is typically not as mobile, and the children reported that it was hard for them to make new friends. In fact, Baltazar says, some of the children “held back from making new friends because they knew they would be moving in a couple of years.”

Both the quantitative and the qualitative studies attested to the loneliness of belonging to a pastoral family. Seventy-one percent of the spouses and 62 percent of the pastors said that it was difficult to maintain friendships in the congregation because of the pastor-member dynamic. “There is the sense that there is no one they can confide in,” says McBride. Some of the pastors in the focus groups noted that they are afraid to confide in their colleagues for political reasons. The only one they can confide in is their spouse. However, 71 percent of the spouses who took the survey reported that there is no one they can talk to.

Many pastors in the focus groups indicated that they did not even feel comfortable seeking counseling. “They feel like there is no culturally acceptable place for them to reach out and get help,” says Baltazar. Interestingly enough, the pastors’ children felt the same way and were comfortable talking only with other “pastor’s kids.”

Once the qualitative data is analyzed, the research group plans on synthesizing both the quantitative and qualitative data into a single report that includes specific recommendations to the Seventh-day Adventist Church. The group hopes that their report will influence the church to actively educate congregations, pastors and those in leadership positions on how a pastor and his/her family can be supported.

For example, congregations can be educated to respect the pastor’s privacy and family time. The pastors can take family or financial seminars to learn how to better handle some of the challenges they face in their work. Some of these seminars have already been instituted in the Seminary curriculum. According to Sedlacek, “the North American Division also is looking into mandating continuing education for pastors.” Instead of pastors leaving college or seminary to head out on their own, the NAD is developing a program that lasts from the beginning of a pastor’s career as a college student all the way to retirement. Church leadership, at the level of the conference, union or division, can work towards understanding that issues such as the ordination of women, homosexuality or contemporary worship music can divide churches and deeply impact the lives of pastors and their families. “I think sometimes we forget that these seemingly academic policy decisions really play out in the pew every Sabbath,” he says.

Although this study only examined pastoral families within the North American Division, it is reasonable to assume that pastors around the world experience similar stresses. The researchers hope to expand this study in the future to include other divisions of the Seventh-day Adventist Church.
Everyone loves the moments on television when crime scene investigators test a substance, point to their computers and say, “a-ha, it was arsenic.” But how did they actually know? What happened between the moment when they tested the substance and the answer flashed on their computer screen? David Randall and Ryan Hayes, professors of chemistry at Andrews University have the answer: spectroscopy!

Spectroscopy studies the interaction of light (electromagnetic radiation) with matter. The wavelengths of the light that are transmitted, absorbed or reflected are then analyzed in order to learn about the substance. “Basically, spectroscopy is a standard method for chemists and physicists to figure out the identity of materials,” explains Randall. “From an analytical chemist’s perspective, there are two domains of spectroscopy: one analyzes molecules and the other analyzes atoms.” Randall and Hayes became involved in spectroscopy as undergraduate students at Andrews University in Dwain Ford’s organic chemistry course. Randall continued using spectroscopy during his graduate work at the University of California, Davis as did Hayes, who completed his doctorate at Northwestern University.

Hayes and Randall are fascinated with finding out the makeup of materials using spectroscopic techniques. Hayes is currently researching the structure of arginine-based heterocyclic amines which are potential carcinogens created in very low quantities when plant proteins are overcooked or charred. Using UV-VIS absorbance, fluorescence, nuclear magnetic resonance (NMR) spectroscopies, Hayes and student researchers are determining the molecular structure of these potential carcinogens which have not been previously discovered and published. Hayes is also collaborating with fellow chemistry professor Desmond Murray and student researchers on the use of stilbenes as a fluorescent detector of metal ions, namely copper(II) ions. This research uses the same three spectroscopic methods listed above. Hayes has mentored students who have participated in his research projects as undergraduate research scholars and several honors theses have been produced as a result.

