

## CURRICULUM VITAE

---

### Dr. Sudipta Saha

Assistant Professor (III),

Amity Institute of Physiology and Allied Sciences (AIPAS),

Amity University, Noida, Uttar Pradesh,

Sector-125, Noida – 201313

Mobile: +91 9830079019, +91 9810349961

E-Mail: sudiptasaha49@yahoo.co.in, sudiptasaha1977@gmail.com, ssaha2@amity.edu

#### **Permanent Residence Address:**

122, Maharshi Debendra Road, Top Floor, Kolkata – 700 005. West Bengal, India.

---



---

**An enthusiastic and skilled researcher in Reproductive Biology, Physiology, Cell Biology, Molecular Biology and Biochemistry.**

---

#### **Research Interest:**

---

- Cell Biology, Molecular Biology and Physiology
  - Reproductive Biology and Protein Biochemistry
  - Bio-Instrumentation and Application Oriented Research
- 

#### **Professional Training:**

---

- **Assistant Professor (III)**, Amity Institute of Physiology and Allied Sciences, Amity University, Noida, UP. June 2017 – Present
  - **Senior Research Associate (CSIR Scientists' Pool Scheme / Pool Officer)**, IICB, Kolkata, India. November 2015 – June 2017
  - **Post Doctoral Research Associate (NSC)**, Chang Gung University, Taiwan. November 2012 – April 2015
  - **Scientific Author, Curator & Reporter**, www.pharmaceuticalintelligence.com, July 2012 – Present (Associated without any payment)
  - **Post Doctoral Research Associate (NSC)**, Chang Gung Memorial Hospital, Taiwan. June 2011 – June 2012
  - **Post Doctoral Research Associate (CSIR)**, Indian Institute of Chemical Biology (IICB), Kolkata, India. February 2009 – June 2011
- 

#### **Research Techniques Known:**

---

- Mammalian cell (U2OS, HEK293, 293T, 293FT, HeLa, C2C12, 3T3, LNCaP, PC3, etc. & different stable clones) and Bacterial cell culture, Primary cell culture, Mouse embryonic fibroblast culture, Bacterial transformation, Plasmid purification, Transfection, Lentiviral transfection, PCR, experiments with gene knockout mice.
  - ELISA, Western Blotting, Immunoprecipitation assay, immunofluorescence staining, fluorescent microscopy and FACS.
  - Protein purification by different Chromatography, Electrophoresis, Histological slide preparation, etc.
  - Animal handling: Laboratory rats, mice, rabbits and some surgery (ectomy), gene knockout mice breeding and experiments.
  - Microscopic and spectrophotometric sperm motility assay techniques, General biochemical assays, etc.
  - Process and instrument development by collaboration with different people with suitable expertise.
- 

#### **Education:**

---

- **Ph.D. in Life Science (Ph.D. awarded December 24, 2008)**

CSIR-Indian Institute of Chemical Biology, Jadavpur University, Kolkata, India

Thesis Title: "A novel method of sperm motility analysis and characterisation of a sperm motility promoting protein from goat blood serum". **Advisor: Dr. G. C. Majumder and Dr. S. R. Dumdung**, Sperm Biology Laboratory, Cell Biology and Physiology Division, CSIR-Indian Institute of Chemical Biology, Kolkata, India.

---

- **Master of Science in Physiology (October 2001)**

*Presidency College, University of Calcutta, Kolkata, India. (Percentage of Marks: 64.10%)*

Project Title: "Effect of oral exposure of arsenic on certain physiological parameters related to ovarian endocrine functions". **Advisor: Prof. Chandan Mitra**, Head, Dept. of Physiology, Presidency College, Kolkata, India.

