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S. M. Henson, R. D. Friend, Editors

MATH@ANDREWS

Department of Mathematics, Andrews University, Berrien Springs, MI 49104-0350 USA

Luis Garibay American Chemical Society Scholar



Luis Garibay, second year mathematics and chemistry major, has been awarded the prestigious American Chemical Society Scholarship. In 2010, there were only 132 ACS scholars. The scholarship, which carries

a substantial financial benefit, recognizes Garibay's academic achievement and his interest in pursuing a career in chemistry. The program was initiated in 1994 by the National Science Foundation and is

administered by the American Chemical Society to encourage members of under-represented groups to pursue careers in science. Funding for the program is provided by major chemical companies. □

Eric Scott conducts research at Santa Fe Institute



Eric Scott, senior mathematics and computing major, attended the Santa Fe Institute (SFI) this summer as one of eight National Science Foundation Research Experience for Undergraduate (REU) fellows along with four returning REU fellows. The mission of SFI is the interdisciplinary study of "complex systems," such as systems with many interacting parts and/or nonlinearities. SFI scientists often study large data sets which they attempt to explain with relatively simple computational models. These models simulate dynamical systems that are difficult or impossible to treat analytically.

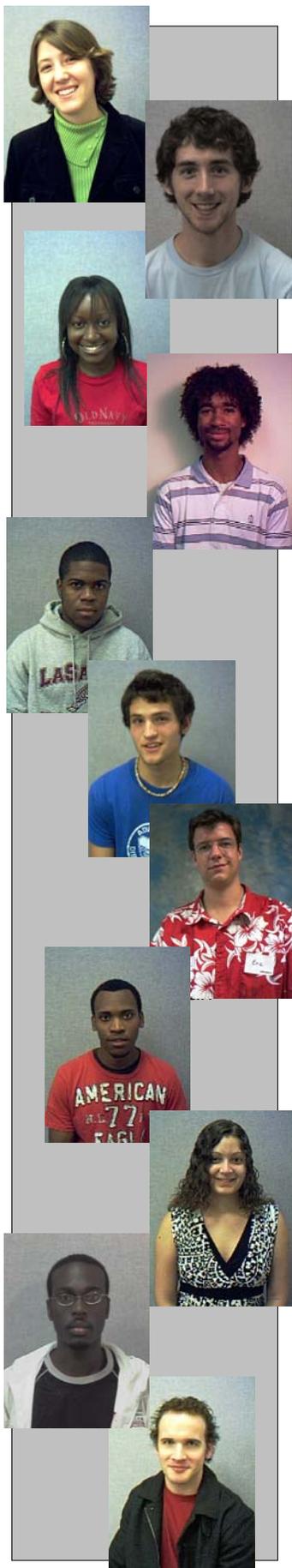
During the first three weeks, the REU group joined

approximately eighty graduate students from around the world for SFI's Complex Systems Summer School, a crash course on various topics such as nonlinear dynamics, network theory, statistical learning, information theory, game theory, and agent-based modeling.

Scott's REU mentor at SFI, J. Dooyne Farmer, is a well-known economist whose team has been working with models of technological progress. Prior to his application for the SFI position, Scott had read a book by Farmer's colleague W. Brian Arthur that convinced him there is a significant analogy between creativity in engineering and creativity in the subfield of Artificial Intelligence known as Evolutionary Computation.

Scott approached Farmer with this idea. Farmer agreed he should program an implementation of Arthur's model of evolving logic circuits to analyze its dynamics in detail and to start thinking about how to build more powerful models in the future. An early draft of this work can be found in Scott's portfolio at <http://WhiteSocksAI.blogspot.com>. Shortly after he left SFI, Scott was invited by several well-known SFI scientists to coauthor an interdisciplinary review paper on the literature relevant to their mutual interests. This exciting opportunity will give Scott a publication before he begins graduate school.

Scott will pursue a PhD in Artificial Intelligence in graduate school. □



2010 Graduates

Kiana Binford
(Mathematics Education with Secondary Certification, Spanish Studies, PME) currently teaches mathematics in the Philippines.

Michael Castelbuono
(Computing, Mathematical Studies, PME) is a software engineer for the web company SimpleUpdates in Berrien Springs, MI. He writes custom applications for users in PHP and develops phone applications for the Android operating system. Michael's long term goals are to continue programming for the Android and other smart phone devices. He plans to build a reputation in freelance work and also continue working for a great company like SimpleUpdates.

Esther Jackie Diah
(Mathematics, Psychology, PME) is studying quantitative psychology on a full scholarship at the University of Notre Dame. She plans to pursue a PhD.

Jeffrey Howson
(Engineering, Mathematical Studies) plans to pursue a master's degree and the Professional Engineer License.

