

DEAN'S MID-ACADEMIC YEAR BULLETIN
January, 2013

Happy 2013!

I am pleased to share with you my Mid-Academic Year Bulletin which aims to inform you and to give you an update on our initiatives, agenda items, progress towards meeting the goals and objectives of our College, and to outline our successes.

UPDATES

Calendar Conversion: The advising plans (IAPs) for all our undergraduate students are completed. We are in the process of putting together the IAPs of our graduate students. Many thanks to our staff and advisors who worked very hard to complete this important task! Congratulations on a job well done!

COS Strategic Plan: We are in the process of implementing Phase I of our strategic plan which includes the following:

Space Audit and Space Plan: We conducted a thorough audit of the space we currently occupy. This was used along with our strategic plan to devise our space plan. We are close to completing our five-year plan that will be submitted to the upper administration for approval.

Ph.D. program in Mathematical Modeling and Scientific Computing: The concept paper for a new interdisciplinary Ph.D. program was just submitted to the Provost.

Center for Transforming STEM Education: We are getting ready to launch a new interdisciplinary center for transforming STEM education whose mission will be to promote innovation in STEM education through discipline-based education research, scholarship of pedagogy, student-centered curricular reform, rigorous assessment, focused professional development, and through creating opportunities for collaboration among existing programs in the STEM colleges.

Materials Science and Engineering: We are conducting a SWOT analysis of our Materials Science and Engineering programs. This analysis will be used to draft a strategic plan that will help us to enhance and grow our materials science and engineering academic and research programs.

Recruiting and Retention: We are working towards developing a robust recruiting and retention plan to be used during the upcoming recruiting season.

Pre-freshmen Research Internships: We are working towards developing a program to attract students who are interested in working with our faculty on some challenging problems before they begin their studies as freshmen.

Inclusive Excellence Framework: We are working towards developing the COS Inclusive Excellence Framework that will create and sustain an environment that celebrates diversity and employs inclusive priorities, will increase the multicultural competencies and capacities of faculty and staff, and will increase the academic success of AALANA, first-generation, male and female students.

Undergraduate Research: Undergraduate research is central to the mission of our college and our institute. It combines faculty mentoring with student achievement, leading both groups to increased scholarship. Please encourage your students to participate in the *Undergraduate Research Seminar Series* that promotes interdisciplinary collaboration. The series consists of one-hour long sessions, that are usually scheduled on Wednesdays at 1:00 p.m., where faculty and students attend presentations given by COS undergraduate students over pizza and soda.

Staff Career Development Implementation Plan: In collaboration with the COS Administrative Council and the College of Science Staff Advisory Council (COSSAC) we have developed a Staff Professional Development and Career Advancement plan that we have discussed with HR and are in the process of implementing.

Evaluating Teaching Effectiveness Plan: The COS Administrative Council has developed a plan for evaluating teaching effectiveness; this plan is to be used in addition to course evaluations. The plan has been shared with the faculty of each academic unit to solicit their feedback and will be submitted to the Provost for his approval.

Global Education: We have established a Task Force led by **Mike Kotlarchyk** to develop a plan that will guide us on how to participate in the institute's efforts to expand our global education initiatives through exchange programs, 2+2 programs, international co-ops and other opportunities that will be a good fit with our college's strategic plan.

Science Exploration Seminar for First Year COS Students: We developed a model for an interdisciplinary and experiential learning seminar course for our Science Exploration program students. This project is partially funded through a PLIG (Provost Learning Innovation Grant) grant and is being implemented this year as a pilot.

Online Learning: We have established a Task Force led by **Paul Craig** to develop a plan for our college and to identify appropriate courses and programs that may be offered online.

COS External Advisory Board: We held our second meeting in November and had a very productive discussion on how to successfully implement our strategic plan.

Development Plan: We developed a prioritized *Case for Support* for our college titled, *The Campaign for 21st Century Sciences*. The development plan has been shared with the upper administration and we are in the process of implementing it.

INITIATIVES

RIT and Nazareth College have won a \$300,000 grant from the National Science Foundation for the **Tech2Teach** program that allows students to simultaneously complete an undergraduate degree from RIT and a Master's in Education from Nazareth. The grant, which comes from the NSF Robert Noyce Teacher Scholar Program, will fund an RIT **Learning Assistant** (LA) program specifically designed to help develop interest in students majoring in science for careers in secondary education.

This past fall RIT offered a **Sign Language Education program**, which gave faculty and staff opportunities for ASL Group Instruction, smaller tutoring sessions, and classroom observation and feedback in order to improve communication skills with deaf and hard of hearing students.

CELEBRATING OUR SUCCESSES

Congratulations to all our faculty, staff, and students for their accomplishments, successes, and contributions to our college and institute. For more details and news releases, please check: www.rit.edu/cos/in-the-news.

