

Prasanna Iyer

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Present Status and Career objective

I am presently pursuing a PhD at ACTREC-TMC, Kharghar, Navi Mumbai as a **Senior Research Fellow (7th year)** under the supervision of **Dr. Dibyendu Bhattacharyya**, funded by ACTREC-Reg. I am currently interested to study the intracellular events in cell biology, specifically, using advanced microscopic approaches to visualize dynamic sub-cellular events in real time. Presently, my doctoral program involves studying the role of PtdIns4P effector Vps74 / GOLPH3 in Golgi size control mechanism. My career goal is to become a complete cell biologist and to study the Golgi organelle in membrane trafficking using molecular and cell biological approaches. I am keen to explore and work in inter-disciplinary areas.

Academic Qualifications

PhD in Life Sciences (Pursuing) [ACTREC, Mumbai, India]	September 23, 2011-2018
M.Sc (62.5%) in Biotechnology [Birla College, Mumbai University, India]	July 28, 2010
B.Sc (69.5%) in Biotechnology [Birla College, Mumbai University, India]	June 9, 2008

Research Publication

1. **Prasanna Iyer**, Madhura Bhawe, Bhawik Kumar Jain, Sudeshna Roy Chowdhury and Dibyendu Bhattacharyya*. "Vps74p control Golgi size in Arf1-dependent manner" FEBS Letters. 2018 October. Article DOI-10.1002/1873-3468.13266
2. Bhawe M[#], Papanikou E[#], **Iyer P**, Pandya K, Jain BK, Ganguly A, Sharma C, Pawar K, Austin JII, Day KJ, Rossanese OW, Glick BS, Bhattacharyya D. Golgi enlargement in Arf-depleted yeast cells is due to altered dynamics of cisternal maturation. J Cell Sci.2014 Jan 1; 127(Pt 1):250-7. PMID: 24190882

Manuscript to be submitted

1. **Prasanna Iyer**, Sabyasachi Sutradhar, Raja Paul, and Dibyendu Bhattacharyya. "A novel combinatorial approach of quantitative microscopy and in silico modeling deciphers ARF1 dependent Golgi size regulation"

Currently working on manuscript

1. **Iyer Prasanna;** Bhattacharjee Chumki; Bhattacharyya Dibyendu. “GOLPH3, GOLPH3L, and ARF1 regulate Golgi shape by adjusting the ratio of amounts of tubules and vesicles”

Research Experiences

PhD project (23 September 2011 - present)

Project title: Investigating possible role of a Golgi resident PtdIns4P effector, an oncogenic homolog in Golgi size control mechanism. (Mentor: Dr. Dibyendu Bhattacharyya, ACTREC-TMC, India).

Project Summary: GOLPH3 is a reported oncoprotein, and also has a functional role in altering Golgi morphology. Many functions of GOLPH3 are conserved from yeast to mammalian system, but the role of its yeast orthologue *VPS74* is not clearly elucidated in regulating Golgi morphology. The role of *VPS74*, an effector of PtdIns4P, on Golgi size was studied. Null mutants of *vps74* and its associated strains were analysed using advanced microscopy with the help of analytical software. The project has demonstrated a role of Vps74 on Golgi size and cisternal maturation parameters. Vps74 was found to regulate Golgi cisternal size in Arf1 dependent manner. Further the study has detailed the alteration of Golgi associated PI4P pool in different mutant strains, and its association with Golgi cisternal size regulation. The article stating role of Vps74 regulation of Golgi size in an Arf1 dependent manner is published in FEBS Letters (*Iyer et al. 2018, PMID: 30291722*). Additionally, we used CRISPR technology to create knock out of genes GOLPH3 (*Vps74* homologue), GOLPH3L and ARF1 in a mammalian cell line, and quantified the 3D morphological changes of the Golgi in the knock out mutant cells. We had also developed a coarse grain model in combination with quantitative microscopy to gain insight into the function of regulators of Golgi size in the budding yeast *S. cerevisiae*. We have tested the regulation of Golgi size for wild-type and *arf1* null mutants using the developed simulation model. A manuscript describing the mathematical simulation is very close to submission.

I have also majorly contributed in the research work showing that Arf1 alters Golgi cisternal size due to altered maturation kinetics (*Bhave et al. JCS 2014, PMID: 24190882*)

March-June 2013 completed training in **C-programming** to develop a model for Golgi dynamics in *S.cerevisiae* from **Dr. Raja Paul's Lab- IACS, Kolkatta, India.**

M.Sc Dissertation project (2010)

Project title: Effect of starvation on reproductive milieu of male Albino rats

(Mentor:Dr. VinodNarayane[M.Sc, Ph.D, B.Ed. & Post Doctorate (TIFR)], Department of Zoology, Birla College, India)

Project summary: The factors that affect the survival of an organism are food, water and environment. The prime objective of the investigation was to study the effect of starvation on the animal model of male albino Wistar rats. In this investigation the main emphasis was on hormonal profile, metabolic profile and histopathology.

M.Sc summer training (2009) under the guidance of Dr. H H Krishnan, Centre for Cell and Molecular Biology (CCMB)–Hyderabad, India in May- July 2009.

