MESSAGE FROM THE DEPARTMENT CHAIR

This year we have a new assistant professor, Jaiyanth Daniel, Ph.D., who comes to us from the University of Central Florida where he was a research associate for a number of years. He will be teaching in the area of microbiology/molecular biology and is scheduled to teach Biology 54400 Virology in the spring 2014 semester. His research program is centered on the mechanisms of drug resistance and metabolism of the tuberculosis bacteria that alone caused more than 1.4 million deaths worldwide last year. His work here will not involve any virulent strains so safety issues are not an issue and he is looking for students at all levels to work with him in his research lab on a number of projects. Please also remember that most of our professors in biology have opportunities for you to become engaged in their research here at IPFW and around the world.

You should become involved early in your career here and reap the benefits of these opportunities! The research experiences, techniques and equipment used, and the opportunity to give presentations at meetings and have your name on scientific papers as an undergraduate will help you follow any path for a profession in the life sciences! Get engaged and be involved!

Welcome and let’s have a great year!

Frank V. Paladino, Ph.D. FAAAS
Jack W. Schrey Distinguished Professor
Chair of Biology

CONGRATULATIONS TO FALL 2012 GRADUATES

The following student received the Bachelor of Science degree:

Tyler Daniels

These students received the Master of Science degree

Thomas Backof
Advisors: Professor
Frank Paladino

Brian Eads
Advisors: Professor
Bruce Kingsbury

Danielle Stevenson
Advisors: Associate Professor
Winfried Peters

Ariel Cyrus
Advisors: Associate Professor
Winfried Peters

Mohammed Hossain
Advisors: Associate Professor
Ahmed Mustafa

BIOscope is an information bulletin published three times during the academic year by the IPFW Department of Biology. It is posted electronically in PDF format on the Department of Biology website (IPFW.edu/biology). Students wishing to submit items for the next issue should contact the editor, Associate Professor Ahmed Mustafa, at 481-6328 or mustafaa@ipfw.edu.
NEW GRADUATE TEACHING ASSISTANTS

Navid Ayon
Advisor: Associate Professor
Ahmed Mustafa

Stacy Keough
Advisor: Assistant Professor
Punya Nachappa

Amber Rhodes
Advisor: Professor
Frank Paladino

Sasha Tetzlaff
Advisor: Professor
Bruce Kingsbury

Geeta Buda
Advisor: Professor
George Mourad

Lindsay McKenna
Advisor: Professor
Frank Paladino

Regina Shannon
Advisor: Associate Professor
Ahmed Mustafa

Tyler Wood
Advisor: Associate Professor
Robert Gillespie

Jacob Janssen
Advisor: Assistant Professor
Tanya Soule

Kevin McLane
Advisor: Professor
Bruce Kingsbury

Jennifer Swiggs
Advisor: Professor
Frank Paladino

NEW GRADUATE RESEARCH ASSISTANT

Christopher Culkin
Advisor: Assistant Professor Punya Nachappa

STUDENT CLUB OFFICERS FOR 2013—14

AMAS Pre-Med Club
President- Srikanth Dasari
Vice President- Holly Kelly-Curry
Secretary- Shori Gerardot
Treasurer- Shauna Northup
Faculty Advisor: Professor George Mourad

Beta Beta Beta- The Biology Honors Society
President- Aldane Hoilett
Vice President- Heidi Nissley
Secretary- Michael Zijlstra
Treasurer- Destin Furnas
Historian- Melissa Garringer
Advisor: Associate Professor Ahmed Mustafa

REGISTRATION—SPRING 2014

We strongly encourage you to speak to your advisor before registering for classes. If you are a senior registering online and expect to graduate at the end of the current semester, be sure to check the box to initiate a graduation audit.

The spring 2014 Schedule of Classes can only be viewed online starting Monday, September 16. Printed schedules will not be available beginning the spring 2014 semester and will only be available on the registrar’s website from now on.

Priority registration for spring semester 2014 begins October 21. Dates for processing are set by class standing (degree candidates, graduate students, and seniors go first). See the spring 2014 schedule information in your IPFW student handbook or the registrar’s website for additional details. Student handbooks are available throughout the campus including the student government office located in Walb Union, Room 225.