STUDENT SPOTLIGHT

Publications:

Louis Gallouin spent the summer in the Center for Computational Relativity and Gravitation researching with physics professor Manuella Campanelli. Their work, entitled "Asymptotically Matched Spacetime Metric for Non-Precessing, Spinning Black Hole Binaries," was accepted to the journal *Classical and Quantum Gravity*.

Presentations:

Ivan di Lernia, a student in the Center for Computational Relativity and Gravitation recently presented at a meeting of the American Astrological Society for his computational work

on tidally-disrupted accretion disks. It captured the attention of many famous astronomers who were at the meeting, including Mario Livio.

Scholarships & Awards:

Tommy Keane, a doctoral student in the Chester F. Carlson Center for Imaging Science, attended the International Computer Vision Summer School this past summer, in Ragusa, Sicily. Among doctoral students from around the world, he received the inaugural Brady Prize, which included 600 euros (around \$730) for an essay examining morality issues with automated vehicle monitoring systems, for example, the red-light cameras currently installed on many Rochester streets.

Doctoral student **Siddharth Khullar** has won two national competitions this year for a retinal imaging device he helped develop at Massachusetts Institute of Technology's Media Lab. In May, his team's medical device won a Judges' Choice award and \$7,500 in the MIT IDEAS Global Challenge, an annual competition for socially driven start-up companies. This past July, Khullar and his team won the Prize for Primary Healthcare, sponsored by Massachusetts General Hospital and the Center for Integration of Medicine and Innovative Technology, which consists of Boston's teaching hospitals and universities. That prize also included \$150,000.

Kevin Dickey, a third-year imaging science student, is a recipient of this year's Greater Research Opportunities undergraduate fellowship. Sponsored by the EPA, the fellowship encourages and supports environmental education and research. Recipients of the fellowship can attend two scientific conferences of their choosing. Dickey hopes to attend a conference hosted by SPIE, an international not-for-profit society for optics and photonics. The fellowship also includes a 12-week summer internship at an EPA research facility. Dickey, whose scientific interest is exploring environmental applications of remote sensing, hopes to complete his internship in Alaska or Hawaii.

Third-year biochemistry student **Kimbria Blake** has earned national recognition through being named an Undergraduate Research Fellow in the American Society for Microbiology. The Society awarded the fellowship to 56 of the 122 applicants who had completed proposed research projects. The fellowship supported Kimbria's ongoing research on PHO13 from *Saccharomyces Cerevisiae* with her mentor, Suzanne O'Handley, associate professor of chemistry at RIT. As part of her recognition, Kimbria received a \$4,000 stipend, a two-year student membership, and funding to cover travel costs to the Society's national meeting in Denver this May.

Graduate student **David Principe** has won observation time to study star formation with NASA's new Stratospheric Observatory for Infrared Astronomy (SOFIA), which is flown on a modified Boeing 747 airplane, as well as the Chandra X-ray Observatory, the space telescope. Principe is in his third year of RIT's astrophysical sciences and technology

doctoral program. His research focuses on multiwavelength astronomy, which combines details from every spectrum of light - radio, infrared, optical, ultraviolet and X-ray, to create a whole picture of an astronomical object.

Mohammed Yousef Hussien, a first year Ph.D. student in Imaging Science had his paper, "Three-dimensional volume analysis of vasculature in engineered tissues" selected as one of the five best papers of the 2013 Visual Data Analysis Conference. He also had a manuscript on the same subject accepted for publication by the *Journal of the Acoustical Society of America*.

Undergraduate Research Fellowships: The following students were funded through the Dean's Office to work with their mentors on undergraduate research projects and presented their work at the undergraduate symposium:

**Charles Border
Nathan Cawley
Erin Crossen
Tessa DiDonato
Pierce Donovan
Michael Eggleston
Clarissa Garvey
Kenneth Gerien
Zachary Howard
Raphael Kahler
Christian Larrabee
Louis Moskowitz
Bradley Rogge
Valerie Sgheiza
Juliana Shaw
Nelson Silva
Harshita Sood
Nadiya Spice
Avani Sudhakar
Dylan Weil
Brian Winkler**

FACULTY SPOTLIGHT

Recognition:

André Hudson and **Michael Savka**, professors in the Thomas H. Gosnell School of Life Sciences, isolated and identified the genome sequences of three bacteria belonging to the

genus *Enterobacter* from Jamaican sugarcane and *Methylobacterium* and *Novosphingobium* from Riesling grapevines. They published the whole sequences in the September and November issues of the *Journal of Bacteriology*, a publication of the American Society for Microbiology.

Physics professor **Brian Koberlein** is developing children's television show called *Prove Your World* that will feature puppets teaching basic scientific principles. It is geared towards middle-school children and the pilot is intended to air on PBS later this year.