Randall is developing a nitric oxide (NO) sensor with student researchers in order to determine the amount of NO in a specific solvent. He is also involved in an interdisciplinary project with biology professor Peter Lyons and physics professor Brendan Cross, who are analyzing the protein folding mechanisms of carboxypeptidase O using Fourier transform infrared (FTIR) spectroscopy. Randall’s previous research projects include a spectroscopic study of enzymes that contain metal-ions using the spectroscopic methods of electron paramagnetic resonance, resonance Raman, and magnetic circular dichroism.

This enthusiasm for problem solving and analysis has spread to their teaching methods, particularly when it comes to spectroscopy. When Randall and Hayes began working at Andrews, they started utilizing a lab-built Laser Induced Breakdown Spectroscopy (LIBS) instrument that was assembled by one of Dwain Ford’s colleagues, Peter Wong (now professor emeritus of chemistry). Wong had purchased a neodymium doped yttrium aluminum garnet (Nd:YAG) laser with funds he secured from a Dreyfus Research Award (matched by Andrews University). Rather than buying a LIBS spectrometer as a dedicated unit, Wong assembled one from individual parts.

Purchasing a complete unit could cost close to $90,000. On the other hand, the cost of purchasing and assembling the readyl

"One of the things that is really excellent about Dr. Wong’s component-based instrument style is that when students leave Andrews, they actually understand how the instrument works, they aren’t just pushing buttons and operating a black box."

The spectrometer ready for action photo: David Randall
available parts from scratch costs under $30,000, a savings of $60,000. Additionally, the laser, which is the bulk of the expense, can be repurposed for other experiments and research.

According to Randall, Wong set up a model for using spectroscopy in general chemistry and upper division classes that Randall and Hayes now teach. They have continued the tradition of using the spectrometer in the classroom as a teaching tool. “Our contribution was documenting the use of spectroscopy in the classroom and putting it in a paper. Dr. Wong implemented the instrument and the labs to go with it,” says Randall.

In 2013, Hayes and Randall published an article with Peter Wong entitled “A simple LIBS spectrometer for use at multiple levels in the undergraduate chemistry curriculum” in the Journal of Chemical Education 2013, 90(4), 456–462. The main purpose of the article was to document how to put together a simple LIBS spectrometer that could be used in undergraduate classes. “It’s a template for how to set up the spectrometer yourself,” explains Randall. The article describes what parts they used to construct the spectrometer, how to conduct experiments, and how to use the module in the classroom. At a national American Chemical Society meeting, where Randall was presenting a poster on this, a faculty member from Centre College in Kentucky said that he was able to use the article to give a project to one of his students.

In addition to the cost savings and flexibility mentioned above, a modular spectrometer like the one Wong assembled teaches students how all the parts of a spectrometer work together and also gives students practice using standard research equipment. “One of the things that is really excellent about Dr. Wong’s component-based instrument style is that when students leave Andrews, they actually understand how the instrument works, they aren’t just pushing buttons and operating a black box,” he says. Students use the instrument to learn the step-by-step process of how scientists identify the elements in a sample and how the major components of the instrument work together. By using a spectrometer in the chemistry lab, “it helps to demystify how scientists figure out what is inside of something,” says Hayes.

The LIBS technique that Hayes and Randall use is a type of atomic emission spectroscopy. The nanosecond pulsed laser they use is so powerful that it produces plasma at around 10,000K (the surface of the sun is around 6,000K). This high temperature blasts and atomizes material from samples, such as a piece of Pepto-Bismol or a paint chip, which are mounted in the sample holder. The sample holder sits at the focal point of a 5.0 cm focal length lens that focuses the laser beam onto the sample. This excites the electrons in the sample, which then emit light as they return to their ground state electron orbitals. A detector integrated with a spectrometer is attached to a computer and records the spectrum of light emitted from the sample. Control software collects spectra, allowing students to observe the wavelengths of the peaks from the sample and compare them to peak wavelengths of known standards, such as elemental bismuth or lead.

