The University Senate of Michigan Technological University

Proposal 6-12
(Voting Units: Academic)

“Proposal for a non-departmental Ph.D. Program in Biochemistry and Molecular Biology (BMB)”

Submitted by the Biochemistry and Molecular Biology Doctoral Planning Group

Contacts: P. Murthy (Chemistry), R. Wusirika (Biological Sciences), C.P. Joshi (Forestry and Environmental Sciences)

There is a growing world-wide demand for scientists and engineers with advanced training in biochemistry and molecular biology. In particular, there is a recognized need for society to understand and respond to problems associated with human health, medicine, forestry and agriculture at the biochemical and molecular levels. Powerful new research tools for understanding these complex processes, such as complete genomes (of humans, animals, crop plants and trees), multi-scale computer models, and applications of “omics” technologies including pharmacogenomics (designing specific therapies based on individual genomes) are being rapidly developed. To successfully participate in these advanced research and development endeavors students require graduate-level training in biochemistry and molecular biology. Furthermore, these research problems and the techniques used to address them are inherently interdisciplinary in nature, and therefore span traditional departmental boundaries.

Michigan Tech has a long and rich history of research in the exciting field of biochemistry and molecular biology. Recent conceptual and technological advancements have widened the scope of what is possible to study in these fields and correspondingly, many recent faculty hires in individual departments and through the Strategic Faculty Hiring Initiative have increased the ranks of those around campus (Biological Sciences, Chemistry, Forest resources and Environmental Sciences, Chemical Engineering, Biomedical Engineering, Mathematics) engaged in biomedical research, plant genomics and other health-related biochemistry and molecular biology studies. Our ability to carry out cutting edge research in these areas will strongly benefit from greater coherence and integrated graduate training. Here, we propose a new doctoral degree program in Biochemistry and Molecular Biology (BMB) which would consolidate our dispersed resources and expertise. This would provide a more appropriate degree program for some of our current and future graduate students as well as a stronger and more focused educational experience for all students involved in molecular level investigations of life processes. Items required by the University Senate for proposing new academic programs (Proposal 108.1.1) are detailed in this proposal.

This program would be categorized within the one or both of the following two CIP codes:
- 26.0210 Biochemistry/Biophysics and Molecular Biology
- 26.0299 Biochemistry, Biophysics and Molecular Biology, Other

1. General description and characteristics of the program

A growing number of faculty and graduate students at Michigan Tech are working in the area of biochemistry and molecular biology. These include members of the Departments of Chemistry, Biological Sciences, Chemical Engineering, Biomedical Engineering and the School of Forest Resources and Environmental Sciences. Active research programs, courses, and a growing number of graduate degrees based on work in this area already exist. The current initiative is to build on the established and emerging research programs by developing a new, coherent, non-departmental Ph.D. program whose primary focus is the graduate education of students in the interdisciplinary areas of biochemistry and molecular biology (BMB).

A core group of 14 graduate faculty members will be involved in the BMB Ph.D. program (Table 1). The BMB Core Faculty are those who likely would advise Ph.D. students in the program, teach relevant lecture and laboratory courses, serve on qualifying exam committees, be elected to serve on the steering committee and otherwise perform programmatic duties of graduate faculty. Current members are from the Departments of Biological Sciences, Chemistry, and the School of Forest Resources and Environmental Sciences.

The BMB program is open to faculty and students with overlapping research and academic interests. Michigan Tech faculty with close research interests include Drs. S. Bagley (BL), M.H. Song (BL), D. Shonnard (CM), C.-A. Peng (CM), A. Minerick (CM), C. Heldt (CM), M. Frost (BE), R. Rajachar (BE) and others. We expect that some of these faculty members will be interested in participating in the BMB Ph.D. program by joining the BMB Core Faculty group and participating in associated teaching and service duties. Other faculty members advise graduate students who will benefit from the new course offerings and other educational activities resulting from this program as their research focus needs a detailed understanding of biochemistry and molecular biology.

We anticipate that a coherent program in BMB will help to attract future faculty with diverse expertise in this area into the above departments as well as other department such as the Departments of Chemical Engineering and Biomedical Engineering.

Table 1. BMB Core Faculty

<table>
<thead>
<tr>
<th>Department of Biological Sciences</th>
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<tbody>
<tr>
<td><strong>Rupali Datta</strong>, Ph.D.</td>
</tr>
<tr>
<td>Associate Professor</td>
</tr>
<tr>
<td>Plant Biochemistry, Environmental Remediation, Plant-Microbe Interactions</td>
</tr>
<tr>
<td>Office: 530 Dow Environmental Sciences and Engineering Building</td>
</tr>
<tr>
<td>Phone: (906) 487-1783; Email: <a href="mailto:rupadatta@mtu.edu">rupadatta@mtu.edu</a></td>
</tr>
</tbody>
</table>

| **K. Michael Gibson**, Ph.D., FACMG |
| Professor |
| Inherited human genetic disorders |
| Office: 740 Dow Environmental Sciences and Engineering Building |
| Phone: (906) 487-2025; Email: kmgibson@mtu.edu |

| **Michael Gritz**, Ph.D. |
| Professor |
| Carbohydrate biochemistry |
| Office: 730 Dow Environmental Sciences and Engineering Building |
| Phone: (906) 487-3175; Email: mgritz@mtu.edu |
Wan Jin Jahng, Ph.D.
Assistant Professor
Vision mechanism, retinal degeneration, functional proteomics
Office: 501 Dow Environmental Sciences and Engineering Building
Phone: (906) 487-2192; Email: wjiahng@mtu.edu

Ramakrishna Wusirika, Ph.D.
Associate Professor
Plant Molecular Biology, Comparative Genomics, Bidirectional Promoters and Transposons
Office 505 Dow Environmental Sciences and Engineering Building
Phone: (906) 487-3068; Email: wusirika@mtu.edu

Thomas Werner Ph.D.
Assistant Professor
Evolution, Genetics, Toxicology, Developmental Biology, Insect Immunology, Virology
Office 523, Dow Environmental Sciences and Engineering Building
Phone: (906) 487-1209; Email: twerner@mtu.edu

Department of Chemistry

Tarun Dam Ph.D.
Assistant Professor
Glycobiology, protein-glycan interactions in immune regulation and pathogen invasion
Office: 701C Chemical Science and Engineering Building
Phone: (906) 487-2940; Email: tdam@mtu.edu

Pushpala Murthy Ph.D.
Professor
Phospholipid and Phosphoinositide metabolism and biochemistry
Office: 505 Chemical Science and Engineering Building
Phone: (906) 487-2094; Email: ppmurthy@mtu.edu

Martin Thompson Ph.D.
Associate Professor
Protein-protein interactions and design of small peptide-based inhibitors of protein-interactions
Office: 510C Chemical Science and Engineering Building
Phone: (906) 487-3522; Email: mthompson@mtu.edu

