Curriculum Vitae
Geetanjali Sundaram, PhD

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Assistant Professor
Department of Biochemistry
University of Calcutta
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Ph: 9433191982
DOB: 18th July 1980

Present Position (March 2009 onwards)

Assistant Professor
Department of Biochemistry
University of Calcutta

Research Interest

Eukaryotic cell cycle- non-classical regulation of the temporal decisions.

Education and Research

- **April 2008-March 2009**

Post Doctoral Research Associate, University of Illinois at Chicago, Chicago, IL, USA
Worked on GTPases involved in Protein trafficking in yeast.

- **2003-2008**

Ph.D in Biochemistry , University of Calcutta,INDIA
Thesis Title: Studies on stress response genes in *Schizosaccahromyces pombe*
Supervisor: Prof. Dhrubajyoti Chattopadhyay

- **2001-2003**

M.Sc in Biochemistry, University of Calcutta, INDIA

Ranked 1st

Specialisation: Bioinformatics,ProteomicsandGenomics
Project Done on "Differential gene expression in *S.pombe* cells exposed to oxidative stress."

- **1998-2001**

B.Sc(Hons) in Chemistry,St.Xaviers'College,University of Calcutta,INDIA subsidiary subjects-Physics,Mathematics and Environmental Sciences .

Honors and Awards

- Awarded the third prize for the **Best Speaker** in the seminar on "Emerging Areas in Biology organized by the Society of Biological Chemists (India) Kolkata Branch from 9-11 April, 2004

- Qualified the **National Eligibility Test** (NET – Examination) jointly conducted by UGC and CSIR and also selected to appear for the Screening test for **"Shyama Prasad Mukherjee Fellowship"**.-2004
- Nominated for the **President of INDIA medal for General Proficiency-2004**
- Ranked **First** in the University , in the **Master of Science** Degree in Biochemistry.-2003.
- Awarded the **"Shanti Bhakta Memorial Award"** Second prize for the **Best Speaker** in the Students' Seminar Competition, Department of Biochemistry, University Of Calcutta.-2003
- Qualified the **Graduate Aptitude Test Engineering (GATE)** Examination conducted by Indian Institute of Technology, Kharagpur, India -2003
- Awarded a scholarship from CMC Ltd. For **Outstanding performance** (A Grade) in the Final Examination of the **"Diploma in Software Technology**"-2001
- Recipient of **"THE TELEGRAPH-NIS GRADUATESHIP Award"**, Scholarship for pursuing graduation.**-**1998

Publications

1) The fission yeast MAPK Spc1 senses perturbations in Cdc25 and Wee1 activities and targets Rad24 to restore this balance. Madhurima Paul, Agamani Ghosal, Sushobhana Bandyopadhyay ,Prakadeeswari G,*, Upasna Selvam, Neeraj Rai, **Geetanjali Sundaram**. Yeast. 2018 Mar;35(3):261-271
2) Antagonistic regulation of cyclin expression by the bZIP 1 transcription factors Pcr1 and Atf1 during G2/M transition. Bandyopadhyay S, Ghosh PM, Basu S, Paul M, Alam SB, Das E, **Sundaram G**. FEMS Microbiol Lett. 2017. Aug;364(14).
3) Genome wide transcription profiling of the effects of overexpression of Spc1 and its kinase dead mutant in Schizosaccharomyces pombe.Paul M, Sanyal S, **Sundaram G**. Genom Data. 2015 Oct 23;6:241-4. doi: 10.1016/j.gdata.2015.10.007. eCollection 2015 Dec.
4) Genome wide transcription profiling reveals a major role for the transcription factor Atf1 in regulation of cell division in Schizosaccharomyces pombe.Bandyopadhyay S, **Sundaram G**. Genom Data. 2015 Sep 18;6:184-7. doi: 10.1016/j.gdata.2015.09.014. eCollection 2015 Dec.
5) Sushobhana Bandyopadhyay, Isha Dey, Megalakshmi Suresh, **Geetanjali Sundaram**, The bZIP transcription factor Atf1 directly controls Cdc13 expression and regulates mitotic entry independently of Wee1 and Cdc25 in Schizosaccharomyces pombe (Eukaryot Cell. 2014 Jun;13(6):813-21)


6) Tokarev AA*, Taussig D*, **Sundaram G***, Lipatova Z, Liang Y, Mulholland JW, Segev N TRAPP II complex assembly requires Trs33 or Trs65.Traffic. 2009 Dec;10(12):1831-44
7) **Geetanjali Sundaram**, Santanu Pal Chaudhuri, Swati dixit, Dhrubajyoti Chattopadhyay, "MAPK mediated cell cycle regulation is associated with Cdc25 turnover in S. pombe after exposure to genotoxic stress.,", Cell Cycle. 2008 February 2008 ; 7(3),365 – 372.

