Mohammed Abdul Majeed

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Objective Graduate studies in the field of Bioengineering.

Research Interests Systems Biology, Synthetic Biology and Biochemistry.

Education

- **Master of technology in Biotechnology**
  Bachelor of technology in Biotechnology
  Indian Institute of Technology, Madras
  CGPA 9.08 on 10 in major, **8.93 on 10** overall
  Currently ranked 2 out of 40 in the graduating Biotechnology class.
  To graduate by May, 2011.
- **Board of Intermediate Education** Andhra Pradesh, India
  Graduated with **93.4 %** May, 2006
- **Board of Secondary Education** Andhra Pradesh, India
  Graduated with **85.4 %** May, 2004

Publications

- **Overexpression and recovery of active human phospholipid scramblase 1 a type II membrane protein from inclusion bodies using N-lauroyl sarcosine.**
  Abdul Majeed, Vincent Gerard Francis, Sathyanarayana N Gummadi.
  Process Biochemistry (Under Review) – Submitted, October 2010.
- **Conformational Properties of Human Phospholipid Scramblase 1 and its Transmembrane Deleted Mutant: A spectroscopic study.**
  Vincent Gerard Francis, Abdul Majeed, A Gopalakrishna, Sathyanarayana N Gummadi.
  Journal of Biological Chemistry (Under Review) – Submitted, November 2010.

Conferences

- **Constraint-Based Network Analysis of Sugar Fermentation in *Saccharomyces cerevisiae*.** [1]
  Abdul Majeed, Joonhoon Kim, Jennifer L. Reed.
  33rd Steenbock Symposium, University of Wisconsin – Madison
  30th July - 2nd August 2009.
- **Ca^{2+} binding in transmembrane deleted mutant of human phosphoslipid scramblase 1: A spectroscopic study.**
  Abdul Majeed, Vincent Gerard Francis, A Gopalakrishna, Sathyanarayana N Gummadi.
  7th Asian Biophysics Association (ABA) Symposium & Annual meeting of the Indian Biophysical Society (IBS), New Delhi
  Abstract accepted; 30th January - 2nd February 2011.

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[1] The Poster is available at http://openwetware.org/images/9/91/Poster_Abdul_wisconsin.jpg

Research Projects

- **Dual Degree Project, IIT-Madras** **Feb 2010 – present**
  - Over expression of recombinant hPLSCR1 cloned into pET-28b (+) in *E. coli* BL21-DE3 leads to their aggregation as inclusion bodies. It was found that treatment of inclusion bodies with 1% N-lauroyl sarcosine effectively recovered ~40% of natively folded protein.
  - In order to understand the role of transmembrane (TM) domain in transbilayer movement of phospholipid, a mutant lacking the TM region of hPLSCR1 was constructed and it's the Ca^{2+} binding properties were characterized by various spectroscopic methods.

  Guide: Dr. Sathyanarayana N Gummadi, IIT-Madras.

- **Research Scholar, University of Wisconsin – Madison** [2] **Summer 2009**
  - *Saccharomyces cerevisiae* reconstructed network was analyzed by constraint based modeling techniques and the organism's inability to ferment xylose was studied.
  - Various strains were designed computationally for improving the *S. cerevisiae's* ethanol yield on glucose fermentation.

  Guide: Dr. Jennifer L. Reed, UW-Madison.

- **iGEM (International Genetically Engineered Machines) Feb – Nov 2009**
  Won a Silver; Presented at **Massachusetts Institute of Technology, Boston** [3]
  - A new versatile system was designed which can be used to "lock up" the function of a certain gene of interest, thus functioning as a combination lock, and can be unlocked only when the cultures are grown in a pre-determined order of external selection pressures.
  - Proof of concept experiments to demonstrate directed plasmid loss in bacteria transformed with multiple plasmids using appropriate growth conditions.

  Guides: Dr. Guhan Jayaraman, IIT-Madras; Dr. Madhulika Dixit, IIT-Madras and Dr. Mukund Thattai, NCBS-Bangalore.

- **Research Internship, Dr. Reddy's Labs, Hyderabad** [4] **Summer 2008**
  - Based on the metabolic profiles, various scale up and media optimization studies were carried for small scale cell cultures of recombinant Chinese Hamster Ovary cells.

  Guide: Dr. Ganesh Reddy, Associate Director - Dr. Reddy's Labs.

Course Projects

- Analysis of Urinary Tract Infection (Pylonephritis) – a mathematical model.
- Kinetics of Ethanol Fermentation with high biomass concentration considering the effect of temperature.
- Recovery of native folded proteins from inclusion bodies - A Review.

[2] The report is available at http://openwetware.org/images/5/57/Abdul_report_wisc.pdf

[3] The work is documented at http://2009.igem.org/Team:IIT_Madras

[4] The report is available at http://openwetware.org/images/4/47/Dr_reddys_Abdul_report.pdf

Skills

Matlab, Scilab, GAMS, VMD, Adobe Photoshop, Adobe Illustrator.

Scholastic Achievements

- Have consistently been at **Branch Position 2** in the department (in a class of 40 students).
- **Khorana Scholar 2009**: Received a scholarship of $ 4100 through the DBT-Govt. of India, IUSSTF and UW-Madison to be amongst the top 15 students in India (out of over 1000 applicants) to undertake research at University of Wisconsin, Madison during May-July 2009.
- **Indian National Physics Olympiad 2006 (INPhO):** Awarded to be among the top 1% (250 students) of 31,459 candidates enrolled.
- Awarded **Scholarship** of INR 25,000 in class X and XII for outstanding performance in high school (2002-2004).
- Secured a position in the **top 0.5%** students in JEE 2006 (Joint Entrance Examination for IITs) written by over 300,000 students.

Co-curricular & Extracurricular Activities

- **Teaching Assistant** for the summer workshop on Bioprocess Technology (12^{th} to 21^{st} July 2010).
- **Teaching Assistant** for the Downstream Processing Laboratory (Aug - Nov 2010).
- Served the **Spastic Society of India** as a part of NSS, 2006-07.
- **Coordinated the campus placements** for the academic year 2008-09.
- **Organizer** for the Department Open House at Shaastra 2007.
- **Won the Robotics** competition of the Civil Engineering department, IIT Madras 2007.
- Member of the hostel soccer team.

Relevant Courses

Biochemistry, Cell biology, Molecular Biology, Structural biology, Genomics and Proteomics, Genetics, Microbiology, Life sciences, Analytics techniques in biotechnology, Enzyme structure and Mechanisms, Introduction to Neuroscience, Principles of neuroscience, Genetic engineering, Biochemical engineering, Bioinformatics, Process calculations, Transport processes and unit operations, Biochemical thermodynamics, Reaction engineering fundamentals, Bioprocess modeling and simulation, Computational fluid dynamics, Biomedical signal processing, Advance Bio-process technology, Process optimization.

Laboratory Courses

Molecular Biology, Biochemistry, Microbiology, Bioprocess Engineering, Downstream Processing, Chemistry, Physics.

References

- Dr. Sathyanarayana N. Gummadi, IIT – Madras
  gummadi@iitm.ac.in
- Dr. Jennifer L. Reed, University of Wisconsin, Madison
  reed@cae.wisc.edu
- Dr. Guhan Jayaraman, IIT-Madras
  guhanj@iitm.ac.in