Ashutosh Tiwari Ph.D.
Assistant Professor
Protein misfolding diseases’ with special emphasis on neurodegenerative diseases
Office: 402B Chemical Science and Engineering Building
Phone: (906) 487-1840; Email: tiwari@mtu.edu

School of Forest Resources and Environmental Sciences

Victor Busov Ph.D.
Associate Professor
Functional genomics of woody development
Office: 185, Noblet Building, School of Forest Resources and Environmental Science
Phone: 906-487-1728; Email: vbusov@mtu.edu

Oliver Gailing Ph.D.
Assistant Professor
Ecological genomics and genomics
Office: 167, Noblet Building, School of Forest Resources and Environmental Science
Phone: 906-487-1615; Email: ogailing@mtu.edu

Chandrashekhar Joshi Ph.D.
Professor
Development of fast growing bioenergy trees for efficient cell wall deconstruction to biofuels
Office: 168 Noblet Building, School of Forest Resources and Environmental Science
Phone: 906-487-3480; Email: cpjoshi@mtu.edu

Hairong Wei Ph.D.
Assistant Professor
Plant systems biology and bioinformatics
Office: 176, Noblet Building, School of Forest Resources and Environmental Science
Phone: 906-487-1473; Email: hairong@mtu.edu

Organizational Structure and Administration

The Biochemistry Ph.D. program, as an interdisciplinary, non-department program, will be administered through the Graduate School. Participating core faculty will elect a three-member steering committee. The committee will elect a Graduate Program Director who will work closely with the Dean of the Graduate School and will be assisted by a staff member. Most biochemistry and molecular biology grants are affiliated with the Biotechnology Research Center (BRC) so the staff member of BRC, who is supported by overhead returns, will provide some assistance.

The Graduate Program Director and the Steering Committee, with the help of BMB Core faculty, will review applications, make admission decisions, determine whether or not changes to the program need to be made (e.g., changing the “approved” curriculum or adding or removing faculty from participation). The home departments of the core courses are committed to offering them on a regular basis. Students enrolled in the program will be housed within the home department of their advisors. The home departments will provide office space, computational resources, and necessary supplies and infrastructure support, and will consider the students for departmental teaching assistantships when appropriate and available. All such students will be counted as members of their home departments for the purposes of internal university accounting.

2. Rationale
The new program responds to a national and international need for more researchers to address problems in the areas of human health, disease treatment and sustainable environment at a molecular level. Advanced education in biochemistry, molecular biology and related fields is essential for creative and productive approaches to these problems. This initiative is motivated by the following:

- This program provides a mechanism for recruiting more highly qualified graduate students by providing a degree that encompasses the interdisciplinary nature of biochemical research better than existing programs within individual academic departments. Currently, students interested in BMB must apply to programs in Biological Sciences, Chemistry, or the School of Forest Resources and Environmental Studies, which have their own curriculum and culture. This new BMB program would attract additional Ph.D. students who wish to have a broader interdisciplinary academic experience focused on biochemistry and molecular biology.

- The new program builds on current strengths with a core group of 14 faculty in three different departments committed to the BMB program. The program could be offered as soon as it is approved. Several existing students are already interested in entering the program.

- Many graduate-level biochemistry and molecular biology courses are currently offered at Michigan Tech in separate departments and this program would streamline existing faculty efforts by helping to identify and eliminate redundancies and increase enrollments in courses that are currently undersubscribed. New graduate courses will be added to address existing deficiencies and serve the needs of students in several disciplines. The new courses along with existing courses will be organized into a coherent program.

- The Ph.D. in BMB is attractive to students as they will have a degree in their area of interest. In addition, the area of expertise of students will be obvious to academic and private sector employers because it is not currently apparent to employers that Michigan Tech students educated in Chemistry, Biological Sciences, or Forest Resources and Environmental Studies have specialized Ph.D. – level training in biochemistry and molecular biology.

- The new program would enhance interdisciplinary research at Michigan Tech by bringing together graduate students and faculty housed in different departments who are conducting related research.

- The new BMB program will be housed in the Graduate School. It will be overseen by a Steering Committee made up of BMB Core Faculty.

- Research in biochemistry and molecular biology is well funded and the new program could help with efforts to increase external funding.

3. Discussion of related programs within the institution and at other schools

There are currently three biochemistry Ph.D. programs (The University of Michigan, Ph.D. in Biological Chemistry; Michigan State University, Ph.D. in Biochemistry and Molecular Biology; Wayne State University, Ph.D. in Biochemistry and Molecular Biology) in the State of Michigan. The character of the biochemistry degree programs vary depending on the research emphasis of the faculty. The faculty involved at Michigan Tech form a unique and broad mix involving biological chemistry, molecular and cellular biology, chemical biology, plant physiology, biomedical science and engineering, biochemical engineering, biomechanical engineering, forest molecular biology and genomics sciences. The combination of subject areas spans the major sub-disciplines of biochemistry and molecular biology. Job opportunities for Ph.D. graduates in BMB are excellent and are expected to remain so as a result of national and international priorities in medicine, health, agriculture, forestry and bioenergy fields.

4. Projected enrollment

We anticipate that 2-5 students will enter the program immediately and that within five years the program will have between 15-20 students.

5. Scheduling plans

We are aiming for implementation by Fall Semester 2012. Participating departments have committed to offer core courses on a regular basis.

6. Curriculum design

Course requirements are designed to ensure that all students have a firm understanding of the fundamentals of biochemistry and molecular biology, including the principles underlying biochemical structure, biochemical dynamics, molecular biology, genomics and biotechnology. These principles will be covered in three core courses BMB5010, BMB5020 and BMB5030. The set of core courses will be offered annually. This ensures that students will be able to complete the core courses and be prepared to take the qualifying examinations during their second year.

6.1 Required Core Courses

Three 6000-level courses (three credits each), a seminar course (BMB6040; one credit), and doctoral research (BMB6990) will form the core of the curriculum for the BMB doctoral program. The courses are BMB6010: Advanced Biochemistry, BMB6020: Advanced Molecular Biology, and BMB6030: Modern BMB Techniques, descriptions in Section 7 below. These courses cover the fundamentals of biochemistry and molecular biology. The three core courses will be developed and taught by the BMB core faculty from the departments of Biological Sciences, Chemistry, and the School of Forest Resources and Environmental Sciences. These courses will provide the necessary background in the areas of biochemistry and molecular biology including genomics and biotechnology. The Departments of Chemistry and Biological Sciences and the School of Forest Resources and Environmental Sciences have agreed to support the creation of these new courses.

In addition to the nine core course credits above, students, depending on their academic background, may be required to take additional courses to provide the breadth and depth necessary for graduate research. The necessary courses will be suggested by the student’s Advisor in consultation with the Advisory Committee. The courses may be at the 3000-, 4000-, 5000- or 6000-level. A partial listing of relevant 5000-level courses is included below (7.2). Courses used to satisfy the requirements for a degree will conform to Graduate School policies regarding required grades, overall GPA, and academic level.