- **Bachelor of Science in Physiology (August 1999)**

*City College, University of Calcutta, India. (Percentage of Marks: 56.75%, Honours Graduation)*

*With Minors: Zoology, Chemistry (Percentage of Marks: 60% in Pass Graduation)*

- **Madhyamick (10<sup>th</sup>, 1994, 79.44%) and Higher Secondary (10+2, 1996, 63.40%)**

*St. Lawrence High School, Kolkata, India.*

---

### **Funded Projects:**

---

1. **DST-Science and Engineering Research Board (SERB)-Start-up Research Grant (2019):** Isolation and characterization of the receptor of sperm motility stimulating protein from sperm membrane and finding its role and mechanism in fertility management. (SERB File Number: SRG/2019/000501, Fund: Rs. 2975369.00)
- 

### **Patents:**

---

1. D. Paul, G. C. Majumder, **S. Saha**, A. Mukherjee, S. Banerjee. A spectrophotometric system for measurement of vertical velocity of clinical and biological samples. Indian Patent Application Filed - No. 1605/DEL/2004, Date: 26.08.2004. **Indian Patent Granted: Patent No. IN264556, Date of Grant: 06.01.2015**, International Classification: G01N 21/25. International PCT Patent Application Filed - PCT/IB05/02541.
- 

### **Journal Papers:**

---

1. Bhoumik A., **Saha S.**, Payghan P. V., Ghosh P., Dungdung S. R. (2018): Localization of MIF-II on mammalian spermatozoa: A study revealing its structure, function and motility inhibitory pathway. **International Journal of Biological Macromolecules**, 116, 633-647.
2. Ghosh P., Bhoumik A., **Saha S.**, Mukherjee S., Azmi S., Ghosh J. K., Dungdung S. R. (2017): Spermicidal efficacy of VRP, a synthetic cationic antimicrobial peptide, inducing apoptosis and membrane disruption. **Journal of Cellular Physiology**, 233(2), 1041-1050.
3. Pan T. L., Hsu S. Y., Wang P. W., Cheng Y. T., Chang Y. C., **Saha S.**, Hu J., and Ouyang P. (2015): FLJ25439, a novel cytokinesis-associate protein, induces tetraploidization and maintains chromosomal stability via enhancing expression of endoplasmic reticulum stress chaperones. **Cell Cycle**, 14(8), 1174-1187.
4. **Saha S.**, Dungdung S. R., Majumder G. C., (2014): Determination of the antioxidant potential of goat sperm cells. **Oxidants and Antioxidants in Medical Science**, 3(3), 195-200.
5. Bhoumik A., **Saha S.**, Majumder G. C., Dungdung S. R. (2014): Optimum calcium concentration: a crucial factor in regulating sperm motility in vitro. **Cell Biochemistry and Biophysics**, 70, 1177-1183.
6. **Saha S.**, Das S., Bhoumik A., Ghosh P., Majumder G. C. and Dungdung S. R. (2013): Identification of a novel sperm motility stimulating protein from caprine serum: its characterization and functional significance. **Fertility and Sterility**, 100(1), 269-279.  
*(This paper was selected and listed by "Global Medical Discovery" as a potential bio-molecule for future drug development potential)*
7. Pei Y.C., Chang T. Y., Lee T. C., **Saha S.**, Lai H. Y., Gomez-Ramirez M., Chou S. W., Wong A. M. K. (2013): Cross-modal sensory integration of visual-tactile motion information: Instrument design and human psychophysics. **Sensors**, 13(6), 7212-7223.
8. Das S., **Saha S.**, Majumder G. C. and Dungdung S. R. (2010): Purification and Characterization of a Sperm Motility Inhibiting Factor from Caprine Epididymal Plasma. **PLoS ONE**, 5(8): e12039 (1-12).
9. Jaiswal B. S., Das K., **Saha S.**, Dungdung S. R., Majumder G. C. (2010): Purification and Characterization of a Motility Initiating Protein from Caprine Epididymal Plasma. **Journal of Cellular Physiology**, 222, 254-263.
10. **Saha S.**, Paul D., Mukherjee A., Banerjee S., Majumder G. C. (2007): A computerized spectrophotometric instrumental system to determine the "vertical velocity" of sperm cells: a novel concept. **Cytometry Part A**. 71A, 308-316.  
*("The Telegraph" reviewed this paper on 14 May, 2007; "News Online" reviewed this paper on Sept, 2009) (National[1605/DEL/2004], International [PCT/IB05/02541] patent applications filed, Won several awards including "Biotech Idea to Innovation Award 2007" from British Council; "India Innovation Pioneers Chalange 2009 from Indo-US Science and Technology Forum)*