8) **Geetanjali Sundaram**, Santanu Palchaudhuri, Sibapriya Chaudhuri, Sheelarani Karunanithi & Dhrubajyoti Chattopadhyay, "Characterization of Sro1, a novel stress responsive protein in Schizosaccharomyces pombe ." FEMS Yeast Research, 8 (3),564-573.)

9) Santanu Pal Chaudhuri ,**Geetanjali Sundaram**, Abhishek Bhattacharya, Partha Ray, Anirban Ray, Indu Bushan Chatterjee, Dhrubajyoti Chattopadhyay:".Activation of S phase checkpoint by cigarette smoke extract in Schizosaccharomyces pombe". (Yeast. 2005 Nov;22(15):1223-38)

10) Banerjee P, Talapatra SN, Mandal N, **Sundaram G**, Mukhopadhyay A, Chattopadhyay D, Banerjee SK Genotoxicity study with special reference to DNA damage by comet assay in fission yeast, Schizosaccharomyces pombe exposed to drinking water.(Food Chem Toxicol. 2008 Jan;46(1):402-7).

Research grants received during the last five years

Sl. No	Tenure	Details
1.	2018-2021	West Bengal Department of Biotechnology funded project entitled "Investigation of the mechanism of cell cycle regulation by the bZIP transcription factors in *Schizosaccharomyces pombe*"-**Ongoing***
2.	2016-2019	DST SERB funded project entitled" Investigation of the functional switching of the transcription factor Atf1 in *Schizosaccharomyces pombe"--**Ongoing***
3.	2012-2015	CSIR funded project entitled ""Investigation and characterization of the role of Sty1 in Cdc25 Regulation in *Schizosaccharomyces pombe".-**Completed***
4.	2011-2014	DST-Fast track funded project entitled "Investigation of MAPK mediated cell cycle regulation in *Schizosaccharomyces pombe"-**Completed***
5.	2010-2013	WB-DBT funded project entitled"An yeast two hybrid based approach to unravel the cellular interaction network of sty1 (p38homolog) in *Schizosaccharomyces pombe*- facilitating the exploration of p38 as a therapeutic target."-***Completed***

Ph.D Dissertations supervised

1) Investigation of the Novel roles of Transcription factor , Atf1 in regulating the cell cycle of *Schizosaccharomyces pombe* (Thesis submitted by Ms.Sushobhana Bandyopadhyay in 2015, Ph.D Degree awarded)
2) Investigation of the cross talks between the DNA damage sensing machinery and the MAPK pathway in *Schizosaccharomyces pombe* [Thesis submitted by Ms. Madhurima Paul in 2017, Ph.D Degree awarded]

Conferences and workshops organised

1)**Organising Secretary (Joint)-** 9th International Conference on Yeast Biology 2015 , 9th to 12th December, 2015,Indian Association for the Cultivation of Science.

2)Member of the Organising Committee-" 5th Annual Meeting of the The Cytometry Society,India and 13th Indo-US workshops", 12th-17th October 2012,Kolkata.

3) **Organising Secretary**-"International Workshop on Applications of Flow Cytometry in Cell Biology and Nanobiotechnology",11th-18th August 2012,Kolkata.

4)**Organising Secretary:-** —2nd National Workshop on applications of Flow Cytometry and Imaging In Biology ,February 2012,Kolkata

5) **Organising Secretary:-** — 1st National Workshop on applications of Flow Cytometry and Imaging In Biology ,December 2011,Kolkata

Conferences attended

1) **10th Conference on Yeast Biology, 2018**, 8th-11th February, 2018, Jawaharlal Nehru University. INVITED SPEAKER.

2) **9th International Conference on Yeast Biology 2015** , 9th to 12th December, 2015,Indian Association for the Cultivation of Science .

3) **8th International Conference on Yeast Biology - Yeast 2013**, December 4 - 7, 2013,IMTECH ,Chandigarh, INVITED SPEAKER.

4) **1st International Meet On Advanced Studies on Cell Signaling Network (CeSiN)**, 11th-13th September ,2012 at IICB, Kolkata (POSTER)

5) **International Conference on the Biology of Yeasts and Filamentous fungi**" , held at NCL, Pune from 15th to 17th February 2007. (POSTER)

6) " **European Fission Yeast Meeting"** held at the Wellcome Trust Conference Centre, Hinxton,Cambridge, UK, from 16th -18th March , 2006. (POSTER)

7) **"XXIX All India Cell Biology Conference "** held at ITRC, Lucknow, INDIA from 17th-20th Jan , 2006. (POSTER)

I hereby declare that all the information provided above are true to the best of my knowledge.