Students will be required to complete a seminar course (BMB6040, 1 credit). Instead of duplicating seminar courses offered by other departments, BMB6040 may include elements of graduate-level seminar courses currently offered by other departments such as Biological Sciences (BL5503), Chemistry (CH5900) and the School of Forest Resources and Environmental Sciences (FW5800) and others.

Students conducting research will enroll in (BMB6990).

Students will need a total of 60 credits beyond a Bachelor degree or 30 credits beyond a Master degree, per Graduate School requirements.

6.2 Qualifying Examination

Each student must pass a written qualifying exam followed by an oral exam no later than the end of the second year of graduate study (Spring semester of second year). This examination will cover topics covered in the core courses BMB6010, BMB6020 and BMB6030. The purpose of the examination is to determine the student’s mastery of
knowledge in biochemistry and molecular biology and the ability to apply this knowledge. Each examination will be written by a committee of four faculty members who have been involved in teaching BMB6010, BMB6020 and BMB6030. All students in the program will take the same qualifying exam. The committee will grade the qualifying exam and conduct the oral examination. On the basis of the student’s performance, the committee will decide whether or not each student passes; a student will pass if a majority of committee members vote in the affirmative. Students who do not pass the examination will be allowed a second attempt. Failure to pass the Qualifying examination in two attempts will result in dismissal from the Ph.D. program; both attempts must be completed by the end of the second year.

6.3 Proposal defense

The student will present a proposal followed by an oral defense of the research plan to his/her Advisory Committee. The proposal should be submitted within one year of successfully completing the qualifying examinations above (6.2) and no later than the completion of the third year in the Ph.D. program. The student’s advisory committee must unanimously agree that the research plan is acceptable. The oral proposal is open to the University community.

6.4 Doctoral dissertation and final oral examination

The research conducted by the student will be presented to the Advisory Committee as a written dissertation. An oral presentation of that dissertation will be made following the completion of the written work. The committee will consist of at least four members of the graduate faculty. At least one of these will be from outside the student’s administrative home department or school. The dissertation is acceptable if the advisor and at least two of the remaining three members of the Advisory Committee concur on its acceptance. The oral defense is open to the University community.

7. New course descriptions

In order to meet the needs of graduate students for graduate level courses in biochemistry and molecular biology, departments periodically offered courses such as, Special topics in biochemistry and molecular biology, Protein folding, Enzymology, Bioorganic chemistry, and others. We anticipate that the following core courses, which will be offered regularly, will replace many of the previous offerings

BMB6010 Advanced Biochemistry This course will focus on the relationships between structure and function of proteins, nucleic acids lipids and carbohydrates. Specific topics include enzyme catalysis, binding and allosterism, protein-protein interaction and protein-nucleic acid interaction, membrane function and signal transduction. Classic and current papers may accompany the lecture material. Foundations in basic biochemistry and molecular biology are required for this course. Credits: 3.0. Lec-Rec-Lab: (3-0-0). Semesters Offered: Fall.

BMB6020 Advanced Molecular Biology This course will focus on the gene structure, gene duplication gene expression, gene regulation, DNA recombination, DNA repair and transposition. Comparison between prokaryotes and eukaryotes will be drawn. Genomics and modern biotechnology methods will be discussed. Classic and current papers may accompany the lecture material. Foundations in basic biochemistry and molecular biology are required for this course. Credits: 3.0. Lec-Rec-Lab: (3-0-0). Semesters Offered: Fall.

BMB6030 Modern BMB Laboratory This is an intensive laboratory course that focuses on protein chemistry, nucleic acid chemistry, genomics and biotechnology. Students will rotate between research labs of four faculty where they will gain in-depth laboratory experience in modern biochemistry and molecular biology. Credits: 3.0. Lec-Rec-Lab: (0-0-3). Semesters Offered: Spring.

BMB6990 Doctoral Research Original research that culminates in a PhD dissertation. Credits: Variable to 12.0. May be repeated; Graded Pass/fail only. Semesters offered: Fall/Spring. Restrictions: Permission of instructor required. Must be enrolled in one of the following level(s): Graduate

7.1 Courses currently offered in Biochemistry and Molecular Biology at the 5000 level

- BLS030 - Molecular Biology Molecular biology of gene structure, expression and regulation. Molecular techniques and their application to biotechnology and genomes are covered. Credits: 3.0. Lec-Rec-Lab: (3-0-0). Semesters Offered: Fall; Restrictions: Must be enrolled in one of the following Level(s): Graduate.

- BL 5035 – Biomaging Current concepts in light and electron microscopy and scanning probe techniques. Theory and practice of fluorescence (including confocal and multi-photon), atomic force, scanning and transmission electron, and video microscopy as applied to biological specimens with an emphasis on sample preparation. Emphasis will be placed on application of advanced techniques. Half semester course. Credits: 2.0. Lec-Rec-Lab: (0-4-0). Semesters Offered: Fall - Offered alternate years beginning with the 2010-2011 academic year. Restrictions: May not be enrolled in one of the following Class(es): Freshman, Sophomore, Junior

- BL 5042 - Scanning Electron Microscopy of Biological Specimens Hands-on training in operation of the scanning electron microscope (SEM). Students prepare biological specimens of their choice for observation. Emphasis will be placed on application of advanced techniques. Successful completion of course is prerequisite to becoming a certified SEM operator in the ACMAL. Half semester course. Credits: 2.0. Lec-Rec-Lab: (0-2-6). Semesters Offered: Fall - Offered alternate years beginning with the 2010-2011 academic year. Restrictions: May not be enrolled in one of the following Class(es): Freshman, Sophomore, Junior. Pre-Requisite(s): BL 5035

- BL 5052 - Fluorescence and Video Microscopy of Biological Sciences Hands-on training in fluorescence microscopy and video microscopy. Students prepare biological specimens of their choice for observation. Emphasis will be placed on application of advanced techniques. Half semester course. Credits: 2.0. Lec-Rec-Lab: (0-2-6). Semesters Offered: Spring - Offered alternate years. Restrictions: May not be enrolled in one of the following Class(es): Freshman, Sophomore, Junior. Pre-Requisite(s): BL 5035

- BL 5062 - Transmission Electron Microscopy of Biological Specimens Hands-on training in operation of the transmission electron microscope (TEM). Students prepare biological specimens of their choice for observation. Emphasis will be placed on application of advanced techniques. Successful completion of course is prerequisite to becoming a certified TEM operator in the ACMAL. Half semester course. Credits: 2.0. Lec-Rec-Lab: (0-2-6). Semesters Offered: Spring - Offered alternate years. Restrictions: May not be enrolled in one of the following Class(es): Freshman, Sophomore, Junior. Pre-Requisite(s): BL 5035

