

## CURRICULUM VITAE

Shubham Singh, Ph.D.

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### Education

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- 2017- (2021) *Ph.D., Biological Sciences*  
**Indian Institute of Science Education and Research**, Pune, India  
Research Advisor: [Siddhesh S. Kamat](#)
- 2015-2017 *M.S., Biological Sciences*  
**Indian Institute of Science Education and Research**, Pune, India
- 2012-2015 *B.Sc. Biotechnology, Chemistry and Zoology*  
**Osmania University**, Hyderabad, India

### Awards and Honors

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1. DST-AWSAR Award – 2021.
2. First prize - Intel Python Hackfury (Hackathon), 2019.
3. GATE (Biotechnology) fellowship 2018.
4. University rank 1 at Osmania University, 2015.
5. 2<sup>nd</sup> prize at National Conference on “Emerging challenges in Applied Toxicology”, 2014.
6. 2<sup>nd</sup> prize at National Conference on “Nano-biotechnology: Invisible Threats, Small Science, Big Consequences”, 2013.
7. DBT Biology Scholarship Award, 2012.
8. Gold Medal from Department of Biotechnology, Government of India, 2012.

## Research Experience and Training

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- 2017-2021 Doctoral thesis on “*Mapping the neuroanatomy of de-regulated lipid pathways in PHARC syndrome*” supervised by [Dr. Siddhesh S. Kamat](#) – IISER Pune.
- 2016-2017 Project on “*Cloning, expression and purification of spider Double-knot toxins*” with [Dr. Jeet Kalia](#) – IISER – Pune.
- 2015-2016 Project on “*Synthesis and characterization of linkers for Activity based probes*” with [Dr. Sandanaraj Britto](#) – IISER – Pune.
- 2012-2015 Undergraduate project on “*Role of dietary amino acids in neurological disorders*” with [Dr. Senthilkumar Rajagopal](#) – Osmania University.

## Publications (Research Articles)

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# denotes authors contributed equally to this work

1. Mondal, S., Kinatukara, P., **Singh, S.**, Sailasree, P., Shambhavi, S., Patil G.S., Dubey, N., Singh, S. M., Pal, B., Shekar, P. C., Kamat, S. S., Kumar, S., Sankaranarayanan\*, R. **(2021)** Dip2 is a unique regulator of specific diacylglycerol homeostasis across Opisthokonta. (Submitted).
2. **Singh, S.**, Kamat\*, S. S. **(2021)** The loss of enzymatic activity of the PHARC associated lipase ABHD12 results in increased phagocytosis that causes neuroinflammation. (In revision).
3. Mehdiratta, K., **Singh, S.**, Sharma, S., Bhosale, R., Choudhury, R., Masal, D. P., Manocha, A., Dhamale, B. D., Khan, N., Vivekanand A., Sharma, P., Ikeh, M., Brown, A. C., Parish, T., Ojha, A., Michael, J. S., Faruq, M., Medigheshi, G. R., Mohanty, D., Reddy, D. S., Natarajan, V. T., Kamat\*, S. S., Gokhale\*, R. S., **(2021)** Kupyaphores as novel virulence factors for maintaining Zinc homeostasis of *Mycobacterium tuberculosis*. (Preprint – [Research Square](#)) (Peer Review – In revision).

4. Khandewal<sup>#</sup>, N., Sheikh<sup>#</sup>, M., Mhetre<sup>#</sup>, A., **Singh<sup>#</sup>, S.**, Sajeevan, T., Joshi, A., Balaji, N. K., Chakrapani, H., Kamat, S. S., **(2020)** Fatty acid chain length drives lysophosphatidylserine dependent immunological outputs, [Cell Chemical Biology](#) 2021 Jan 21;S2451-9456(21)00008. (#Equal contribution).
5. Kinatukara, P., Sailasree, P., Patil G. S., Shambhavi, S., **Singh, S.**, Mhetre, A., Madduri, K. M., Kamat, S. S., Kumar, S., Sankaranarayanan\*, R. **(2020)** Pre-natal growth retardation rate and fast mass accumulation in mice lacking Dip2A is dependent on dietary lipid nutrients, [Transgenic Research](#) 2020, 29, 553-562.
6. **Singh\*, S.**, Joshi, A., Kamat\*, S. S. **(2020)** Mapping the neuroanatomy of ABHD16A-ABHD12 and lysophosphatidylserine provides new insights into the pathophysiology of the human neurological disorder PHARC, [Biochemistry](#) 2020, 59, 24, 2299-2311. (\*Co-corresponding author).
7. Kelkar<sup>#</sup>, D. S., Ravikumar<sup>#</sup>, G., Mehendale<sup>#</sup>, N., **Singh<sup>#</sup>, S.**, Joshi, A., Sharma, A. K., Mhetre, A., Rajendran, A., Chakrapani, H., Kamat, S. S. **(2019)** A chemical genetic screen identifies ABHD12 as an oxidized phosphatidylserine lipase, [Nature Chemical Biology](#) 15, 169-178. (#Equal contribution).
8. Joshi<sup>#</sup>, A., Shaikh<sup>#</sup>, M., **Singh<sup>#</sup>, S.**, Rajendran, A., Mhetre, A., Kamat, S. S. **(2018)** Biochemical characterization of the PHARC associated serine hydrolase ABHD12 reveals its preference for very long chain lipids, [Journal of Biological Chemistry](#) 293 (44), 16953-16963. (#Equal contribution).
9. Pathak<sup>#</sup>, D., Mehendale<sup>#</sup>, N., **Singh, S.**, Mallik, R., Kamat, S. S. **(2018)** Lipidomics suggests a new role for ceramide synthase in phagocytosis, [ACS Chemical Biology](#) 13 (8), 2280-2287.
10. **Singh, S.**, Sangam, S. R., Rao, J. V., Rajagopal, S. **(2015)** Alcohol Glycine Gastritis, [International Journal of Nutrition, Pharmacology, Neurological Diseases](#) 5, 1-5.