11. Mandal M., **Saha S.**, Ghosh A. K., Majumder G. C. (2006): Identification and characterization of a sperm motility promoting glycoprotein from buffalo blood serum. **Journal of Cellular Physiology**, 209(2), 353-362. (*"The Statesman" reviewed this paper on 10 Jan, 2007; "Down to Earth" reviewed this paper on 15 Jan, 2007.*)
12. **Saha S.**, Paul D., Mukherjee A., Banerjee S., Majumder G. C. (2006): Development of a unique computerized spectrophotometric system with vertical movement of the cuvette for sperm motility analysis. In: **Proceedings of Canadian Conference on Electrical and Computer Engineering (CCECE/CCGEI, IEEE - Ottawa, May 2006)**. pp. 183-186. Online Publication pp. 1399-1402, DOI: 10.1109/CCECE.2006.277432.
13. Chattopadhyay D., Dungdung S. R., Das K., **Saha S.**, Mandal A. B., and Majumder G. C. (2005): Sperm motility inhibiting activity of a phytosterol from *Alstonia macrophylla* Wall ex A. DC. Leaf extract: a Tribal Medicine. **Indian Journal of Experimental Biology**, 43, 1104-1109.
14. Kundu C. N., Das K., Chakrabarty J., Dutta P., Bhattacharyya D., **Saha S.**, Ghosh A., and Majumder G. C. (2003): Development of a novel epididymal sperm model for evaluating cryoprotecting potential of various reagents. **Indian Journal of Cryogenics**, 28(3), 79-89.