Philippe LaGuerre
(Engineering, Mathematical Studies, PME, Honors) is attending Benjamin N. Cardozo

School of Law in Manhattan, with a concentration in intellectual property law. His career goal is to be a patent attorney with special focus on pharmaceuticals, biomedical engineering, robotics, and renewable energy. Philippe says, "Discrete math and formal logic are essential to legal thinking. Also, probability and statistics are often used as forms of evidence." When LaGuerre finishes his legal career, he wants to teach mathematics at the high school level.

Daniel Moskala
(Mathematics, Economics, PME, Honors) is working in the actuarial department at Auto-Owners Insurance Company in Lansing, MI. Moskala says the solid math foundation he received at Andrews allows him to teach himself the advanced probability and modeling he is currently studying for work. He uses generalized linear models for much of his work; these reduce to regular regression in the simplest case. "Thanks for all your instruction in modeling class! It's really paying off for me now," says Moskala. His plans for the next few years are to take the 10 actuarial exams and become a Fellow of the Actuarial Society. He says of his recent marriage, "Catherine and I are enjoying the married life

and had a blast on our honeymoon in Fiji."

Eric Shull (Mathematics, PME, Honors) is a software engineer working at Auto-Owners Insurance Company in Owosso, MI. In the evenings, he and his wife bike, walk, read, and eat. In December they will both take a mission trip to Chiapas, Mexico to build a church.

Stefan Smith
(Mathematics) lives in Bermuda. He plans to take all of the actuarial exams and work for the government.

Amanda Umlauf (MAT with secondary certification, PME) is teaching mathematics at a public high school in Colorado.

Basil Williams (Physics, Mathematical Studies, 2008) works as an educational assistant with junior high and elementary students for one of the school divisions in Manitoba. He also hosts a show on a local radio station called Acoustical Propagations in which all of the phrases are in some way related to math or physics. His first goal is to continue his education and begin a PhD program. He has enjoyed preaching several times at his local church. Somehow we left Basil out of the 2008 newsletter. Our sincere apologies, Basil!

Jonathan Williams
(Mathematics, Computing). □

Pi Mu Epsilon

On April 1, 2010, nine members were inducted into the Michigan Gamma Chapter of Pi Mu Epsilon (chartered 1970) in a departmental ceremony. President **Daniel Moskala** presided over the meeting. He was assisted by Vice President **Erin McLean** and Secretary-Treasurer **Andrew Hoff**.

The Pi Mu Epsilon lecture was presented by Eric Scott, who spoke on

“Steady-State Analysis of Biogeography Based Optimization”.

The newly elected officers for 2010-2011 are **Theron Calkins**, President, and **Andrew Hoff**, Vice President. **Sandra Prieto** has been appointed Secretary-Treasurer. **Prof. Joon Hyuk Kang** is the faculty advisor.

The new inductees are Anabel Dominguez, Libby



Left to right: Eric Scott, Adam Shull, Danny Ruiz, Libby Megna, Anabel Dominguez, Vernon Ng, Tsung-han Lin

Megna, Adam Shull, Vernon Ng, Daniel Ruiz, Kendra Anderson, Tsung-han Lin, Eric Scott, and Gina Creek. □

26.2! Gina Creek qualifies for Boston Marathon

The Boston Marathon is the oldest, best-known, and most prestigious marathon in the world. In order to qualify for Boston, a runner must attain a

minimum time specific to gender and age in an official qualifying marathon. In October, faculty member Gina Creek ran the Grand

Rapids Marathon with a chip time of 3:40:21, a qualifying time for her division. Creek will run the 115th Boston Marathon this coming year on Patriots' Day, April 18, 2011. □



Left to right: Lynelle Weldon, Yun Myung Oh, Joon Kang, Bob Moore. Above: Gina Creek

Kang promoted to Full Professor

Prof. Joon Hyuk Kang was promoted to Professor of Mathematics on March 17, 2010. Kang has been with the Department for 10 years. He maintains a productive research career in nonlinear elliptic and parabolic partial differential equations. □



Weldon authors book

At the 2009 Joint Mathematics Meetings in Washington DC, Prof. Lynelle Weldon attended a special session on math education in which she became acquainted with well-known textbook author James Stewart. Weldon was invited by Stewart, Redlin, Watson,

and Panman to write an Instructor's Guide for their textbook *College Algebra: Concepts and Contexts*. Weldon's book is now available, with a 2011 publication date. Weldon, an algebraist, has become increasingly interested in the research area of mathematics education. □

Henson & Hayward awarded NSF grant

The Seabird Ecology Team, led by Prof. Shandelle Henson and Research Professor of Biology Jim Hayward, has been awarded a \$350,000 research grant from the National Science Foundation (NSF) Division of Mathematical Sciences.