- BL 5145 - Plant-Microbe Interactions Interactions between plants and microorganisms in the environment. Topics include microbial virulence, signaling, gene expression, beneficial interactions and disease resistance in plants. Laboratory will focus on plant biochemical and microbiological methods as they relate to environmental problems. Credits: 3.0. Lec-Rec-Lab: (2-0-2). Semesters Offered: Fall. Restrictions: May not be enrolled in one of the following Class(es): Freshman, Sophomore, Junior

- BL 5503 - Graduate Research Seminar Seminar is designed to facilitate critical discussions of student research projects at various stages of their development. The presenter will provide a seminar on their project and research goals, which will establish the foundation for the discussion thereafter. Credits: 1.0. May be repeated. Lec-Rec-Lab: (0-1-0). Semesters Offered: Fall

- CH 5110 - Pharmaceutical Chemistry: Drug Action Focuses on structural and mechanistic approaches to pharmaceuticals and drug action. General principles of absorption, distribution, action, metabolism, and toxicity of drugs will be presented followed by action of drug classes such as antibiotics, cardiovascular, and anti-inflammatory drugs. Credits: 3.0. Lec-Rec-Lab: (3-0-0). Semesters Offered: Spring. Restrictions: Must be enrolled in one of the following Level(s): Graduate

- CH 5120 - Pharmaceutical Chemistry: Drug Design Focuses on the important concepts in the design and synthesis of drugs. Rational basis for drug design including synthetic, computational, and biochemical concepts will be discussed. Topics include structure-activity relationships, synthesis and reaction mechanism, and case studies of drugs. Credits: 3.0. Lec-Rec-Lab: (3-0-0). Semesters Offered: Fall. Restrictions: Must be enrolled in one of the following Level(s): Graduate
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7.2 Potential additional courses

New courses will be offered based on the needs of graduate students and the expertise and availability of affiliated faculty. Potential new courses include, Bioremediation; Cancer/tumor metabolism; and Metabolic impact of pollutants.

8. Library and other learning resources

The program builds on existing resources, so it is not anticipated that new library or other learning resources will be required.

9. Computing Access Fee

Initially each student will pay the Computing Access Fee appropriate to the advisor’s home department. The program will revisit this issue as circumstances dictate.

10. Faculty resumes

Attached below.

11. Description of available/needed equipment

Faculty listed in Table 1 have fully functioning laboratories with the necessary equipment and computers. No new equipment is required to startup this program.

12. Program costs

No new resources are requested, and costs associated with recruiting and other program administration will be handled through the Graduate School and the departments of Biological Sciences, Chemistry, and Forest resources and environmental sciences and the BRC.

13. Space

No new space is required.

14. Policies, regulations and rules

Described in Section 1 (faculty participation) and Section 6 (curriculum requirements) above.

15. Accreditation requirements

Not applicable

16. Internal status of the proposal
17. Planned implementation date

There are students currently attending Michigan Tech who are interested in the BMB PhD program so we are aiming for implementation by Fall Semester 2012.
Education

University of Calcutta, Calcutta, India  
Indian Institute of Science, India  
Albert Einstein College of Medicine, NY

Ph. D. 1994  
Trainee, 1993-1995  
Postdoc, 1996-2000

Selected publications


Biographical Sketch

Rupali Datta  
Assistant professor  
Department of Biological Sciences
Education
Osmania University, India
B.S., 1987
University of Hyderabad, India
M.S. 1989
University of Hyderabad, India
Ph.D. 1997

Appointments
2008-present
Associate Professor, Department of Biological Sciences, Michigan Technological University, Houghton, Michigan
2004-2008
Assistant Professor, Department of Earth and Environmental Sciences, University of Texas at San Antonio, San Antonio, Texas
2003-2004
Research Assistant Professor and Senior Lecturer, Earth and Environmental Science Department, University of Texas at San Antonio,
2002-2003
Post-doctoral Fellow and Lecturer-I, Earth and Environmental Science Department, University of Texas at San Antonio, San Antonio, Texas
1998-2001
Post-doctoral Associate, Plant Pathology Department, University of Florida, Gainesville, Florida
1997-1998
Visiting Research Fellow, Japanese Society for Promotion of Science Fellowship) Niigata University, Niigata, Japan

Honors
1991-96
Junior and Senior Research Fellowships from the University Grants Commission, Govt. of India
1992
American Society for Plant Physiologists (ASPP) fellowship for Plant Biochemistry course at the University of California, San Diego
1994
Young Scientist Fellowship by 16th International Union of Biochemistry and Plant Molecular Biology Congress
1996-97
Senior Research Fellowship in project funded by Department of Science and Technology (Govt. of India)
1997-98
JSPS Research Fellowship by the Japanese Society for Promotion of Science
2004
Outstanding Young Scientist Award, 2004 Association of Agricultural Scientists of Indian Origin (AASIO)
2005
University of Texas at San Antonio Faculty Research Award.
2005
Early Career Award in Research, Southern Branch of the American Society of Agronomy

Selected Research Support
United States Environmental Protection Agency, 2002, $391,473/2y (Total): Biogeochemistry of arsenic in contaminated soils of Superfund sites

National Institutes of Health
1) 2007, $414,510 (Direct): Novel Remediation Methods to Lower Human Health Risk from Exposure to Arsenic-Enriched Soils
2) 2006, $414,510 (Direct): A new method to clean up chromium and metal enriched stormwater in Naval shipyards (Principal)
3) 2005, $750,000 (Total): A new method to clean up chromium and metal enriched stormwater in Naval shipyards (Principal)

Selected Refereed Publications (out of >160 refereed publications):

Biographical Sketch
Oliver Gailing
Assistant Professor of Ecological Genomics
School of Forest Resources and Environmental Science
Michigan Technological University, Houghton, MI 49931
Tel: 906-487-1615, email: ogailing@mtu.edu
Web Page: http://forest.mtu.edu/faculty/gailing/

Professional preparation
M. Sc. (Botany), University of Bochum, Germany, 1994
Ph.D. (Genetics), University of Halle, Germany, 2000
PostDoc (Genetics), Leibniz Institute IPK-Gatersleben, Germany, 2002-2002
Post lecturer qualification (Habilitation, Forest Genetics), University of Goettingen, Germany, 2009

Appointments
2009-present
Assistant Professor, Michigan Tech University
2008-2009  Research Scientist, Goettingen University, Germany
2002-2008  Assistant Professor ("Wiss. Assistent"), Goettingen University
2000-2002  Research Scientist (PostDoc), Leibniz Institute IPK-Gatersleben, Germany
1996-2000  Research Scientist (Ph.D), Leibniz Institute IPK-Gatersleben, Germany
1994-1996  Research Scientist, Bochum University, Germany

Five recent publications most closely related to the proposed project:


Five additional significant publications:


Synergistic activities

1) Ad hoc reviewer for international Journals (e.g. BMC Plant Biology, BMC genomics, Conservation Genetics, Molecular Ecology, New Phytologist, Plant Biology, Physiologia Plantarum, Plant Cell Biology 7: 516-525.