---

#### Book Chapters / Review Articles:

---

1. Yasmin H., **Saha S.**, Butt M. T., Modi R. K., George A. J. T., Kishore U. (2021): SARS-CoV-2: Pathogenic Mechanisms and Host Immune Response. Review in Book: *Microbial Pathogenesis: Infection and Immunity*. 2<sup>nd</sup> Edition, Editor: Uday Kishore, **Springer Nature, New York, USA. (In Press)**
2. **Saha S.**, Bernstein L. H., Williams S. J., Lev-Ari A., Kandala P., Robu I., Feldman M. W. (2021): Human Reproductive System, Genomic Endocrinology and Cancer Types (Series D: e-Books on BioMedicine – Metabolomics, Immunology, Infectious Diseases, Reproductive Genomic Endocrinology Book 1), Kindle Edition. (e-book) <https://www.amazon.com/dp/B08VTFWVKM>, Editors: Stephen J. Williams, **Sudipta Saha**, Aviva Lev-Ari., [www.pharmaceuticalintelligence.com](http://www.pharmaceuticalintelligence.com).
3. Lev-Ari A., Bernstein L. H., Williams S. J., **Saha S.**, Nir D., Robu I., Thornton G. S. Feldman M. W. (2019): Latest in Genomics Methodologies for Therapeutics: Gene Editing, NGS & BioInformatics, Simulations and the Genome Ontology (Series B Book 2), Kindle Edition. (e-book) <https://www.amazon.com/dp/B07MGSFDWR>, Editors: Stephen J. Williams, Aviva Lev-Ari, Marcus W. Feldman, [www.pharmaceuticalintelligence.com](http://www.pharmaceuticalintelligence.com).
4. Sarkar A., **Saha S.** (2019): Diagnosis of Arrhythmias by Translational Bioinformatics: An Artificial Intelligence Approach. Review in Book: *Artificial Intelligence – An Inducement of Technology in Human Affairs*, Page: 228-248, Editors: Shefali Raizada and Ekta Jha, **Wolters Kluwer, Gurgaon, India**.
5. Pearlman J. D., Bernstein L. H., Lev-Ari A., **Saha S.**, Sag D., Dragoi D., Lal V. (2018): Pharmacological Agents in Treatment of Cardiovascular Diseases (Series A: Cardiovascular Diseases Book 5), Kindle Edition. (e-book) <https://www.amazon.com/dp/B07MGSFDWR>, Editors: Justine D. Pearlman, Larry H. Bernstein, Aviva Lev-Ari, [www.pharmaceuticalintelligence.com](http://www.pharmaceuticalintelligence.com).
6. Bernstein L. H., Lev-Ari A., Williams S. J., Nallaseth F., Brook I., **Saha S.**, Sag D., Saxena R., Barliya T., Thornton G. S. (2017): The VOICES of Patients, Hospitals CEOs, Health Care Providers, Caregivers and Families: Personal Experience with Critical Care and Invasive Medical Procedures, Kindle Edition. (e-book) <https://www.amazon.com/dp/B076HGB6MZ>, Editor: Gail S. Thornton, [www.pharmaceuticalintelligence.com](http://www.pharmaceuticalintelligence.com).
7. Bernstein L. H., Lev-Ari A., Williams S. J., Sag D., Robu I., Barliya T., Orchard-Webb D., Kaul A. F., Dragoi D., **Saha S.** (2017): The Immune System, Stress Signaling, Infectious Diseases and Therapeutic Implications, Kindle Edition. (e-book) <https://www.amazon.com/dp/B075CXHY1B>, Editor: **Sudipta Saha**, [www.pharmaceuticalintelligence.com](http://www.pharmaceuticalintelligence.com).
8. Dungdung S. R., Bhoulmik, A., **Saha S.**, Ghosh P., Das K., Mukherjee S., Nath D., Chakrabarty J., Kundu C., Jaiswal B. S., Mandal M., Maiti A., Roychowdhury M., Ray, D., Bhattacharyya D., Majumder G. C. (2016): Identification of Sperm Motility Regulatory Proteins: A Potential Approach towards Animal Reproduction. Review in Book: *Insights from Animal Reproduction*, Page: 161-177, Editor: Rita Payan Carreira, **InTech, Rijeka, Croatia**.
9. Pearlman J. D., Saxena R., **Saha S.**, Sag D., Williams S. J., Baker M., Bernstein L. H., Lev-Ari A., Sonnenberg A. (2015): Regenerative and Translational Medicine: The Therapeutic Promise for Cardiovascular Diseases, Kindle Edition. (e-book) <http://www.amazon.com/dp/B019UM909A>, Editors: Larry H Bernstein, Aviva Lev-Ari, [www.pharmaceuticalintelligence.com](http://www.pharmaceuticalintelligence.com).
10. Pearlman J. D., Williams S. J., Barliya T., **Saha S.**, Stoicescu M. Vatsa A., Lev-Ari A., Bernstein L. H., Sonnenberg A. (2015): Etiologies of Cardiovascular Diseases: Epigenetics, Genetics and Genomics, Kindle Edition. (e-book) <http://www.amazon.com/dp/B018PNHJ84>, Editors: Aviva Lev-Ari, Larry H Bernstein, [www.pharmaceuticalintelligence.com](http://www.pharmaceuticalintelligence.com).
11. **Saha S.**, Saxena R., Barliya T., Sarkar A., Feldman M. W., Sag D., Bernstein L. H., Williams S. J., Lev-Ari

- A., Sonnenberg A. (2015): Genomics Orientations for Personalized Medicine (Frontiers in Genomics Research Book 1) Kindle Edition. (e-book) <http://www.amazon.com/dp/B018DHBUE06>, Editors: Larry H Bernstein, Aviva Lev-Ari, Stephen J. Williams, [www.pharmaceuticalintelligence.com](http://www.pharmaceuticalintelligence.com).
12. Majumder G. C., **Saha S.**, Das K., Nath D., Maiti A., Dey S., Roy D., Dey CS., Mitra S., Rana A., Chakrabarty J., Das S., Bhoumik A., Banerjee S., Mandal M., Jaiswal B. S., Ghosh P., Das A., Bhattacharyya D., and Dungdung S. R. (2015): Role of Sperm Surface Molecules in Motility Regulation. Review in Book: Mammalian Endocrinology and Male Reproductive Biology, Page: 197-244, Editor: Shiokumar Singh, **CRC Press, Taylor & Francis Asia Pacific, New Delhi, India**.
  13. Bernstein L. H., Kandala P., Lev-Ari A., **Saha S.**, Saxena R., Williams S., Sonnenberg A. (2015): Metabolic Genomics & Pharmaceuticals: Volume I (BioMedicine - Metabolomics, Immunology, Infectious Diseases Book 1) Kindle Edition. (e-book) <http://www.amazon.com/dp/B012BB0ZF0>, Editor: Larry H Bernstein, [www.pharmaceuticalintelligence.com](http://www.pharmaceuticalintelligence.com).
  14. Majumder G. C., , Das K., **Saha S.**, Nath D., Maiti A., Das S., Dey N., Banerjee S., Barua M., Mandal M., Jaiswal B. S., Biswas R., Bhoumik A., Roy D., Dey S., Som J., Bhattacharyya D., Dungdung S. R. (2012): Purification and Characterization of Novel Sperm Motility-Related Proteins. (Review) Protein Purification, Page: 1-90 Editors: Miguel Benitez and Victoria Aguirre, **Nova Science Publishers Inc., USA**.