11. Rajagopal, S., Sangam, S. R., **Singh, S.**, (2015) Differential regulation of anaesthetics on ion channels, [\*International Journal of Nutrition, Pharmacology, Neurological Diseases\*](#) 5 (4), 128-134.

### **Publications (Book Chapters)**

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1. Kamat, S. S., **Singh, S.**, Rajendran, A., Game, S., Zechel, D. L. (2020) Enzymatic strategies for the catabolism of organophosphonates, [\*Comprehensive Natural Products III, Enzymes and Enzyme Mechanisms\*](#) (Polar Intermediates) Edited by Chris Whitman, Paul Fitzpatrick, Kenji Watanabe.
2. **Singh, S.**, Sangam R. S., Rajagopal, S. (2020) Regulation of dietary amino acids and voltage-gated calcium channels in autism spectrum disorder, [\*Advances in Neurobiology\*](#), Springer Publications, 24, 647-660.
3. **Singh, S.**, Razak M. A., Sangam R. S., Viswanath, B., Begum, P. S., Rajagopal, S. (2018) The impact of functional food and nutraceuticals in health, [\*Therapeutic Foods – Handbook of Food and Bioengineering\*](#), Science Direct, 23-47.
4. Rajagopal, S., Sangam R. S., **Singh, S.** (2016) Modulatory effects of dietary amino acids on neurodegenerative diseases, [\*Advances in Neurobiology\*](#), Springer Publications, 401-414.

### **Presentations and Conferences Attended**

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1. Neurodegenerative Diseases: Emerging Mechanisms and Therapeutic Opportunities, JCB-JEM Neurodegenerative Symposium, 2021.
2. 12<sup>th</sup> International Conference on Frontotemporal Dementias and 1<sup>st</sup> International Society for Frontotemporal Dementias Congress, 2021.
3. International Conference on Laboratory Animals in Biomedical Research –The Way Forward, Nov 2019.
4. 10<sup>th</sup> Annual Meeting of PSI and International Proteomics Conference, NCCS, Pune, Dec 2018.
5. IISER-WIS Conference on Chemical Biology, Jan 2018.
6. National Conference on Emerging challenges in Applied Toxicology, Sept 2014.
7. National Seminar on Hematophagous Vectors, Aug 2014.

8. National Conference on Multiplex Approaches in Biotechnology, Aug 2014.
9. National Conference on Pharmacogenomics, Drug Development and Personalized Medicine, Jul 2014.
10. National Conference on Forensic DNA Fingerprinting, Mar 2014.
11. National Conference on Nanoscience and Nanotechnology, Feb 2014.
12. International Conference on Nano, Bio and Material Sciences, Jan 2014.
13. Conference on Advances in Bio-analytical Techniques, Jan 2014.
14. National Symposium on Recent Trends in Biotechnology, Dec 2013.
15. National Seminar on Green Biotechnology –Science for Better Future, Dec 2013.
16. National Conference on Nano-biotechnology: Invisible Threats, Small Science, Big Consequences”, Sept 2013.

### **Teaching Experience**

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Fall 2016	System Biology, IISER – Pune
Spring 2017	Introduction to Biology, IISER – Pune

### **Experimental Skills**

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1. Liquid Chromatography coupled Mass Spectrometry (LC-MS)
2. Metabolomics and Chemical Proteomics
3. Tissue culture (primary and secondary mammalian cell lines)
4. Protein Purification and Enzymology
5. Immunohistochemistry
6. Super Resolution (STED) and Confocal Microscopy
7. Stereotaxic surgery in mice and Animal Behavior
8. Fluorescence-activated cell sorting (FACS)
9. Molecular biology (Cloning and in vivo/in situ genetic experiments)
10. Chemical genetic screens and phenotyping of cells