Anne Houtman, Head of the Thomas H. Gosnell School of Life Sciences co-authored the textbook *Environmental Science for a Changing World*, which integrates engaging real-world stories, vivid photographs, and infographics with scientific principles.

Honors:

Mathematical sciences professor **Carlos O. Lousto** was elected a Fellow of the American Physical Society for contributions towards connecting perturbation theory and numerical relativity as well as aiding the understanding of simulating binary black holes.

The College of Science recently hired **Sukanya Chakrabarti** as a professor in the School of Physics and Astronomy. Just prior to starting here though, Chakrabarti shared her expertise on a new show airing on The Weather Channel called *Deadliest Space Weather*.

Research & Other Awards:

The National Science Foundation selected RIT as one of the universities to receive a \$3.2 million ADVANCE grant for the project "CONNECT: Increasing the Representation and Advancement of Women Faculty at RIT." CONNECT@RIT (Creating Opportunity Networks for Engagement and Collective Transformation) focuses on improving conditions for female STEM faculty, thereby helping to develop a more diverse science and engineering workforce. **Carol Marchetti** is one of the Co-PIs and **Stefi Baum** is one of the members of the senior personnel.

The College of Science's **Center for Detectors** received \$1.1 million in funding from NASA to collaborate with Raytheon Vision Systems to test detectors grown on silicon wafer substrates. This will help improve the performance of large detectors and make them more cost effective.

Chemistry professors **Christopher Collison** and **Scott Willaims** were co-PIs along with Denis Cormier from the Kate Gleason College of Engineering that won a NSF PFI grant for around \$600,000.

Of the 181 proposals submitted to NASA's Astrophysics Theory Program for funding, physics professor **David Merritt's** project concerning the dynamics of galactic nuclei was one of only 28 to be selected to receive funding. NASA is supporting 80% of the project's costs.

A \$2.6 million grant for the Rochester Regional Optics, Photonics, and Imaging Accelerator (RRPA) program was awarded to five regional institutions, among them RIT. From this grant, \$100,000 will go to mathematics professors **David Ross** and **Kara Maki**, to build on the latter's tear film work, which will instigate a new design methodology for contact lenses for Bausch & Lomb.

Imaging science professor **Jan van Aardt** was invited to become a member of the NEON Airborne Observation Platform (AOP) Waveform LiDAR Technical Working Group, which will assess current techniques for instrument calibration and data validation and recommend strategies to develop or implement these techniques for vegetation remote sensing.

Imaging science professor **Joel Kastner** led a research team that won seven days of observation time with NASA's Chandra X-ray satellite observatory to survey and capture images of over twenty dying stars, otherwise known as planetary nebulae. Their efforts resulted in one of the most comprehensive X-ray surveys ever for the astrological objects.

Stefi Baum, Director of the Center for Imaging Science, and astrophysics professor **Chris O'Dea** used the Hubble Space Telescope in conjunction with researchers at the National Radio Astronomy Observatory to perform a multiwavelength study on the elliptical radio galaxy Hercules A. They found differences in morphology that indicate larger scale differences in the galaxy's radio jets than previously believed.

A team led by imaging science professor **Anthony Vodacek**, including professors from the University of Rochester and the University of Minnesota as well as RIT researchers **Michael Richardson** and **Nicholas Rogers**, is conducting a two-year survey of the Lake Kivu system in Rwanda to collect scientific measurements for benchmarking hazards threatening biodiversity. They received a grant worth \$350,000 through the EU to continue their work.

Four professors were awarded grants through the Grant Writer's Boot Camp this year. Previous participants reviewed submitted proposals and offered feedback to current researchers. The professors winning funding and the names of their proposals are as follows:

- Chemistry professor **Nathan Eddingsaas** for *Development of a Spectroscopic Method for the Detection of Atmospheric Oxidation Products*
- Imaging science professor **Erin Ontiveros** for *Evaluation of various image modalities to improve search and rescue operations*

- Chemistry professor **John-David R. Rocha** for *Study of the synergy between carbon and boron-based nanomaterials through the development of an undergraduate computational chemistry course*
- Mathematics professor **Paul Wenger** for *Toward a Unified View of Saturated Graphs*

Non-Tenure-Track Teaching Awards: The following faculty members have been nominated for the Non-Tenure-Track Teaching Award, which will be hosted on Tuesday, May 7, 2013.