---

### Press Mentions:

---

1. “**Global Medical Discovery**” listed our paper in 2013 on goat serum motility promoting protein as a potential bio-molecule for future drug discovery.
2. “**News Online**” reported our work on the sperm vertical velocity measuring instrumental system in their September 2009 issue on 14th September 2009 following “Indo-US Honorable Mention Award”.
3. “**The Telegraph**” has reviewed our work on the sperm vertical velocity measuring instrumental system in the “**Know How**” scientific section on May 14, 2007.
4. “**Down to Earth**” the renowned science and technology magazine has reviewed our work on buffalo serum motility promoting protein on January 15, 2007.
5. “**The Statesman**” has reviewed our work on buffalo serum motility promoting protein on January 10, 2007.

---

### Awards & Honours:

---

1. Awarded **Best Poster Award**, Bangalore India Bio, 2011.
2. Awarded **Honorable Mention Award** in India Innovation Pioneers Challenge Business Plan Competition, Indo-US Science & Technology Forum, New Delhi, 2009.
3. Finalist in **BioAsia Innovation Award**, BioAsia, Hyderabad, 2009.
4. Finalist in **Ranbaxy Young Scientist Award**, Ranbaxy Research Laboratories, Gurgaon, 2008.
5. Awarded **Biotech Idea to Innovation Award**, British Council, New Delhi, 2007.
6. Awarded **Best Poster Award**, International Congress On Gamete Biology: Emerging Frontiers In Fertility And Contraceptive Development, National Institute of Immunology, New Delhi, 2006.
7. Awarded **National Scholarship** for getting Star Marks in Madhyamick Pariksha, National Scholarships Scheme, Govt. of West Bengal, 1994.

---

### Workshops and Research Training:

---

1. Participation in the “**Hands-on Basic Flow Cytometry Course**” during 17 - 21 December 2009, by Centre for Cellular and Molecular Platform (C-CAMP) at National Centre for Biological Sciences (NCBS), Bangalore. (Training on Becton Dicson (BD) FACS Aria).
2. Participation in “**CSIR 6th Technology Led Entrepreneurship Programme 2009**” during 1 – 26 June 2009, by Indian Institute of Management - Bangalore faculties, at Indian Institute of Chemical Technology, Hyderabad.
3. Participation in “**Effective Communication & Scientific Writing Skill Development Workshop**” on 26th February - 3rd March 2009, by The Centre for Personal Transformation, at Indian Institute of Chemical Biology, Kolkata.
4. Participation in “**Users' Training Programme on CSIR E-Journals Consortium**” on 21st August 2006 at Indian Institute of Chemical Biology, Kolkata.
5. Participation in Workshop on “**Laboratory Safety on Biological, Chemical & Radiation Hazards**” in 2005 at Indian Institute of Chemical Biology, Kolkata.
6. Participation in Workshop on “**Electron Microscopy for Beginners**” in 2003 at Jadavpur University, Kolkata.