Honors and Awards

1/2009: Habilitation (Post Lecturer Qualification) for Forest Genetics and Forest Tree Breeding at the Georg-August University of Göttingen
7/2000 Luther certificate of the University Halle / Wittenberg for the PhD thesis

Graduate and Postdoctoral advisors:
- Prof. Dr. Reiner Finkeldey, Prof. Dr. Konrad Bachmann, Prof. Dr. Thomas Stuetsel

Thesis Advisors:


Biographical Sketch

Gibson, K. Michael
Professor and Chair
Department of Biological Sciences
Michigan Technological University
1400 Townsend Drive, Houghton, MI 49931
Phone: (906) 487-2025
Email: kmgibson@mtu.edu

Education
University of California, Riverside, CA  Biochemistry  B.S. 1977
University of Colorado, Boulder, CO  Chemistry  M.S. 1979
University of California, San Diego, CA  Chemistry  Ph.D. 1983

Appointments, Honors, Awards

1984 - 1986  Postdoctoral Fellow, Dept. Pediatrics, University of California, San Diego, La Jolla, CA
1985 - 1986  Bank of America Giannini Foundation Fellow
1986 - 1988  Assistant Research Biochemist, Dept. Pediatrics, Univ. of California, San Diego, La Jolla, CA
1988 - 1998  Senior Research Scientist, Institute for Metabolic Disorders, Baylor University Medical Center and Baylor Research Institute, Dallas, Texas
1991 - 1992  Alexander von Humboldt Research Fellow, Heidelberg, Germany
1989 - 1994  Assistant Professor of Biomedical Studies, Baylor University, Waco, Texas
1990 - 1995  Adjunct Assistant Professor of Biological Sciences, Southern Methodist University, Dallas, TX
1994 - 1998  Associate Professor of Biomedical Studies, Baylor University, Waco, TX
1995 - 1998  Adjunct Associate Professor of Biological Sciences, Southern Methodist University, Dallas, TX
1995 - 1998  Adjunct Associate Professor/Neurology, Univ. Texas Southwestern Medical School, Dallas, TX
1998 - 2001  Associate Professor, Depts. of Molecular and Medical Genetics and Pediatrics, Oregon Health & Science University, Portland, Oregon
1998 - 2005  Director, Biochemical Genetics Laboratory, Oregon Health & Science University, Portland, OR
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1999 - 2009 Board Certified Clinical Biochemical Geneticist, American College of Medical Genetics
2001 - 2005 Professor, Dept. Molecular and Medical Genetics, Oregon Health & Science University
2004- Komrower Memorial Lecturer, Annual Meeting, Society for Study of Inborn Errors of Metabolism, Amsterdam, August 31 - September 4, 2004
2005- 2009 Director, Biochemical Genetics Laboratory, Children's Hospital of Pittsburgh of UPMC
2005 - 2009 Professor, Pediatrics, Pathology, Human Genetics, University of Pittsburgh School of Medicine
2009- Prex Professor and Chair, Biological Sciences, Michigan Technological University
2008 NIH Site Visit, PDEGEN (Program in Developmental Endocrinology/Genetics), March 26-28.

Selected Publications (from 258)


Biographical Sketch

Michael R. Gretz
Biotechnology Research Center
Department of Biological Sciences
Michigan Technological University
Houghton, MI 94931-1295
Telephone: (906)487-3175,
Email: mrgretz@mtu.edu
www.desmids.mtu.edu

A. Professional Preparation:
Ph.D. 1981, Arizona State University; Botany (Plant Biochemistry)
B.S., 1977, Central Michigan University; Chemistry & Biology

B. Appointments:
2010-present: Director, Biotechnology Research Center, Michigan Technological University
2007-2008: Visiting Scholar, Scripps Institution of Oceanography, UCSD
1999-present: Professor of Biological Sciences, Michigan Technological University
1993-1999: Associate Professor of Biological Sciences, MTU
1992-1993: Associate Professor of Biology (Tenured), George Mason University
1989-1992: Director, Shared Research Instrumentation Facility, GMU
1988-1989: Co-Director, Center for Basic and Applied Research, GMU
1986-1991: Assistant Professor of Biology, GMU
1984-1986: Postdoctoral Research Assoc., Univ. of Texas, Austin with R. Malcolm Brown
1981-1984: Postdoctoral Research Fellow, McMaster University with E. L. McCandless

C. Publications:
FIVE SELECTED PUBLICATIONS RELATED TO PROPOSED PROJECT:


OTHER PUBLICATIONS (last five years):


D. Synergistic Activities:

Elected Treasurer, Phycological Society of America 2004-2006
AAAS Section G Committee representative 2006-2008
Organized NSF funded "Modern Methods" workshop at International Botanical Society meeting 2002

Patents:


E. Collaborators (last 48 mo.):

Ziegler, Sue. Memorial University of Newfoundland, Canada
Liepman, Aaron. Eastern Michigan University
Hildebrand, Mark. Scripps Institution of Oceanography
Roberts, Alison. University of Rhode Island
Delwiche, Chuck, University of Maryland
Domozych, David. Skidmore College
Willats, William, University of Copenhagen
Hagerthey, Scot. South Florida Water Management District
Hotchkiss, Arland. USDA ERRC Wyndmoor
Pauly, Markus, Michigan State University. – DOE Lab
Spaulding, Sarah. EPA, Colorado
Underwood, Graham. University of Essex, UK
Handler, Robert. Michigan Technological University

Graduate and Post-doctoral Advisors of M. Gretz:

Aronson, Jerome. Arizona State University
Sommerfeld, Milton. Arizona State University
Brown, R. Malcolm, Jr. University of Texas, Austin
McCandless, Esther. McMaster University, Ontario, Canada

Graduate Students:

Erin McKenney, M.S. expected 2012.
Sarah Kiemle, Ph.D. 2010.
Melba Apoya, Ph.D. 2006.
Brent Bellinger, Ph.D. 2006.
Abass Abdullahi, Ph.D. 2006.
Yan Wang, Ph.D. 2000
Jingjie Lu, Ph.D. 1999
Brandon Wustman, Ph.D. 1998
Yalin Wu, Ph.D. 1993
Carla Kinslow, M.S. 1999

Postdoctoral Fellows Hosted:
Sarah Kiemle, 2010-11, MTU
Utpal Adhikari, 2009-10, University of Burdwan, India
Ash Haeger, 2008-10, University of Leeds, UK
Eric Koh, 1998-99, University of Otago, NZ
Jean-Claude Mollet, 1993-95, UC Riverside

Biographical Sketch

Wan Jin Jahng
Assistant Professor
Department of Biological Sciences
Michigan Technological University
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Education
Korea University, Seoul, Korea
Agricultural Chemistry
B.S. 1986-1990
Korea University, Seoul, Korea
Organic Chemistry
M.S. 1990-1992
University of Nebraska, Lincoln, NE
Organic Chemistry
Ph.D. 1995-2000
Harvard Medical School, Boston, MA
Biochemistry, Proteomics
Postdoc 2001-2003
Harvard Medical School, Boston, MA
Biochemistry, Proteomics
Research Associate 2004-2005