Alla Bailey, School of Chemistry and Materials Science

Patricia Diute, School of Mathematical Sciences

John Hamilton, School of Mathematical Sciences

Thomas Prevendoski, School of Mathematical Sciences

William Ryan, School of Chemistry and Materials Science

Gregory Trayling, School of Physics and Astronomy

Dean's Research Initiation Grants:

The Dean's Research Initiation Grants (D-RIG) provide seed funding that will help to jump start research projects and cross-disciplinary research clusters that promote rich learning environments for our students and faculty. The following professors have received grants:

D-RIG Seed Funding Grants:

Moumita Das, School of Physics and Astronomy for the project: *Touchy Feely Physics of Living Matter: Mechanics and Force Transmission in Soft and Biological Composites in Cells*

Maureen Ferran, Thomas H. Gosnell School of Life Sciences for the project: *Characterizing a Unique VSV Strain: Are Inhibition of Host Transcription and IFN Gene Suppression Separable Functions?*

Richard Hailstone, Chester F. Carlson Center for Imaging Science for the project: *Novel Device Fabrication Techniques Using Doped-Ceria Nanomaterials*

Maria Helguera, Chester F. Carlson Center for Imaging Science for the project: *Designing a Portable Ultrasound System for the Detection of Biofilms Formed in the Middle Ear Canal*

Matthew Hoffman, School of Mathematical Sciences for the project: *Modeling and Assimilation System Development for Lake Ontario*

Jeff Pelz, Chester F. Carlson Center for Imaging Science for the project: *For Eye Movement Data Quality Standardization*

D-Rig Cross-Disciplinary Research Group Grants:

Hans Schmitthenner, School of Chemistry and Materials Science, **Joseph Hornak**, School of Chemistry and Materials Science and Chester F. Carlson Center for Imaging Science, **Irene Evans**, Thomas H. Gosnell School of Life Sciences, and **Hyla Sweet**, Thomas H. Gosnell School of Life Sciences for their project: *Peptide Scaffolds for Targeted Molecular Imaging Agents*

STAFF SPOTLIGHT

The following staff were nominated for university Staff Awards:

Individual Nominees

Carrie Koneski, School of Mathematical Sciences

Brenda Mastrangelo, School of Chemistry and Materials Science

Team Nominees

Autumn Madden and **Brenda Mastrangelo**, School of Chemistry and Materials Science

Paul Allen, **John Gallucci**, **Erin Kobie**, and **Dave Lake**, Stockroom Team

Council of Scheduling Officers – including our own **Ann Gottorff**

President Destler made a special mention of **Erin Kobie** and **Brenda Mastrangelo**.
Congratulations!

EVENTS

The Rochester Institute of Technology **Observatory** had open houses for stargazers on September 28 and December 13. In September visitors were able to observe the gibbous Moon as well as the planets Neptune and Uranus. In December visitors saw the peak of the Geiminid meteor shower, Jupiter, and the asteroid Toutatis.

Women in Science (WISe) sponsored the **Grad School Bootcamp** for all students this past October. The camp provided guidance towards applying to graduate school, including writing resumes, cover letters, personal statements, taking the GRE's and seeking recommendation letters. In the upcoming quarters they will also cover what to expect at interviews and how to prepare for them, and finally how to choose the best school. Professors involved include **Manuela Campanelli**, **Tina Collison**, **Raluca Felea**, **Dawn Hollenbeck**, **Kara Maki**, **Lea Michel** **Susan Smith**, **Loraine Tan**, and **Kate Wright**.

The **Imaging Science Hall of Fame** Induction took place in the Chester F. Carlson Center on January 16th, 2013. The keynote speaker was **Ray Jayawardhana**, the Canada Research Chair in Observational Astrophysics at the University of Toronto, whose talk was titled

"First Glimpses of Alien Worlds." Among the honorees this year was our own **John Schott**, Professor of Imaging Science and Frederick and Anna B. Wiedman Chair.

SPEAKERS

The College of Science hosted three guest speakers as part of our Distinguished Speakers Series this past fall. All were very well attended.

On October 5th, **James Gentile**, president of the Research Corporation for Science Advancement in Tucson, Arizona, gave a talk, entitled, "Solving Complex Questions in Science through Innovation and Interdisciplinary Collaboration." Gentile is also a former president of both the North American Environmental Mutagen Society and the International Association of Environmental Mutagen Societies. His presentation explored how collaboration between disciplines in the laboratory and class room provides the best assessment of high-risk/high-reward research questions.

Pamela Cook, vice president for publications of the Society of Industrial and Applied Mathematics, came to present her talk, "Complex, Yet Everyday Fluids" on November 30th. She is also an inaugural Fellow of S.I.A.M., and an associate fellow of the American Institute for Aeronautics and Astronautics. Her lecture focused on the properties of strange fluids we use every day such as shampoo and peanut butter.

Stefano Curtarolo, director of the Center for Materials Genomics at Duke University gave a talk on January 18th. His talk, "Topological Insulators within the Materials Genome Initiative: Robustness/fragility, new materials and topological quantum devices," covered a search model he developed to mine the quantum materials repository that allowed him to discover heretofore unknown classes of topological insulators.

Keep up the good work, everyone!

Respectfully,

Sophia M.

Sophia A. Maggelakis, Ph.D.
Dean of the College of Science
Professor of Mathematics