

DIVYALAKSHMI SOUNDARARAJAN

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EDUCATION

Miami University, College of Arts and Science, Oxford, OH Expected May 2017
Master of Science in Cell, Molecular and Structural Biology (CMSB)
Cumulative GPA: 3.92/4

Anna University, SSN College of Engineering, Chennai, India May 2015
Bachelor of Engineering in Biomedical Engineering, with Distinction
Cumulative GPA: 8.5/10

PATENTS

MULTISYRINGE MODEL- JECTABLE

India Patent Application 5847/CHE/2014

ELECTROMAGNETIC VASCULAR FORCEPS

India Patent Application 5848/CHE/2014

PROJECTS

- **Testing a Feedback Regulation Control Model for the expression of the *Drosophila rnp-4f* gene.**
Understanding the defects in pre-mRNA processing which has been recognized as a major cause for a number of human diseases.
Skills and Expertise: Western Blotting • Northern Blots • In vitro transcription (IVT) • DNA Sequencing • REMSA (RNA Electrophoretic Mobility Shift Assay) • Polymerase Chain Reaction (PCR) • Extensive training in rearing *Drosophila* in laboratory environment • *Drosophila* Genetics (UAS- GAL4 system, RNAi) • Plasmid Purification • Gel Electrophoresis • nucleotide extraction • 3'-RACE
- **Observation and Identification of Erythrocyte Cell Membrane Vibrations for Differential Diagnosis**
Developed a Diagnostic technology involving Cell vibration tracking using Kalman filter.
Skills and Expertise: Image and Signal Processing using Matlab, SIMULINK • Fluorescent Microscopy.
- **Design of Multisyringe Model- JECTABLE**
A multi-injection pen which features reduced needle-pricking, Less manufacturing cost, Increased shelf life of current drug in the market.
Skills and Expertise: CATIA v5
- **Portable Device for the treatment of Postpartum Hemorrhage**
An automated device that induces blood coagulation non-surgically in PPH patients.
Skills and Expertise: Electromagnetic coil design, Charged particle theory, Hematology.
- **Automation and Redesigning of Vascular Clamps/Forceps**
Electromagnetic forceps which is electronically controlled by the surgeon.
Skills and Expertise: ARDUINO, CATIA

HONORS AND AWARDS

- Recipient of **Graduate Assistantship**, Miami University with 93% fee waiver for the academic year 2015-2017.
- Recipient of **Graduate Summer scholarship** 2016, Miami University.
- Awarded **11th rank holder** amongst the 444 candidates in the Bachelor's degree of Biomedical Engineering programme, 2011-2015, Anna University, India.
- Ranked amongst one of the top 5 finalist in **GE EDISON CHALLENGE** 2013, Bangalore, India.

- Ranked among one of the top 20 venture proposals in **ASSOCIATION OF BIOTECHNOLOGY LED ENTERPRISES- BEST** 2014, Bangalore, India.
- Elected Speaker, Best 5 student papers in **IEEE GLOBAL HUMANITARIAN TECHNOLOGY CONFERENCE** 2014 - October 2014 at San Jose, California.
- Ranked amongst the top 150 semi-finalist teams in **"BIG-C COMPETITION 2014"** by Livestrong Foundation.
- Awarded best paper in **National Level Technical Conference** on Bioengineering 2014 at Bharath University, India.

RELATED EXPERIENCE

MIAMI UNIVERSITY, OXFORD, OHIO

August 2015- Present

Graduate Researcher

Performed wet-lab and molecular biology scientific research, using methods including western blotting, RNA Electrophoretic Mobility Shift Assay (REMSA), In *vitro* transcription, polymerase chain reaction (PCR) and DNA sequencing, 3'- RACE, DNA sequencing, Gene editing techniques.

FORTIS MALAR HOSPITALS, CHENNAI, INDIA

October 2014

Biomedical Engineer Intern

- Assisted in learning to interpret bioelectric data, using signal and image processing techniques.
- Assisted in evaluating the safety, efficiency, and effectiveness of biomedical equipment in clinical environment.

IIT MADRAS, INDIA

December 2013

Cellular and Molecular Biology Lab Intern

Understanding and learning basic biological techniques in a laboratory environment and help assist scientist in their research work.

FYSTRA SOLUTIONS, INDIA

June 2013- July 2013

Project Design and Development Intern

- Designed circuits using MULTISIM and MATLAB for the development of devices such as muscle stimulator.
- Collaborated with a team of engineers in understanding the nuances of problems related to collecting bio-signals.

OTHER EXPERIENCE

MIAMI UNIVERSITY, OXFORD, OHIO

Teaching Assistant/Instructor

Teaching introductory biology courses such as and to the undergraduates which includes both non-major and majors' students.

BIO 115 (Biological Concepts: Ecology, Evolution, Genetics, and Diversity)

Fall 2015

BIO116 (Biological Concepts: Structure, Function, Cellular, and Molecular Biology)

Spring 2015-16

BIO 161(Principles of Human Physiology)

Fall 2016

UNV 172(First Year Research Experience [FYRE]) and BIO 472/572 (Developmental Neurobiology)

Spring 2016-17

SPECIALIZED SKILLS

Programming Languages: C, Java.

Web development skills: HTML, JavaScript.

Tools: Matlab, LabVIEW, Adobe Photoshop, Multisim, Office, SIMULINK, Adobe Lightroom.

Bio-informatics skills: General BLAST analysis; NCBI Seqview; Transcriptome analysis; Pairwise Alignment-LALIGN, Needle program, Waterman program; Multiple sequence alignment: Clustal Omega, T-Coffee; Phylogenetic tree: MEGA7 **Genome assembly:** Velvet, CAP3

Languages: Proficient in Tamil and Hindi.