“When you blast the sample with this high-powered laser, it’s so powerful that if you put in a blank card it makes a snapping sound that comes from the expansion of rapidly heated air,” says Randall. To help protect students and faculty, Hayes covers the equipment with a black cloth to make sure no light gets in or out during the experiment.

Once the equipment is set up, the whole experiment takes no more than five minutes. “Because there is minimal sample preparation, it’s a very fast way to determine what is in the sample. A limitation of our instrument is that it is not quantitative. It doesn’t tell us how much of a given element is present; only that it is present,” says Randall.

To make the class experiments interesting, Randall and Hayes have created scenarios where students play the role of forensic scientists. According to Hayes, this helps them understand that what they see in popular forensic television shows is not entirely accurate. Instead of the answer popping up on the screen, there is actually a process that scientists have to go through in order to get the answer.
Decisions on Contraceptive Use in Collectivistic Communities

The Madagascar Case

The Malagasy students had an awkward task: go to a village in the Vatovavy Fitovinany region of Madagascar and ask married couples if they used contraceptive protection. As if that wasn’t enough, they wanted to know why and how the couple decided to use it. Fortunately for the students, people were not shy about discussing their contraceptive use and a total of 756 couples completed the entire survey.

The survey was part of a project funded by MEASURE Evaluation Population and Reproductive Health (PRH) and USAID. Joel Raveloharimisy, director of the Community & International Development Program (CIDP) at Andrews University, and Kayla Piña, a CIDP graduate student at Andrews, received the grant to do research on contraceptive use in Madagascar. Because the grant only supported Madagascar-based researchers, Raveloharimisy received additional funding from the Andrews University Office of Research & Creative Scholarship for his travel to Madagascar to lead the research team.

Raveloharimisy became interested in the MEASURE Evaluation PRH program for a number of reasons. First, Madagascar was on the list of countries that MEASURE and USAID were developing programs for. This was already familiar territory for Raveloharimisy, and his knowledge of the country made research much easier. Second, Madagascar ranks very low on contraceptive use. While Raveloharimisy was not originally interested in family planning, he was interested in global health and how collectivistic communities live. “If we apply the same processes that people use in collectivistic communities to make decisions for family planning, then we should be able to understand why some people are reluctant to use contraceptive methods,” he explains. Third, he wanted to show his students how to secure a grant. “And the best way is to apply for a grant in a place that you know very well,” he says. Most of the grant application was actually written by Piña.

In collectivistic communities, the entire community is part of any decision process. If an individual wishes to make a decision, they first share their decision with their family members. The decision then becomes a group decision. “There are some things that we consider to be personal and will not share with others. But these concepts are constructs that our society creates. In a collectivist society, people have a different construct of what they consider to be personal,” says Raveloharimisy.

The purpose of the study was to understand how Malagasy couples make decisions regarding the use of contraceptives. “USAID put out the call for grant proposals because they have spent millions in that region [Vatovavy Fitovinany], but the rate of the use of contraception has never increased,” Raveloharimisy says. The Vatovavy Fitovinany region has the lowest use of contraception in the country with only six percent of the population using protection, despite the many different kinds of modern contraceptives (pills, injections, patches and condoms) that have been made available to the region by USAID. Many children die at a young age and the women are not able to spend time in the fields working because they are perpetually pregnant or breastfeeding.

For this reason, USAID hopes to increase the use of contraceptives in this area in

“In collectivistic communities, the entire community is part of any decision process.”
an effort to reduce child mortality and the various diseases women may contract as a result of early or excessive pregnancies. “My approach was to understand how they make the decisions and develop a way to educate them based on that. If they want to have children, we need to teach them how to space the pregnancies, when to start, and how many to have instead of just saying ‘Use the contraceptives and that will help you,’” says Raveloharimisy.

In order to see how Malagasy couples make decisions about contraceptive use, Raveloharimisy adapted a survey from the MEASURE sample survey pamphlet and trained Malagasy students via Skype prior to the data collection. The Vatovavy Fitovinany region was divided into 12 different sites and the students went out in pairs over the course of a month collecting data. Raveloharimisy spent several summers doing research in Madagascar and, on at least one occasion, took two Community & International Development students from Andrews, Rachel Butherford and Andile Ncube, to participate in the research.