The team combines the fields of mathematics and biology, using dynamical systems theory to describe, explain, and predict the dynamics of ecological systems and animal behavior. The team has been funded by NSF since 2003. □

Research and professional activities

The Department of Mathematics has produced 60 peer-reviewed research publications since 2001, and has helped attract over one million dollars in NSF funding, most of which has supported student research.

Henson and Hayward authored the lead article in the November 2010 issue of Notices of the American Mathematical Society. The Notices is read by 30,000 AMS members worldwide.



*Moore receives
Augsburger Award
(see p. 6)*

Publications

Hayward, J. L., Galusha, J. G., and **S. M. Henson** 2010. Foraging behavior of bald eagles at a marine bird colony and seal rookery in Washington. *Journal of Raptor Research* 44:19-29.

Henson, S. M., Hayward, J. L., Cushing, J. M., and J. G. Galusha 2010. Socially induced synchronization of every-other-day egg laying in a seabird colony. *Auk* 127:571-580.

Henson, S. M., and J. L. Hayward 2010. The mathematics of animal behavior: an interdisciplinary dialogue. *Notices of the American Mathematical Society* 57:1248-1258.

Kang, J.H., Lee, J.H. 2010. A predator-prey biological model with combined self-limitation and competition terms. *Czechoslovak Mathematical Journal* 60:283-295.

Weldon, L. M., et al. 2011. *Instructor's Guide, College Algebra: Concepts and Contexts*. Belmont: Brooks/Cole.

Presentations

S. M. Henson, Colloquium, Departments of Mathematics and Biology, Joint with James L. Hayward, "Mathematical Ecology: An Interdisciplinary Dialogue", Sponsored by Southern Maine Chapter of Sigma Xi and the Mellon Foundation, Bates College, Lewiston, ME, September 24, 2010.

S. M. Henson, Joint Mathematics Meetings, AMS Special Session on "Biomathematics: Modeling in Biology, Ecology, and Epidemiology", San Francisco, CA, January 15, 2010.

Conferences Organized

Yun Myung Oh organized the special session "The Geometry of Submanifolds" at the 2010 Fall Central Section Meeting of the American Mathematical Society, held at the University of Notre Dame.

Alumni notes

Chantel Blackburn is working on a PhD in mathematics education at the University of Arizona in Tucson.

Danielle Burton spent last year teaching English and Western Culture at a small private university in an agricultural province in China.

Sharon Hodge is a college success coach at a community college. She is thinking of attending pharmacy school.

Don Rhoads is editing Ed Specht's geometry book with Keith Calkins. He finally knows LaTeX!

Rick Robertson works in DC as an economist at the International Food Policy Research Institute, a leading institute in (micro) development economics.

Glenn Saunders worked for a company that did computing at Kennedy Space Center from Gemini 9 through Apollo 12. He now works as an IBM mainframe systems programmer and plans to retire soon.

Robert Wilson is doing a PhD in Chemistry at the University of Illinois at Urbana-Champaign. His graduate advisor is Mary Kraft.

Grenith Zimmerman-Griffeth graduated from the University of Minnesota in 1970 with a PhD in Math-Probability theory, teaches Statistics and Research at Loma Linda, and is currently the Associate Dean for Research in the School of Allied Health Professions.

Please send your updates to henson@andrews.edu.

Focus on alumni: Donald J. Albers

By Donald H. Rhoads, emeritus and former chair

I was 26 years old in 1964, on the faculty at Andrews, and preparing to move to Ann Arbor to pursue a doctorate. One day this fellow, a little younger than I, entered my cubicle in the basement of the old EMC chapel, and sat in the chair by my desk. He introduced himself as Don Albers, a recent graduate from the University of North Dakota. He was considering entering our Masters program.

He did not tell me he had graduated Summa Cum Laude and Phi Beta Kappa, or that he was trying to decide between Astronomy and Mathematics, or that he didn't think he knew much math. He was just a thoughtful 21 year old, looking a little puzzled, with nothing of the "know-it-all" about him, a good listener who obviously processed what I said to him—you could see the wheels turning.

On that first meeting I never imagined that Donald J. Albers would become one of the best-known American mathematicians of his time and one of the most significant figures in the publishing of collegiate level mathematics. Or that one day the Mathematical Association of America (MAA) would devote an entire issue of its newsletter *Focus* to

honoring (and roasting) him.

After his first year at Andrews, Albers took 1965-66 off to teach at a prep school, then returned to Andrews to graduate in 1967. Afterward he received graduate fellowship offers at the University of Idaho, University of Utah and University of Arizona, but, in his own words, "for a variety of reasons, none of which makes much sense now, I turned them all down." After a year of teaching at Lea College, Albers did additional graduate work at the University of Minnesota and University of California at Santa Barbara, got married and joined the faculty of Menlo College in Atherton, CA.

During his tenure at Menlo, Don received three Teacher of the Year awards and one national award. He developed majors in mathematics, computer science, and computer information systems. In 1979 he was named Associate Dean, and during his last four years he served as Dean and Special Assistant to the President.