Appointments
Professional Experience
2009-present Assistant Professor, Department of Biological Sciences, Michigan Technological University

www.admin.mtu.edu/usenate/prose/12/6-12.htm
Biographical Sketch

Chandrashekhar P. Joshi
Professor of Plant Molecular Genetics
Biotechnology Research Center
School of Forest Resources and Environmental Science
Michigan Technological University, Houghton, MI 49931
Tel: 906-487-3480 Fax: 906-487-2915
email: cpjoshi@mtu.edu
Web page: http://forest.mtu.edu/faculty/joshi/

Current Research Interests:
Biotechnological improvement of lignocellulosic materials in poplars for better bioenergy production

Education
Ph.D. University of Poona, India Biochemistry 1982
M.Sc. University of Poona, India Botany 1977
B.Sc. University of Poona, India Botany 1975

Synergistic Activities
2) 2007-9 Proteomics Center Committee member, Development of Differential 2D Electrophoresis, USC
3) 2006- Principal Organizer, Nepal Trauma Center Project
4) 2006 Director, Science Summer Camp for middle and high school students in South Carolina
5) 2003 Principal Organizer, U.S.-Korea Bioscience-Biotechnology Conference, Harvard Medical School

Selected Collaborators & Other Affiliations
Dr. Heywon Chung, Department of Ophthalmology, Asan Medical Center, Seoul, Korea. Project: Retina Degeneration-Apoptosis
Prof. Donald M. Coen, Department of Biological Chemistry and Molecular Pharmacology, Harvard Medical School, Boston, MA 02115. Project: Human Cytomegalovirus Phosphorylation Signal Transduction
Graduate Advisors and Postdoctoral Mentor
M.S.: Prof. Bong Rae Cho, Department of Chemistry, Korea University, Seoul, Korea
Ph.D.: Prof. David B. Berkowitz, Department of Chemistry, University of Nebraska, Lincoln, NE
Postdoc.: Prof. Robert R. Rando, Department of Biological Chemistry and Molecular Pharmacology, Harvard Medical School
Apointments:
2010-present  WCU Visiting Professor, Chonnam National University, Gwangju, S. Korea
2008-present  Professor, Michigan Tech University, Houghton, MI
2007-2009  Director, Biotechnology Research Center, Michigan Tech University
2004-2009  Director, SFRES graduate programs, Michigan Tech University
2004-2008  Assistant Professor, Michigan Tech University, Houghton
1999-2004  Assistant Professor, Michigan Tech University, Houghton
1996-1999  Research Assistant Professor, Michigan Tech University, Houghton
1990-1996  Research Scientist, Texas Tech University, Lubbock
1988-1990  Research Associate, Ohio State University, Columbus
1985-1988  Scientist, National Chemical Laboratory, Pune, India
1983-1985  Visiting Scientist, Max Planck Institute, Cologne, Germany
1980-1983  Scientist, National Chemical Laboratory, Pune, India
1979-1980  Research Student, National Chemical Laboratory, Pune, India
1977-1979  Lecturer in Botany, S.P. College, Pune, India

Some selected recent and significant publications:

Synergistic activities
1) Spearheaded establishment of M. S. and PhD degrees in Forest Molecular Genetics at Michigan Tech
2) Currently editing two books on poplar genomics and bioenergy; author of three approved US patents
3) Director of Biotechnology Research Center 2007-2009, MTU
4) Current member of Research Advisory Council and Chair of the Institutional Biosafety Committee, MTU
5) Graduate Program Director, 2004-2009, SFRES, MTU
6) Faculty judge: Western Upper Peninsula Science Fair (Grades 4-9) and Graduate Poster competitions
7) Ad hoc reviewer for numerous International journals and NSF, USDA and DOE proposals;
9) Distinguished Teaching Award Finalist, Assistant Professor Category, MTU, 2004; fellow of SFI, 2010
10) PI on a successful US Department of Education grant for establishing transatlantic dual degree program in Forest Resources and Biotechnology
11) PI or Co-PI on over $6 million grants from national and international agencies at Michigan Tech

Collaborators
Coauthors and Collaborators (Last 48 months) (!Our Science 2006 paper has over 100 coauthors)
Anroll Tony, Bhandari Suchita, Vincent Chiang, Oswal Crista, Davis Mark, Fucetti-Rusell Fei, Fujino Takeshi, Candace Harding Scott, Xiang X Liang Xiang, Kalluri Udaya, Li Shigen, Xuaice Liu, Xiang X Liu, Mansfield Shawn, Otoson W, Podila Gopi, Ranjan Priya, Sumaga Anita, Tsai Chung Jui, Thammannagowda Shiv, Turner Simon, Williamson R, Xu Fuyu, Yi X Zhang Dongyan

Graduate and Postdoctoral Advisors
Dr. P.K. Ranjek, Late Prof. Otto Schieder, Prof. Desh Pal Verma, Prof. Henry Nguyen

This thesis and Postdoc Advisees


Postdocs and other staff: Xaxao Liang, Shanfa Lu, Yujia Zhou, Takeshi Fujino, Suchita Bhandari, Dongyan Zhang, Xuyxia Liu, Ramesh Thakur, Xiaohong Zhu

Undergraduate Research Advisors
Marie Wilkening, Hwee Chi Tay, James Wex, Katherine Kleeckhafer, Laura Kluksen, Katie Kruger, Ellen Brenna, Ashley Sharp, Megan McQuillan, Jill Recla, Kristina Flesher, Eric Koronka, Ayushi Kawatra, Ian Bonner, Sandra Orlowski, Nathan Fettenger, Eric Hollender, Justeen Beaune, and Josh Papacek

Biographical Sketch
Pushpalatha P. N. Murthy
Professor
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E-mail: ppmurthy@mtu.edu

Education
Miranda House, Delhi University, Delhi, India  Chemistry  B.Sc. (Hons) 1972
Indian Institute of Technology, Kanpur, India  Chemistry  M.Sc. 1974
Brown University, Providence, RI  Bioorganic Chemistry  Ph.D. 1979
The Univ of Mich., Ann Arbor, MI  Bioorganic Chemistry  1979-1980
The Univ of Michigan, Ann Arbor, MI  Neuroscience  1980-1982

Appointments
Sept.99 - present:  Professor, Dept. of Chemistry, Michigan Technological University, Houghton, MI
Feb. 06 - May 08:  Sabbatical leave at CSIRO Canberra, and CAMBIA, Canberra, Australia
Aug. 01 - July 04:  Chair, Dept. of Chemistry, Michigan Technological University, Houghton
Aug. 00 - Aug.02: Interim Chair, Dept. of Chemistry, Michigan Tech. University, Houghton, MI  
Sep. 91 - Aug. 99: Associate Professor, Dept. of Chemistry, Michigan Tech. Univ., Houghton, MI  
Mar. 93 - May 93: Visiting Assoc. Prof (on sabbatical leave), Biotechnology Dept., Cornell University, Ithaca, NY  
Sep. 92 - Dec. 92: Visiting Assoc. Prof (on sabbatical leave), Michigan State University, East Lansing, MI  
Sept. 86 - Aug. 91: Assistant Professor, Department of Chemistry, Michigan Technological University, Houghton, MI  
Sept. 85 - Aug. 86: Visiting Asst. Professor, Department of Chemistry and Chemical Engineering, Michigan Technological University, Houghton, MI

Aug. 82 - Jan. 85: Research Chemist, Stauffer Chemical Company, Dobbs Ferry, NY.