“We were interested only in couples, people who were living together, whether married legally or traditionally,” he says, “because we were really interested in the dynamic between the couple and how they talk and make decisions together.”

This proved to be difficult, because the houses were randomly selected. The students worked in pairs and targeted 5–15 households in each community, expecting that at least six of the households would contain a couple that lived together. By the end of their data collection, they had visited 1,500 couples that lived together. By the end of their data collection, they had visited 1,500 couples that lived together. The data also showed that once the couples discuss and make a decision together, they then discuss it with their immediate families to see how their parents respond. This led Raveloharimisy to conclude that the promotion of contraceptive use should not just target the woman, as USAID has done in the past, but should be promoted to the husband and family members. Men have been excluded from the training in the past. This should be remedied because, as Raveloharimisy states, “it is not a decision that the women make alone.”

In addition, the dynamic between married children and their parents has never been considered in the contraceptive campaign as the parents are considered to be beyond childbearing age. Raveloharimisy believes that the parents should be included in the campaign because of their influence on their children.

Another implication for the research involves the traditional practice of a trial period before marriage. According to tradition, if the woman does not become pregnant during the trial period, the man is permitted to leave her and find another woman. Legally, they are not considered a couple nor are they considered to be married traditionally. However, the promotion of contraceptive use by USAID may bring into conflict the modern understanding of family planning and the traditional concept of having children as soon as possible.

Now that the data collection is complete, Raveloharimisy is focusing on publishing his results. The first publication, “The Influence of Family Dynamics on Contraceptive Use in Madagascar and the Ensuing Impact on Family Well-Being” was published in the MEASURE Evaluation PRH Working Paper Series in December 2013. Raveloharimisy co-authored the paper with Kayla Piña and Joel Hajasen, the monitoring and evaluation specialist and administrator of Works Improve Society and Economy (WISE) in Toamasina, Madagascar.
Andrews University Hosts the First Annual Andrews Research Conference (ARC)

The first Andrews Research Conference (ARC), titled “Early Career Researchers in STEM,” was held at Andrews University May 7–11, 2014. Participants included presenters from universities around North America and Andrews University science, technology, engineering and mathematics (STEM) faculty members. Most of the presenters were Adventist graduate students or early career faculty either at non-American or non-Adventist universities. The conference included presentations by each of the attendees in areas of chemistry, biochemistry, biology, mathematics, physics, engineering, computer science, and materials science.

The conference was sponsored by the North American Division of Seventh-day Adventists and the STEM departments at Andrews University. The Office of Research & Creative Scholarship organized the event along with STEM coordinator, Rachel Boothby. Thanks to the generosity of the sponsors, attendees were able to participate in the conference at no cost except their travel expenses. Attendees traveled from as far west as the California Institute of Technology and as far south as Montemorelos, Mexico and the University of the West Indies.

The conference consisted of oral presentations followed by evening leisure activities, such as a picnic at the beach or canoeing down the St. Joseph River. This enabled the researchers to get to know one another both professionally and personally.

Matias Soto, a materials science PhD student at Rice University, expressed his appreciation for the personal and small-group feel of the conference. “All the researchers had the opportunity to get to know each other outside of the conference setting,” he said. This distinguishes ARC from other conferences. “We also had the opportunity to get to know faculty and staff from Andrews at different moments. I think the time spent outside the conference in other activities made a big difference,” he said.

Participants appreciated the opportunity to meet and network with other researchers, and some are already looking forward to collaborating with one another on their projects. “I made some good contacts,” Johnson Luma said. Luma is an undergraduate student pursuing a degree in civil and environmental engineering at the University of Tennessee, Knoxville. “I never connected research to anything spiritual,” he said. “After the conference, I know that as I research, I will be dealing with what God has created. We are all learning about parts of His creation.”