Seniors, Grad Students....begins October 21
Juniors, Honors Students, Student Athletes, Students with Disabilities ....begins October 28
Sophomores ....begins November 4
Freshmen ....begins November 11

Please Note
Listed on page 3 are tentative A and B electives for spring 2014.
**SPRING 2014-BIOLOGY ELECTIVES**

**A Electives**

- **BIOL 33500 - Animal Behavior**  
  (Instructor: Professor Bruce Kingsbury)
- **BIOL 34500 - Vertebrate Biology (lecture and lab)**  
  (Instructor: Associate Professor Mark Jordan)
- **BIOL 50200 - Conservation Biology**  
  (Instructor: Professor Bruce Kingsbury)
- **BIOL 52000 - Parasitology**  
  (Instructor: Associate Professor Ahmed Mustafa)
- **BIOL 54300 - Population Ecology (lecture and lab)**  
  (Instructor: Professor William DeMott)
- **BIOL 59500 - Crse: Invasion Biology**  
  (Instructor: Assistant Professor Jordan Marshall)
- **FNR 50500 - Molecular Ecology & Evolution**  
  (Instructor: Associate Professor Mark Jordan)

**B Electives**

- **BIOL 31500 – Developmental Anatomy (lecture and lab)**  
  (Instructor: Associate Professor Winfried Peters)
- **BIOL 52410 – Bacterial Diversity Systematic**  
  (Instructor: Assistant Professor Tanya Soule)
- **BIOL 53700/56500 – Immunobiology (lecture and lab)**  
  (Instructor: Professor Elliott Blumenthal)
- **BIOL 54400 – Principles of Virology (lecture only)**  
  (Instructor: Assistant Professor Jaiyanth Daniel)

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**STUDENT NEWS**

**Vertebrate Biology Students Publish Species Accounts**

Did you know that one of the first blood pressure medications was developed from the venom of a Brazilian pit viper (Jaracara), that there are birds that show off to potential mates by displaying prey impaled on spikes, or that the scars on the flippers of female manta rays are due to male bites during mating? These questions and many more were answered by students that took Biology 345 Vertebrate Biology in spring 2013. An assignment for the course was to develop a species account of a vertebrate for submission to Animal Diversity Web (ADW), an online encyclopedia that is hosted and reviewed by staff at the University of Michigan Museum of Zoology (UMMZ). Content from ADW contributes the Encyclopedia of Life (eol.org) in an effort to provide online descriptions of all species organized by the world’s leading natural history museums. The writing of an account depends on an extensive review of the primary literature so that all that is currently known about the species of interest can be comprehensively described.

Congratulations to the 11 students who authored accounts that were published on Animal Diversity Web following review by UMMZ staff over the summer. They include:

- **Brittany Byerley**, Brittan Brown-headed cowbird (Molothrus ater)
- **Wendy Forrest**, Agami heron (Agamia agami)
- **Aldane Hoilett**, Red-billed streamertail (Trochilus polytmus)
- **Theresa McHugh**, Great grey shrike (Lanius excubitor)
- **Molly Miller**, Clear-nosed brier skate (Raja eglanteria)
- **Adam Murphy**, Jaracara (Bothrops Jaracara)
- **Natasha Perrine**, Glue Chromis (Chromis cyanea)
- **Kourtney Simpkins**, Alfred manta (Manta alfredi)
- **Natalie Singleton**, Siskiyou chipmunk (Tamias siskiyou)
- **Vi Tran**, New Guinea crocodile (Crocodylus novaeguineae)
- **Kristen Weimer**, Yellow-collared lovebird (Agapornis personatus)

Links to all accounts can be found on Associate Professor Jordan’s website (users.ipfw.edu/jordanma/index.html) or accounts can be searched on ADW (animaldiversity.ummz.umich.edu).

IPFW undergraduate honors student **Heidi Nissley**  
(Research Supervisor: Associate Professor Ahmed Mustafa)  
analyzing samples in the physiology lab.
FACULTY NEWS

New Faculty Research Focus:

Jaiyanth Daniel, Ph.D.