Selected Publications
6) Bakul Dhtag Mehta, Sonali P. Jog, Steven C. Johnson and Pushpala P.N. Murthy (2006) Lily pollen alkaline phytase is a histidine phosphatase similar to mammalian multiple inositol polyphosphate phosphatase (MIPP), Physchimia, 67, 1874-1886.

Synergistic Activities
1) Developing a new inquiry-based lab course "Research methods in Biomolecular Chemistry". This project is funded by the NSF-CCU program.
2) Developed a new course for chemistry majors interested in teaching high school chemistry: Design and Operation of a High School Chemistry Laboratory. I worked with local high schools to develop this course. The aim of the course is to address topics necessary for the design and introduction of a chemistry laboratory in high schools including ordering, storage, tracking, and disposal of chemicals, safety issues, developing new lab experiments and demonstrations, preparation of reagents on large scale, and internships in local high schools. The need for such a course was identified by a workshop organized by the American Chemical Society on Secondary Chemical Education curriculum and our own alumni. This course is now offered every other year.
3) Worked on a curriculum for two new degree programs now offered in the Department – BS in Biochemistry and Molecular Biology and BS in Pharmaceutical Chemistry.
4) Developed a new course for the BS in Pharmaceutical Chemistry program – Pharmaceutical Chemistry I – Mechanism of Drug Action. This course is now offered every year.
5) Finalist for Outstanding Teacher of the Year award for 1989-90 in Assistant Professor category.

Collaborators and Other Affiliations
Dr. Richard Brown, Dept. of Chemistry, Michigan Technological University
Dr. Haiying Liu, Dept of Chemistry, Michigan Technological University
Dr. Victor Raboy, USDA, Aberdeen, Idaho

Graduate Advisors and Postdoctoral Sponsors
Ph.D. Advisor: Prof. David Cane, Brown University
Postdoctoral sponsor: Prof. Masato Koreeda, Univ of Michigan, Ann Arbor, MI
Postdoctoral sponsor: Prof. Bernard Agranoff, Univ of Michigan, Ann Arbor, MI

Thesis Advisor (Ph.D.)
Dr. Laura Barrientos, Center for Disease Control, Atlanta; Dr. Bhuvanra Murthy, Ohio State University, Columbus, Ohio; Dr. Barry Garchow, Univ of Pennsylvania; Dr. Sonali Jog, Univ of Southern California; Dr. Bakul Dhtag Mehta, Univ of Missouri, Columbia; Dr. Gay Plishka-Matyskha, Henry Ford Hospital, Detroit, Dr. Steven Johnson, Univ of Illinois, Urbana-Champaign

Biographical Sketch
Ashutosh Tiwari
Assistant Professor
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Web page: http://www.chemistry.mtu.edu/pages/faculty/faculty.php?fac=tiwari

Current research interests
“Protein misfolding diseases” with special focus on neurodegenerative diseases.

Education
Jawaharlal Nehru University (JNU), New Delhi, India Biotechnology Ph.D. 1999
Jamia Millia Islamia, New Delhi, India Biosciences M.Sc. 1993
All-India Institute of Medical Sciences (AIIMS),New Delhi India Human Biology, specialization in biophysics 1991 B.Sc.(Hons)

Appointments
2009 – Assistant Professor, Department of Chemistry, Michigan Technological University, Houghton, MI.
2009 – Adjunct Research Assistant Professor, Department of Neurology, University of Massachusetts Medical School (UMMS), Worcester, MA.
5/30/2019 Proposal 6-12

Four recent publications

Five significant publications:

Synergistic activities:
2) Member of ‘University Animal Care Committee’ and ‘Institutional Biosafety Committee’ at MTU.
3) Member of ‘Biochemistry Curriculum Committee’ for Chemistry department at MTU.

Collaborators
Robert Brown (UMMS), Lawrence Hayward (UMMS), Zuoshang Xu (UMMS), Hoi Pang Low (UMMS), Robert Mahews (UMMS), Jeffrey Agar (Brandeis University); John Hart (UTHSCA), Joan M. Hart (UTHSCA), Arizona State University, Tempe, AZ. Ph.D.

Biographical Sketch
Martin Thompson
Associate Professor
Department of Chemistry Tel: (906) 487-3522
Michigan Technological University Fax: (906) 487-2061
4100 Townsend Drive Email: thompson@mtu.edu
Houghton, MI 49931

Education
Arizona State University, Tempe, AZ. Ph.D. 2000
Dissertation “Synthesis and Characterization of the Photophysical and Photocatalytic Properties of Sequence Specific DNA-Binding Probes,” Advisor: Neal Woodbury

Appointments
2009-present Associate Professor, Department of Chemistry, Michigan Technological University Assistant Professor, Department of Chemistry, Michigan Technological University (2003-2009)
2004 Visiting Scientist, Department of Biological Chemistry, University of Michigan Medical Center
2002-2003 Postdoctoral Fellow, Department of Biological Chemistry, University of Michigan
2000-2002 Postdoctoral Assistant, Howard Hughes Medical Institute, University of Michigan

Other Activities
2010-present Councilor, Upper Peninsula Section of the American Chemical Society 2007 Panel Member, National Institutes of Health, Center for Scientific Review, Study Section ZRG1 GGG-F(90) 2006-2009 Chair, Upper Peninsula Section of the American Chemical Society

Professional Affiliations
American Chemical Society, Biophysical Society, Council on Undergraduate Research

Research Interests
Fluorescence-based biochemical methods and biosensors; quantification of modification-dependent protein-protein interactions associated with transcription; development of assays for drug discovery; molecular recognition; cell-specific targeting using peptidoimetics;

Five Significant Publications
Biographical Sketch

Hairong Wei
Assistant Professor of Systems Biology & Molecular Biology
School of Forest Resources and Environmental Science
Michigan Technological University
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http://forest.mtu.edu/faculty/wei/index.htm

Current Research Interests
Systems Biology: Gene network constructions & gene function prediction
Bioinformatics and Genomics on tree growth & wood development
Biological database design and development
Impact of CO2 and abiotic stress on gene network
New algorithm/software/pipeline development