The second annual Andrews Research Conference will be held from May 13-17, 2015 with a focus on early career researchers in the social sciences. Adventist graduate students, post-docs, and early career faculty in the social sciences (anthropology, communication, community and international development, psychology, social work, etc.) are invited to present. More information can be found at andrews.edu/research/arc.

Gary Burdick

Gary Burdick joined the Andrews University faculty in 1999 and is currently professor of physics and associate dean for research in the School of Graduate Studies & Research. Under Gary’s leadership, the Office of Research & Creative Scholarship has developed an electronic application and review process for the Institutional Review Board and simplified the annual Faculty Research/Creative Scholarship Activity Report. The office has implemented a “Merit Release Time” award, giving top performing faculty researchers the opportunity to take a three-credit release from their regular teaching load. The office has also developed a simplified Internal Faculty Research Grant application process with a seven-member peer review committee, creating a fairer, more transparent grant award process.

The office has been proactive in extending the Annual Celebration of Research program with a published abstract book, and in expanding the annual Honors Research Poster Symposium to include all recipients of the Undergraduate Research Scholar Award and other undergraduate researchers. In addition, the office has provided funding for these students to present the results of their research at regional or national conferences. At Gary’s initiative, the Research website has been developed to include up-to-date information regarding external and internal grants, undergraduate research, graduate research, as well as faculty and student research resources.

Andrews University strives to be known for its culture of research and creative scholarship, an institution where research is part of our academic fabric. Gary is instrumental in shaping that culture and helping us achieve that identity.

Gary has published one book, two book chapters, more than 60 scientific peer-reviewed journal articles and made over 50 professional presentations. He has also received a number of honors, including the 2004 North Central Regional Young Investigator Award by Sigma Xi, the 2001 Award for Excellence in Faculty Research, and the 2013 Daniel A. Augsburger Excellence in Teaching Award.
Greg Constantine
Arts, Humanities & Education
Greg Constantine, emeritus research professor of art and artist-in-residence, has always mixed humor and scholarship in the lectures given during his 42 years as a professor of art at Andrews University, as well as dozens of off-campus presentations in the United States and Europe. He directed 15 summer tours to Europe, and journeyed there an additional 19 times for his own enrichment, or in connection with art exhibits and publication debuts.

Greg has been referred to as an “evangelist” of art, but his goal has been to introduce people to his world of art and artists, not necessarily to convert them into being artists.

Greg is a prolific painter and exhibitor, having held 47 one-person exhibits in the United States and Europe (18 of them in premier New York City galleries). In addition, he was included in 64 group shows. He has received 19 research grants from Andrews University and various other sources.

He has had six books published: three widely acclaimed 80-page books of his drawings infused with sophisticated humor: Vincent van Gogh Visits New York, Leonardo Visits Los Angeles, and Picasso Visits Chicago, followed by three children’s books about artists: When Big Artists Were Little Kids, When More Big Artists Were Little Kids, and When Big Architects Were Little Kids. His latest series, “Artist Licenses” and “Poetic Licenses,” use vanity plates to convey messages.

Roy Gane
Religion & Theology
Roy Gane’s dedication to excellence has led him to write 10 books, 29 chapters for different books, eight articles for encyclopedias, and 58 articles for professional and academic journals. Altogether, Roy has published more than 4,500 pages, which would equal a 3,000 foot-long scroll.

Roy, who is professor of Hebrew Bible and Ancient Near Eastern Languages at the Seventh-day Adventist Theological Seminary, attained international recognition as one of the foremost scholars in the book of Leviticus with the publication of his book, Cult and Character. Moreover, with his authorship of the NIV Application Commentary: Leviticus, Numbers, published by Zondervan, he became the first Seventh-day Adventist to have written a volume in a major non-Seventh-day Adventist Bible commentary series. One of the significant contributions of this volume is that the Sanctuary doctrine, which is so foundational to Seventh-day Adventist theology and has profound implications for the Christian life, has now become accessible to the broader Evangelical world. He also authored the Leviticus and Numbers portions of The Baker Illustrated Bible Commentary and was the primary translator for the Leviticus portion of the Common English Bible.