Date: 11/9/2018
Place: Kolkata ***Geetanjali Sundaram***

Annexure 1: Research interest

Eukaryotic cell cycle- non-classical regulation of the temporal decisions

The research focus of my group is in understanding the fine tuning of the timing of cell division in eukaryotes. Cell cycle phase transition is a tightly controlled process and its stringent regulation is extremely important for maintaining genomic stability. Deregulated activities of the key molecules that ensure the fidelity of this timing have been reported to be associated with many diseases including Cancer. Our group mainly focuses on two major aspects of this regulatory mechanism.

i) **Transcriptional control of cell cycle phase transition (by bZIP domain containing transcription factors).**

ii) **Mitogen Activated Protein Kinase (MAPK) dependent alternative pathways for regulation of mitotic timing.**

For studying these mechanisms we have chosen the excellent model system for cell division research, *Schizosaccharomyces pombe*.

Transcriptional control of cell cycle phase transition by bZIP domain containing transcription factors: Cell cycle progression depends upon periodic transcription of many genes. Knowledge about the regulation of this transcriptional program is largely limited to the core transcriptional units (eg: the mammalian E2F family;MBF complex in *Schizosaccharomyces pombe)*. The contribution of overlying parallel pathways controlled by other transcription factors has not been explored well. Our research focuses on the regulation of periodic transcription by bZIP domain containing transcription factors. bZIP transcription factors are found in all organisms and are associated with many cellular processes. Aberrations in their function have been shown to lead to Cancer and various other diseases. The significance of their contribution and the complete understanding of the connection with cell cycle regulation are however largely elusive.

Using our *S. pombe* model we have already unravelled two novel aspects of eukaryotic cell cycle regulation by the bZIP transcription factors Atf1 (hATF2 homolog) and Pcr1 (hCREB homolog). Our research has shown that transcription of the mitotic cyclin *cdc13*$^{+}$ in *S. pombe* is directly controlled by Atf1. Further, we have recently shown that antagonistic regulation of cell cycle related transcription by Atf1 and Pcr1 can control the timing of mitotic entry and DNA replication. Currently, we are trying to characterise the various mechanistic aspects of such a regulatory scheme in details. Our approaches include mapping the temporal variations in the interactions of Atf1 and Pcr1 with target promoters during the cell cycle and also the perturbations of such temporal patterns in the presence of external stimuli that interfere with cell cycle progression. We are also trying to evaluate the presence of similar regulatory paradigms in mammalian cells. These new insights into how transcription factors affect cell cycle's transcriptional program will provide new avenues to manage cancers with deregulated cell cycle transcription.

In the long term we plan to develop an *S. pombe* based model system to characterise the interactions between human bZIP transcription factors and assess the outcome of the variations in their combinatorial association w.r.t cell cycle progression. The presence of such a model will facilitate high throughput approaches aimed at targeting bZIP transcription factors for therapeutic purposes.

Mitogen Activated Protein Kinase (MAPK) dependent alternative pathways for regulation of mitotic timing: The *S. pombe* p38 MAPK homolog, namely, Spc1, has the unique ability to have contrasting influences on mitotic timing depending upon its extent of activation and the activating stimuli. Thus it behaves in a manner functionally similar to the human ERK (mitotic accelerator) when moderately activated while when strongly activated, it begins to behave as the human p38MAPK (mitotic inhibitor). Thus the Spc1 MAPK represents an important special branching point in the evolutionary timeline of MAPKs. Our main goal is to understand how this MAPK exhibits such dual behaviour, what regulates these contrasting functions and how the decisions to exhibit either function are made. In course of our research we have recently reported a novel backup mechanism by which Spc1 cannot only sense aberrations in the classical cell cycle regulatory mechanisms but can also activate a backup mechanism to counteract such deleterious events. We have also discovered that Spc1 can function as the transcriptional regulator of Rad24, a 14-3-3 homolog in *S. pombe* and a very important cell cycle regulator with orthologs in all eukaryotes. We have also unravelled the existence of a competition between the mitosis accelerating and inhibiting activities of Spc1 that finally dictates the outcome of Spc1 activation w.r.t mitotic timing.

We are now interested to understand the above regulatory mechanisms in more details especially the mechanism by which Spc1 senses the deficiencies in the core cell cycle regulatory machinery and then also investigate whether MAPKs in higher eukaryotes also retain the ability for such dual functions . MAPKs are implicated in multiple developmental and neoplastic disorders and hence such investigations exposing their complete functional repertoire are extremely important.