---

## Memberships:

---

- Society of Biological Chemists, India - Life Member since 2002.
  - Indian Science Congress Association - Life Member since 2004.
- 

## International Exposures for Research Purpose:

---

- London, United Kingdom – 2007.
  - Chicago, USA – 2010, 2011.
  - Bangkok, Thailand - 2010.
  - Taipei, Taiwan – 2011, 2012, 2013, 2014, 2015.
- 

## Extra Curricular Activities:

---

- Training Consultant in British Council's "Darwin Now" programme, 2010.
- Judge in the British Council's School Debate 2008 entitled "Debating Matters, India".
- Participated in various inter-organization competitive cricket tournaments of IICB and CSIR during 2002-2011 & 2015. Played for Royal Indian Cricket Club, Taiwan during 2012-2015.

## Summary of Key Research Achievements:

### Ph.D. Research Achievements:

- The presently available cell motility-analyzers measure primarily the "horizontal" velocity and there is no instrument available for "vertical" velocity measurement. Using goat sperm as the model a unique computer-based spectrophotometric system (SPERMA) has been developed for the first time to determine the average "vertical" velocity of motile cells. Undertaking upward movement against gravity is much tougher as compared with horizontal movement. Consequently average vertical **velocity is expected to be a much better identifying parameter for assessing semen and other motile cell quality**. The novel instrumental system developed in this research has thus the potential for **immense application in human infertility clinics, animal-breeding centres, centres for conservation of endangered species, etc. (Cytometry Part A, 2007)**
- Motility Stimulating Protein (MSP) is a heat stable 66 kDa monomeric novel protein purified from goat blood serum. At 0.9  $\mu$ M, it showed **much higher forward motility and longer motility maintenance than other known activators**. Motility analyzers CASA & SPERMA studies showed increase in horizontal and vertical velocities respectively. MSP action was cAMP independent. Its occurrence was higher in testis although blood was the richest source. MSP was localized throughout the cell surface of spermatozoa. Its antibody caused significant inhibition of sperm motility and inhibited fertilization showing its contraceptive efficacy. MSP has high efficacy to stimulate sperm forward motility thus may be used in **biomedical application in infertility clinics, animal breeding centers, poultries, animal conservation centers. (Fertility & Sterility, 2013)**

### Post Doctoral Research Achievements:

- Information obtained from multiple sensory modalities, such as vision and touch, is integrated to yield a holistic percept. In this research a **novel visual-tactile cross-modal integration stimulator** has been developed with three degrees of freedom that can present tactile motion stimuli with arbitrary motion direction, speed, and indentation depth in the skin. The apparatus can present cross-modal stimuli in which the spatial locations of visual and tactile stimulations are perfectly aligned. Results showed that perceived direction of visual motion can be biased by the direction of tactile motion when visual signals are weakened. The results also showed that the visual-tactile motion integration follows the rule of temporal congruency of multi-modal inputs, a fundamental property known for cross-modal integration. The apparatus developed in the present study **could be used for computational, psychophysical, and neurophysiological studies for research on rehabilitation of stroke patients. (Sensors, 2013)**
- Cell cycle regulation plays a pivotal role in controlling cell proliferation and survival. Aberrant expression of cell cycle-associated genes generally afflicts cells with tumor-prone characteristics and promotes chromosome instability. FLJ10540 (Centrosome Protein 55kDa: **Cep55**) was identified recently as an important regulator of cytokinesis involved in cell growth and proliferation. Thus Cep55 may be considered for cancer regulation. Other than this testis is one of the tissues with most prominent Cep55 expression. Therefore, it must have some role related to testicular cell cycle progression. **FLJ25439**, a novel protein found in our laboratory (**Cell Cycle, 2015**), was also found to be expressed exclusively in testis and preliminarily found to be an interacting partner of Cep55. In this study, we generated **Cep55 Knockout (KO) mice** by microinjection of embryonic stem (ES) harboring Cep55 null allele into blastocysts and chimera mice produced were then mated with wild type (WT) C57BL/6 mice. Heterozygous (-/+) mice from different litters were then mated to finally get homozygous (-/-) mice which showed **proportionate dwarfism with balancing problem and short life span**. Thus, complete knockout of Cep55 may be detrimental to cell division (in vivo) and development of embryo.

*Sudipta Saha*