He encourages and mentors his students on a daily basis, which is reflected in his students’ appreciation. He fittingly uses his God-given gifts in the academic world and well represents God and this institution before the world.

Marcia Kilsby
Professional Programs
Marcia received her PhD in educational leadership and Master of Science in medical technology from Andrews University. She is a specialist in blood banking technology and certified as a medical technologist by the American Society for Clinical Pathology and as a clinical laboratory scientist by the Agency for Medical Laboratory Personnel.

Marcia started her academic career at Andrews University in 1983. She is currently professor and chair of the Department of Medical Laboratory Sciences. Under her leadership, the department has grown considerably.

Marcia is a contributing author to more than 30 publications, including the NCA Review for the Clinical Laboratory Sciences and Blood Banking Terminology. She has done numerous presentations to churches, local schools and university forums.

Marcia is passionately committed to mission outreach, evidenced by her multiple trips to countries around the world, including Jamaica, Trinidad-Tobago, Haiti, Kenya, Eritrea, India and North Korea, to assist with training and improvement of infrastructure in the field of medical laboratory sciences.

She served as consultant and advisory board member for Lab-in-A-Suitcase from 2006 to 2009 and consultant and trainer for Christian Friends of Korea, a nonprofit organization concerned primarily with giving humanitarian aid to North Korea.
Projects supported by the Office of Research and Creative Scholarship, 2013–2014

Faculty Research Grants

- Synthesis and Investigation of Isoxazoline Scaffolds as Selective Antibacterial Agents
  - Lisa Ahlberg (Chemistry & Biochemistry)

- Historical socio-economic and xeriscape plants at Tall Hisban, Jordan
  - Stanley Beikmann (Agriculture)

- Denominational Persistence and Denominational Exit Among Adventist University Alumni
  - Larry Burton (Teaching, Learning & Curriculum)

- Music Relaxation Video and Biophysical Measurements: A Randomized Controlled Trial
  - Grace Chi (Nursing)

- Creation and Exhibition of “Poetic Licenses”
  - Greg Constantine (Visual Art & Design)

- Cultural Backgrounds to the Biblical Book of Esther
  - Constance Gane (Old Testament)

- Seasonal variation in diet of fossil Wyoming ground squirrels (Urocitellus elegans) from Porcupine Cave, CO
  - Thomas Goodwin (Biology)

- “First Person Shooters”, “Saints and Sinners”
  - Steven Hansen (Visual Art & Design)

- Paleoeological Reconstruction of Protection Island, Washington
  - Shandelle Henson (Mathematics) and Jim Hayward (Biology)

- Synthesis and Separation of an Arginine-based Heterocyclic Amine
  - Ryan Hayes (Chemistry & Biochemistry)

- Iris Murdoch’s “Forest”: On Value, Askesis, and the Good
  - Ante Jeroncic (Religion & Biblical Languages)

- The influence of religiosity, religious involvement, spiritual maturity, adherence to Adventist core beliefs, and Adventist education on denominational loyalty among youths and young adults in Sahab mission of Seventh-day Adventists
  - Jimmy Kijai (Graduate Psychology & Counseling)

- Native English Speakers’ Comprehension and Perception of a Nonnative Speech
  - Julia Kim (English)

- Study of conformational and electric charge change of protein binding using the QCM-D and EGFET system
  - Hyun Kwon (Engineering & Computer Science)

- Millenium Horizons in the Global History of the Ancient Near East
  - Oystein LeBlanc (Behavioral Sciences)

- Using a New Animal Model of Psychological Stress to Test the Effects of Control vs Predictability on Brain Structure and Function
  - Pam Litvak (Biology)


- Spatial risk of exposure to alphaviruses in northeastern Peru
  - Kanya Long (Biology)

- Purification and characterization of a novel yeast protease
  - Peter Lyons (Biology)

- Modulation of Phonotaxis by Monoamines
  - David Mbungu (Biology)

- Foundations of Web Design: Introduction to HTML & CSS
  - Thomas Michaud (Visual Art & Design)