Technical experiences

- ✧ **Molecular Biology:** Extensive bacterial and yeast molecular cloning, PCR, DNA isolation.
- ✧ **Cell Culture:** Worked with the cell lines HeLa, U2-OS and HEK293. Made stable cell clones for GOLPH3L and ARF1 knock out using CRISPR technology in U2-OS cell line. Transfection in cell lines mentioned above. Flow cytometry. CRISPR- CAS9 mediated gene knock out.
- ✧ **Protein:** SDS-Page, Spectrophotometry (UV, VIS and fluorescence)
- ✧ **Yeast culture:** Worked with *Saccharomyces cerevisiae* (haploid strain), several strains made by genetic manipulations, transformation, genomic DNA isolation, gene amplification and overexpression studies, epitope tagging in endogenous gene, endogenous gene replacement.
- ✧ **Microscopy:** Confocal Microscopy and Wide field microscopy
- ✧ **Live cell imaging** of yeast and mammalian cell lines labeled with different fluorescent proteins, extensive microscopy using confocal microscopes Zeiss 780, Leica SP8, Zeiss LSM-510, Spinning disc-3i Confocal etc, inverted microscope Leica DMI6000 and Nikon upright microscope.
- ✧ **Computer proficiency and Bioinformatics:** Imaris 8.1, Huygens-professional, Snapgene, Graph pad prism 6, Chromas, Adobe Photoshop, ImageJ, LSM-510,Zen, Leica-LAF, BLAST, Guide sequence designing for CRISPR- Cas9 mediated gene knock out, *Saccharomyces* genome database, Endnote.

Achievements

- ✧ Qualified CSIR (Council for Scientific and Industrial Research, Gov. of India, Junior Research Fellowship) in Life Science under eligibility for Lectureship in December-2010 (115th rank) and June 2011 (28th rank).
- ✧ Qualified GATE exam in Life Science subject held in the year 2010 and 2011.

- ⌘ Qualified ACTREC entrance exam (Advance center for treatment, research and education in cancer, India) in June-2011.
- ⌘ Qualified IISC test, Bangalore, India in April 2011

Scholarships

- ⌘ Awarded ACTREC-TMC(Tata Memorial Centre) -DAE (Department of Atomic Energy, Govt. of India) - Junior Research fellowship (JRF) from September 2011- August 2013
- ⌘ Awarded ACTREC-TMC(Tata Memorial Centre)- DAE (Department of Atomic Energy, Govt. of India) -Senior Research Fellowship (SRF) from August 2013- August 2016
- ⌘ Qualified DBT (Department of Biotechnology, Govt. of India) Senior Research Fellowship October 2016–August 2017.
- ⌘ Qualified travel fellowship award for ACTREC-Sam Mystery 2014 to attend American Society of Cell Biology Conference (ASCB) held in San Diego, 2015.
- ⌘ Awarded Travel fellowship from Homi Bhabha National Institute (HBNI) to attend American Society of Cell Biology Conference (ASCB) held in San Diego, 2015.

Supervising and event organizing experience

- ⌘ During Ph.D. I have supervised and trained 1 M.Sc. student, project assistants and junior graduate students of the lab for their dissertations or projects.
- ⌘ Participated in organizing (2011-2014) and organized (2014) the conference ‘National Research Scholars Meet in Life Sciences’ at ACTREC, Navi Mumbai, India. It is a national conference organized by students of ACTREC.

Conferences presentations / Attending workshops

Participation in Workshops:

- ⌘ Attended Cancer Informatics Workshop, ACTREC-TMC, Mumbai, India in Jan 2013.
- ⌘ Attended STED workshop in IISER Pune, India – June 2015.

Participation in Conferences:

- ∞ Participated in **Global Cancer Genomics Consortium symposium 2011**, in ACTREC- TMC, India [Won **3rd prize** for Poster presentation].
- ∞ Attended **Global Cancer Genomics Consortium symposium 2012** in ACTREC-TMC, India.
- ∞ Participated in international symposium on **Conceptual Advances in Cellular Homeostasis regulated by Proteases and Chaperons 2013**, in ACTREC-TMC, India [Poster presentation]
- ∞ Participated in **Biophysics Paschim Meet 2014**, ACTREC- TMC, India[Poster presentation]
- ∞ Presented poster in International conference-**American society of Cell Biology conference (ASCB-2015)** - December 2015, San Diego, U.S.
- ∞ Presented poster in **Optics within Life Science conference (OWLS)** - March 2016, TIFR, Mumbai, India.
- ∞ Won **2nd prize** for Oral presentation in **National Research Scholars Meet in Life Science**, ACTREC- TMC, India – December 2016.
- ∞ Presented Poster on topic “**How a Yeast homologue and mammalian oncogene – Vps74/GOLPH3 maintain Golgi size and shape?**” in **International conference of Cell biology (ICCB)** held at CCMB, Hyderabad – January 2018

Declaration

I hereby declare that all the information stated above is true and complete to the best of my knowledge and nothing has been concealed / distorted.

Prasanna Iyer

References

- 1) Dr. Dibyendu Bhattacharyya (PhD Mentor)
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- 2) Dr. Raja Paul (Collaborator)
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- 3) Dr. V. Prasanna (Deputy Director ACTREC-TMC & Chairman of Doctoral Committee)
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- 4) Dr. Milind M. Vaidya (Retired Former Chairman of Doctoral Committee)
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