# DIVYALAKSHMI SOUNDARARAJAN

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## EDUCATION

**Miami University**, College of Arts and Science, Oxford, OH — Expected July 2017
Master of Science in Cell, Molecular and Structural Biology (CMSB)
Cumulative GPA: 3.7/4

**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.

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| 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.