

## Vinoth Edal Joseph SUNDAR RAJAN

Age 31, Male, Indian

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Enthusiastic researcher in **Biophysics and Cell Biology** with nearly **7 years of experience** in cell & molecular biology, different microscopic techniques and image analysis.

### RESEARCH EXPERIENCE

- Aug 2018 – Present **Single-molecule studies on nucleic acids using tweezers**  
Postdoctoral Fellow, Chalmers University of Technology, Gothenburg, Sweden.

We investigate the intermolecular forces in Nucleic acids and interaction of nucleic acids with proteins.

- Jan 2018 - July 2018 **Visiting Faculty, Department of Biotechnology**  
KSR College of Technology, Tamil Nadu, India.
- Feb 2017 - Dec 2017 **Role of mechanical forces in nuclear mechanotransduction**  
Research Associate, King's College, London, United Kingdom.

We investigated the role of **mechanical forces** and **substrate rigidity** in **nuclear mechanotransduction** in live cells and isolated nucleus using Atomic Force Microscopy (AFM).

- Mar 2013 – Oct 2016 **Adhesion and transendothelial migration of cancer cells**  
PhD Graduate, Institute for Advanced Biosciences, Grenoble, France.

Studying the **key adhesion molecules** involved in **cancer-endothelial cells interaction** and to **quantify the forces** during these interaction by **Single cell force spectroscopy - AFM**. Additionally to investigate the **forces exerted by cancer cell during transendothelial migration** using **Traction Force Microscopy (TFM)**.

- Jun 2012 – Feb 2013 **Super-Resolution Imaging of Virus like particles**  
Research Assistant, EPFL, Switzerland.
- Feb 2012 – May 2012 **Semiconductor based Quantum Dots for Nonlinear Microscopy**  
Research Assistant, Ecole Normale Supérieure de Cachan, France.
- Mar 2011 – Oct 2011 **Effect of Taxol in microtubule based intracellular transport**  
Master Thesis, Institut Curie, Paris, France.
- Sep 2010 – Oct 2010 **Binding of Lethal Gaint Larvae fragments to model membranes**  
Research Intern, TU Dresden, Germany.
- Aug 2008 – Apr 2009 **Teaching Assistant**, CIT Sandwich Polytechnic College, India.
- Jan 2008 – Apr 2008 **Cloning of Deacetoxycephalosporin C synthase from Streptomyces clavuligerus**

### Technical Knowledge

**Cell & Molecular Biology:** Cell culture (primary-HUVECs and secondary cells), Flow cytometry, Adhesion assay, Immunofluorescence Assay, shRNA transfection, DNA purification, q-PCR, Western blot, Gel electrophoresis, Purification and labeling of proteins, Synthetic model membranes (GUVS, SLBs).

**Microscopy:** Atomic Force Microscopy (Single cell force spectroscopy, ligand-receptor interaction), Confocal, Super-Resolution Microscopy (PALM & STORM), Total Internal Reflection Microscopy, TFM.

**Programming & Image analysis:** ImageJ (Fiji), Matlab, Adobe Illustrator, GraphPad Prism, Origin, Single particle tracking, AFM data analysis.

## LIST OF PUBLICATIONS

1. Unraveling the Receptor-Ligand Interactions between Bladder Cancer Cells and the Endothelium Using AFM.  
**Vinoth Sundar Rajan**, Valerie M.Laurent, Claude Verdier and Alain Duperray.  
**Biophysical Journal** 112, 1246-1257, <http://dx.doi.org/10.1016/j.bpj.2017.01.033> (March 2017).
2. Mechanosensitivity of Cancer cells in contact with soft substrates using AFM.  
Yara Abidine, Andrei Constantinescu, Valerie M.Laurent, **Vinoth Sundar Rajan**, Richard Michel, Valentin Laplaud, Alain Duperray, and Claude Verdier.  
**Biophysical Journal** 114, 1165-1175, <https://doi.org/10.1016/j.bpj.2018.01.005> (March 2018).
3. Atomic Force Microscopy reveals a role for endothelial ICAM-1 expression in bladder cancer cell adherence.  
Valerie M.Laurent, Alain Duperray, **Vinoth Sundar Rajan**, and Claude Verdier.  
**PLOS ONE** 9(5):e98034. doi:10.1371/journal.pone.0098034 (May, 2014).
4. Simple buffers for 3D STROM microscopy.  
Nicolas Olivier, Debora Keller, **Vinoth Sundar Rajan**, Pierre Gonczy and Suliana Manley.  
**Biomedical Optics Express**, Vol.4, Issue 6, <http://dx.doi.org/10.1364/BOE.4.000885> (June, 2013).

## EDUCATION

- Mar 2013 – Oct 2016 **PhD in Cancer biology & Cellular biophysics**,  
Institute for Advanced Biosciences, Grenoble, France.

Focus: Cancer metastasis, Mechanotransduction, cancer-endothelial cell adhesion, extravasation, Atomic Force Microscopy, Traction Force Microscopy, flow cytometry, cell culture.

- Sep 2009 – Sep 2011 **Masters in Molecular Bio and Nano-Photonics**,  
Ecole Normale Supérieure de Cachan, France  
University of Wrocław, Poland **Graduated Magna Cum Laude**

Focus: Fluorescence biology, cell biophysics, biosensors, protein engineering, nanophotonics.

- Sep 2004 – July 2008 **Bachelor of technology in Biotechnology**,  
Anna University, India **Graduated with 91.2% (University Second)**

Focus: Molecular biology, immunology, cell biology, biochemistry, biophysics, genetic engineering.

## SKILLS

Project planning & management, Problem-solving (determine the root cause, analyze and tackle), Collaboration establishment, Communication skills (article writing, presentations).

## AWARDS AND RECOGNITION

- Awarded **ERASMUS MUNDUS** Scholarship from European Union (2009-2011).
- Secured **Second Rank in Anna University, India** (2<sup>nd</sup> out of 772 aspirants).
- Awarded as **Best outgoing student** in college for academic and co-curricular excellence (2004-2008).

## LANGUAGES

**English (native), French (operational),** Tamil (mother tongue).

## SOCIAL ACTIVITIES

Participation in St. John's Ambulance first aid training Programme. Participation in National student service camp. Part of 'Enfants du TamilNadu' - Organization based in France which provides assistance to 2004 Tsunami victims. Part of 'World Vision India' – Organization that supports education of children.