During Albers' second year he got to know George Polya who was at Stanford. He persuaded Polya to give a lecture to students and faculty. The lecture was such a big hit that Albers wanted to

have Polya give a series of lectures.

Albers went to his President for funding, and was astonished to discover that the President had been involved in fund raising for Polya Hall on the Stanford campus and already knew Polya was a famous mathematician. The President gave Albers \$3,000 for the series and Polya agreed to give the lectures on condition that half of the money be used for the purchase of more mathematics books for Menlo's library.

It was Polya who got Albers seriously involved with the MAA. Albers served on an editorial board of one of the book series, and in 1974 became Chair of the Northern California Section of the MAA. In 1978 he became Editor of the *College Mathematics Journal*, a job that he greatly enjoyed.

In 1986, Don was elected Chair of the MAA's Committee on Publications, and in 1988 he was elected Vice-President. That year he was also asked to replace Walter Kaufmann Buhler (who had died suddenly at age 44) as Editor of Mathematics for the scientific publisher Springer Verlag in New York. He had to turn that offer down, but he did agree to serve as a



Springer editor based in California. He was recommended to Springer by Paul Halmos, whom he had come to know in 1980.

In 1991 Don moved to Washington, DC to join the MAA as Director of Publications and Associate Executive Director. He did so because he wanted to start a new magazine for students, *Math Horizons*, which now has the largest circulation of any MAA publication.

In addition to his editing activities, Don has published six books, including two books of interviews with noted mathematicians: *Mathematical People*, and *More Mathematical People*. A third in this series will be published soon.

Donald J. Albers has done us proud by becoming the best-known mathematician to have graduated from our department. □

Andrews University Department of Mathematics

Programs

- *BS in Mathematics
- *BS in Mathematics Education
- *Mathematical Studies Major
- *Mathematics Minor
- *Mathematics Education Minor
- *Minor in Mathematics of Economics and Finance
- *Behavioral Neuroscience Mathematics Track
- *Masters in Mathematics and Science (Interdisciplinary)

PME Michigan Gamma Chapter

- *Theron Calkins, President
- *Andrew Hoff, Vice President
- *Sandra Prieto, Sec-Treas
- *Prof. Joon Hyuk Kang, Advisor

Eigen* Math and Physics Club

- *Theron Calkins, Math President
- *Andrew Hoff, Physics President
- *Sam Snelling, Secretary

Mission Statement

Through teaching, research, and service, the Department of Mathematics seeks to provide leadership in the mathematical sciences by:

- *Preparing students with the mathematical understanding, problem-solving skills, and dispositions that enable them to excel in their chosen careers;
- *Increasing mathematical and scientific knowledge through publication and presentation;
- *Supporting the broader mathematics education community and mentoring others for generous service through a committed Christian life.

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Moore receives Augsburg Teaching Award

Professor Bob Moore received the Daniel A. Augsburg Excellence in Teaching Award on March 1, 2010. This award recognizes faculty whose teaching reflects the high standards of excellence modeled by Prof. Augsburg in his 60 years of teaching at Andrews University. □



Ex Cathedra

From the Chair

It has been a great year for the department. The number of undergraduate mathematics majors has continued to climb to more than 40, and we have three graduate students with mathematics as an area of emphasis. We said goodbye to a rather large group of graduates last May. Alumni, please keep in touch!

We would like to express our appreciation to a generous donor for the beautiful new bulletin board we purchased and installed this summer. With an attractive aluminum frame and sliding glass doors, it now displays awards and achievements earned by our students and faculty including the Jones, Ulloth and Specht Scholarship plaques. Also, several donors rose to meet last year's \$333 challenge by Don Rhoads for the Endowed Chair in Mathematics. *Thank you!*

As you can see in this newsletter, the faculty have been productive in their scholarly activities. I'll mention just two achievements. In a recent department meeting Lynelle Weldon shared with us some of her creative ideas for helping students understand the *function* concept, as presented in the instructor's guide she wrote for Stewart's new College Algebra textbook. Shandelle Henson and Jim Hayward brought in another substantial NSF grant to continue their research on the population dynamics of various animal species. They have helped attract over \$1,000,000 in outside funding!

In preparation for submitting our application for reaccreditation of our BS Mathematics Education program next fall, we have been assessing our program

and making some changes. One significant change is the introduction of a new course, MATH375 Secondary School Mathematics Teaching, as recommended by several recent graduates. We listened!

I have decided that this will be my last year as department chair. I am pleased to announce that the department faculty voted last week to recommend Shandelle Henson as the next chair, starting next summer.

To our donors, alumni, faculty, students, and friends, I say thank you for making our department a great place to live, work, and study. God bless you all! *-Bob Moore, Chair*

Alumni! Send your updates to henson@andrews.edu.