  - Nicholas Miller (Church History)

- Genomic Stilbenes as Molecular Probes for Nucleic Acids
  - Desmond Murray (Chemistry & Biochemistry)

- Testing a model for recognition in the auditory system of the cricket Acheta domestica
  - Benjamin Navia (Biology)

- Evaluation of the electrical resistance and capacitance of a di-electric electro-active polymer
  - Boon-Chai Ng (Engineering & Computer Science)

- Haemagglutinin (HA) Multimers as Probes for the Detection of 2,3- and 2,6- Sialic Acid Bond Structures
  - David Nowack (Chemistry & Biochemistry)

- The effect of hippotherapy on hypertonicity as measured by the HAT scale (Hypertonia Assessment Tool) Modified Ashworth Tool and gait speed
  - Elizabeth Oakley (Physical Therapy)

- The Influence of Family Dynamics on Contraceptive Use in Madagascar and the Ensuing Impact on Family Well-Being
  - Joel Raveloharimisy (Behavioral Sciences)

- Artist working with the Cavan Burren Research Project
  - Rhonda Root (Visual Art & Design)

- Social environment and hormonal control: Their effects on the roles auditory neurons play in regulating phonotactic behavior by female crickets
  - John Stout (Biology)

- Evidence: A Body of Original Fine Art Images
  - Marc Ullom (Visual Art & Design)

- Design of a Prototype Clinical Near Infrared Imager
  - Ricardo Huancaya (Gunnar Lovhoiden)

- Seasonal Variation in Diet and Environment of Pleistocene Ground Squirrels from Porcupine Cave, CO: Isotopic Evidence
  - Luke Kang (Thomas Goodwin)

- College Students’ Definitions of Domestic Violence and Perceptions of Potential Helping Resources for Victims
  - Eliana Iler (Melissa Ponce-Rodas)

- Breakage Patterns in Bones of Bald Eagle Prey: A Taphonomic Analysis
  - Christopher Kim (James Hayward)

- Investigation of spatial isotope ratios in soil and the effects of fertilizer on plant isotope ratios
  - Jamie Kim (Tom Goodwin)

- Investigation of 1, 3-Dipolar Cycloadditions Mechanisms: Synthesis of Thiolactomycin and Derivatives
  - Lucyna Krzywon (Lisa Ahlberg)

Undergraduate Research Scholars

- African American Veterans, the Combahee River Raid, and the Politics of the Race in the U.S.
  - Clifford Allen (Kathryn Silva Banks)

- Gender Differences in the Relationship between Parent Bonding and Alcohol Use
  - Subira Brown (Duane McBride)

- The Derivation of Identity: Genders, Masculinity, and Sexuality in Coriolanus
  - Matthew Chacko (Monique Pittman)

- Sources of Religious Knowledge as Predictors of Social and Moral Reasoning
  - Cassandra Chievin (Karl Bailey)

- Evaluation of Copper(II) Isonicotinamidostilbene Binding Interaction
  - Stephen Gilbert (Ryan Hayes)

- Measurement of protein binding in the combined QCM-D and EGFET device
  - Michael Hess (Hyun Kwon)

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### Support Research and Creative Scholarship at Andrews University

Internal grants and Undergraduate Scholar Awards are supported by the Office of Research & Creative Scholarship. To meet the needs of the growing research initiatives around campus, we have instituted a Fund for Research which will be used to support faculty and student research activities above and beyond what is normally funded through the internal grant process, to cover travel expenses to national and international conferences, and to support the hosting of research conferences where our faculty and students can interact with other researchers from around the world.

You may support research at Andrews by choosing to designate a gift to the Office of Research & Creative Scholarship. Please visit www.andrews.edu/go/give/SCHOLAR or fill out the form to the right to support research at Andrews.

### Graduate Research Assistants

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Phillip Giddings presents his Honors research at the 2014 Honors Scholars & Undergraduate Research Poster Symposium, held in Buller Hall, March 7, 2014