Jaiyanth Daniel is a new assistant professor in biology. The focus of his research is *Mycobacterium tuberculosis* (*Mtb*), the causative agent of tuberculosis (TB), which kills nearly 1.4 million people each year. Dormant *Mtb* in two billion people with latent infection necessitates a deeper understanding of the biology of the dormant pathogen. Antibiotics that can shorten treatment time required to cure TB are urgently needed because currently available therapies do not kill dormant *Mtb* and therefore require a prolonged treatment period. Assistant Professor Daniel has been involved over the past decade in understanding the lipid metabolic pathways that enable the pathogen to enter a state of dormancy and become tolerant to antibiotics, resulting in latent TB infection. His future research will include studies on vital metabolic processes in dormant *Mtb* involved in the establishment of latent TB infection. He looks forward to using his expertise as a tool for motivating student involvement in science education and research at IPFW and plans to accept students for research in his lab in spring 2014.

Daniel works in the area of molecular plant-insect and plant-microbe interactions. He strongly believes that a better understanding of the molecular mechanisms underlying plant interactions with insect pests and pathogens holds the key to sustainable agriculture.

Vamsi Nalam, Ph.D.

Vamsi Nalam’s research interests include studying plant response to phloem-feeding insects such as aphids, plant defense against bacterial and fungal pathogens specifically under conditions of abiotic stress, and using the knowledge so gained to engineer disease resistance in agronomically important plants. During his Ph.D., he utilized a model plant, *Arabidopsis thaliana*, to study plant response to an insect pest (Green Peach Aphid), a bacterial (Bacterial wilt), and a fungal pathogen (*Fusarium graminearum*). The knowledge gained from the study enabled him to genetically engineer wheat plants with enhanced resistance to fungal diseases. At IPFW, Visiting Assistant Professor Nalam plans to apply the same principles to develop better soybean varieties with enhanced tolerance to various biotic and abiotic stresses.

IPFW Faculty serving Indiana Academy of Science:

Punya Nachappa, Ph.D., has been elected to serve on the Indiana Academy of Sciences Senior Research Grants Committee and Proceedings of the Indiana Academy of Sciences.

RECENT GRANTS AWARDED TO OUR STUDENTS/FACULTY

- Fuelling, R. R. Indiana Academy of Science–$1,105.
- Paladino F. V. Earthwatch. Costa Rican Sea Turtles–$74,000
- Paladino, F. V. Leatherback Trust. South African Sea Turtle Migrations and Biology–$28,000
- Nachappa, P. National Institute of Food and Agriculture-Agriculture and Food Research Initiative Competitive Grants Program (NIFA-AFRI)–$149,995.
- Soule, T. NSF Research Opportunity Award (ROA)–$15,000
- Soule, T. Indiana Academy of Sciences Senior Research Grant–$1,102
- Soule, T. American Society for Microbiology Conference for Undergraduate Educators (ASMCUE) Early-Career Faculty Travel Grant–$750.
**RECENT BIOLOGY PRESENTATIONS**


**RECENT BIOLOGY PUBLICATIONS**


Kingsbury, B. A. and Christopher Woodley. Advances in Predicting Spring Emergence of the Eastern Box Turtle (Terrapene carolina). Joint Meeting of Ichthyologists and Herpetologists, Albuquerque, NM, July 2013.

Nachappa, P. 2013. Dissecting the ecological and molecular interaction between the plant pathogens and insect vectors. Department of Entomology, Purdue University, West Lafayette, IN, Fall Seminar Series, Invited seminar.


Each year, several IPFW faculty are honored as Featured Faculty for their outstanding performance in the area of research, scholarly activity, or creative endeavor. As a quality measure that distinguishes IPFW from other institutions of higher education, the accomplishments of the Featured Faculty illustrate the comprehensive and significant contributions of IPFW faculty to the sciences, the arts, the humanities, and society. The objectives of this program are:

▶ To showcase IPFW faculty
▶ To emphasize the scholarship at IPFW
▶ To communicate the benefits of intellectual opportunity for students at IPFW
▶ To demonstrate the benefits of IPFW's intellectual resources for our community and society
▶ To elevate the significance of creating new knowledge
▶ To create prestige and recognize and motivate faculty

This year two of our biology professors have been selected as featured faculty. They are Professor George Mourad and Associate Professor Ahmed Mustafa. Congratulations to both of them.