Education
Beijing Forestry University, P.R. China Agricultural Sci. BS & 4 years
Beijing Forestry University, P.R. China Plant Genetics MS & 3 years
University of Hawaii at Manoa Plant Mol. Biol Ph.D. & 5 years
University of Chicago Computer Sci. MS & 1.5 years
University of Minnesota Bioinformatics Post-doc & 1.5 years
University of Alabama at Birmingham Biostatistics Post-doc & 1 year

Appointments
2008–Present Assistant Professor, Michigan Technological University, Houghton, MI
2006–2008 Bioinformatics Developer, Wicell Research Institute, Inc., Madison, WI
2005–2006 Bioinformatics Scientist, Operon Biotechnologies, Inc., Huntsville, AL
2004–2005 Postdoc, Biostatistics, University of Alabama, Birmingham, AL
2003–2004 Postdoc, Bioinformatics, University of Minnesota, Minneapolis, MN
1996–2001 Res. Assistant, Plant Mol. Biology, University of Hawaii, Honolulu, HI
1995–1996 Res. Assistant, Plant Genetics, University of Hawaii, Honolulu, HI
1989–1995 Assistant Professor, and Lecturer, Forestry Genetics, Beijing Forestry University

Some selected publications

Teaching
FW4099 Programming Skills for Bioinformatics Fall 2009, 2011
FWS5082 Gene Expression Data Analysis Fall 2010, 2012
CS2321 Data Structure in Java Spring 2011
FW4500 Experimental Design and Data Analysis for Natural Science Spring 2012

Recent Synergistic Activities
1) Grant Proposal Reviews: NSF Organism and Environment Interaction. 2010
2) Grant Proposal Reviews: NSF of China Forestry Biotechnology. 2010
3) invited speaker: International Conference on Sustainable Management of Multi-purpose Poplar Plantations, IUFRO, China, 2010
4) invited speaker: Plant and Animal Genome XIX Conference, Jan 2011, San Diego, California.

Collaborators & Collaborators & Other Affiliations (within last 48 months)

Advisor
Fang Ruan, Ph.D. student in Systems Biology, Spring, 2010 to Present
Yang Li, Master student in Genomics. Fall, 2009 to Present
Hang Zhang, Master student in Computer Science, Spring, 2010 to Present

Biographical Sketch

Thomas Werner
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Department of Biological Sciences
DOW 523, 1400 Townsend Drive
Michigan Technological University
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E-mail: twerner@mtu.edu

Education
2005 Ph.D., Cell and Molecular Biology, Umeå Center for Molecular Pathogenesis, Umeå University, Umeå, Sweden.
1997 M.Sc., Biology, Jena University, Jena, Germany.

Appointments
2010 - present Assistant Professor, Department of Biological Sciences, Michigan Technological University, Houghton, MI.
2005 - 2010 Post-Doctoral Research Associate, Department of Molecular Biology, University of Wisconsin-Madison, Madison, WI.

Honors and Awards
2005 - 2008 Postdoctoral Long-term fellowship, Human Frontier Science Program
2005 - 2007 Postdoctoral Long-term fellowship, European Molecular Biology Organization (declined in favor of the HFSP fellowship)
1998 – 2000 Graduate fellowship Umeå University
1990 Special Award at the National Youth Science and Technology Competition "Jugend Forscht" ("Youth researches"), Mainz, Germany.

Peer Reviewed Publications

Memberships
Michigan Tech Biotechnology Research Center (BRC)

Current Collaborations
Sean B. Carroll and Shigeyuki Koshikawa, University of Wisconsin-Madison, WI.

Advisors
M.Sc. Advisor: Dr. Andreas Henke, Jena University, Jena, Germany
Ph.D. Advisor: Dr. Dan Hultmark, Umeå Center for Molecular Pathogenesis, Umeå University, Umeå, Sweden.
Postdoctoral Advisor: Dr. Sean B. Carroll, University of Wisconsin-Madison, WI.

Present Undergraduate Students
Bryant Kollie, Roger Yeager

Biographical Sketch

Ramakrishna Wusirika
Associate Professor
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Proposal 6-12

Education
National Chemical Laboratory, and University of Pune, Pune, India  
Biochemistry  Ph.D., 1995
University of Hyderabad, Hyderabad, India  
Biochemistry  M.Phil., 1990
University of Hyderabad, Hyderabad, India  
Biochemistry  M.Sc., 1988
Osmania University, Hyderabad, India  
Biology  B.Sc., 1986

Appointments
2009 – present  Associate Professor  Department of Biological Sciences, Michigan Technological University, Houghton, MI.
2003 - 2009  Assistant Professor  Department of Biological Sciences, Michigan Technological University, Houghton, MI.
1999 - 2003  Post-Doctoral Research Fellow  Department of Biological Sciences, Purdue University, West Lafayette, IN.
1997 - 1999  Post-Doctoral Research Fellow  Department of Horticulture, Purdue University, West Lafayette, IN.
1995 - 1997  Post-Doctoral Research Fellow  Division of Biochemical Sciences, National Chemical Laboratory, Pune, India.

Recent Publications

Synergistic Activities
1) Member, American Society of Plant Biologists
2) Coordinator, Bioinformatics Program, Michigan Tech University
3) Ad hoc reviewer for several international journals and funding agencies (NSF, US-Israel BARD and U.S. Civilian Research and Development Fund)
4) Chief editor for a special issue of International Journal of Plant Genomics

Collaborators
Jeffrey Bennetzen (U. Georgia, GA), Phillip SanMiguel (Purdue Univ, IN), Jianxin Ma (Purdue Univ, IN), Ramanjulu Sunkar (Oklahoma State Univ, OK), Chung-Jui Tsai (U. Georgia, GA), Erich Grotevold (Ohio State Univ, OH), Sastry Jayanty (Colorado State Univ, CO), Rupali Datta (MTU), Wan Jin Jahng (MTU), Charles Kerfoot (MTU)

Graduate and Postdoctoral Advisors
PhD Advisor: Prabhakar Ranjekar, National Chemical Laboratory, Pune, India
Postdoctoral Advisor: Jeffrey Bennetzen, University of Georgia, Athens, GA, Avtar Handa, Purdue University, West Lafayette, IN, Prabhakar Ranjekar, National Chemical Laboratory, Pune, India

Thesis Advisor
Current Ph.D.
Suresh Reddy Dhadi, Kefeng Li and Sheikh Rafi
Past Ph.D./M.S.
Nicholas Krom, Zijun Xu, Deepak Kumar and Patience Tenney

Curren Visiting Scientist
Zhiying Dou

Past Visiting Scientist
Bashir Yusuf (Ahmadu Bello University, Nigeria)

Undergraduate Students Advised
Nari Kang, Matt Ogg, Sulagna Gupta, Katte Kruger, Megan McQuillan, Jill Recla, Benjamin Baer and Holly Grunst

Introduced to Senate: 19 October 2011

Approved by Senate: 02 November 2011
Approved by Administration: 11 November 2011
Approved by BOC: 09 December 2011
Approved by State: 20 January 2012