CURRICULUM VITAE

Name **Shantanu Sengupta**

Designation: Chief Scientist

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Delhi-110020

Date of Birth April 11, 1967

Sex Male

SC/ST/GEN Gen

Education

Ph.D. - 1996, Jadavpur University, Calcutta
Thesis title: Studies on enzymatic reactions in organic solvents. (Work done at Indian Institute of Chemical Biology)

M.Sc. (Chemistry) - 1990, First Class, Jadavpur University

B.Sc.Honours (Chemistry, Physics, Maths) - 1988, First Class, Jadavpur University

Specialization Nutritional and Clinical Genomics and Proteomics related to metabolic disorders.

Positions held

CSIR Junior Research Fellow, 1990-92, Indian Institute of Chemical Biology, Calcutta

CSIR Senior Research Fellow, 1992-95, Indian Institute of Chemical Biology, Calcutta

Project Associate, 1995-98, National Institute of Immunology, New Delhi

Postdoctoral Research Fellow, 1998 – 2002, Department of Cell Biology, Cleveland Clinic Foundation, U.S.A.

Scientist , 2002- continuing, Institute of Genomics and Integrative Biology, Delhi

Awards/Honours

1. Fellow of the **West Bengal Academy of Science and Technology**, 2016
2. Fellow of the **National Academy of Sciences** (NASI), 2015
3. R.N. Chakrawaty **Oration award** by the Atherosclerosis Society of India, 2015
4. DBT **National Biosciences Award** for Career development, 2011
5. The Cleveland Clinic Foundation-**ELSA ALBRECHT fellow award**, 2001
6. Senior Research Fellowship by CSIR, 1992
7. Junior Research Fellowship by CSIR, 1990
8. **Ranked among top eleven candidates** in the National Eligibility Test (NET) conducted jointly by CSIR and UGC held in 1989 by CSIR.

Academic Positions

1. Co-Chairperson of Technical Expert Committee on Women and Child health and nutrition, Department of Biotechnology, Govt. of India
2. **Academic Editor**, PLoS one
3. **Member** of Advisory board of the Journal of the practice of Cardiovascular Sciences
4. **Member**, Editorial Board, Journal of Proteins and Proteomics

Administrative Positions

Member of Institutional Committees

1. Member, building committee, CSIR-IGIB south campus. This committee supervised the construction of the IGIB south campus. (2009-2013)
2. Chairman of South campus coordination committee which was formed to take care of the maintenance and smooth functioning of IGIB south campus (2013-2015)
3. In charge, National Facility for Biological and Genomic Resources (2015-)
4. Member, works and services committee (2009-2015)
5. Member of the Technical and Purchase committee (2009-2023), which looks after major purchases (Rs. 25 lakhs and above). Chairman of the committee from 2015-2023
6. Member of Academic Committee for student affairs (2010- 2017)
7. Member library committee (2005-2006)
8. Member annual report preparation committee (2003-2007)
9. Member International Science and technology Affairs Group (2006-2009)

Important Administrative position in Societies

1. Council Member, Asia Oceania Human Proteome Organization 2018-
2. Vice President, Proteomics Society, India
3. Member of the executive committee, International Society of Heart Research (Indian Section)

Current Research Interest

i) To identify prediagnostic markers for cardiovascular disease using genetic, epigenetic and proteomic approaches.
ii) Understand the role of thiols like homocysteine and cysteine and micronutrient vitamin B12 and folate in complex disorders using model systems

We have integrated nutrition, genetic, epigenetic, biochemical & proteomic approaches and developed novel methodologies to clinically establish relevance of new markers in cardiovascular disease biology. While in the western world, Coronary Artery Disease (CAD) is linked to high-calorie diet and sedentary lifestyle, the high incidence of such diseases in India, even amongst low income groups led us to investigate diverse aspects related to CAD. We hypotheiszed that low vitamin B12 levels presumably due to the adherance of a strict vegetarian diet, leads to elevated levels of the thiol amino acids homocysteine and cysteine, which are independent risk factors for CAD.

Genetic factors and biomarkers: Our work revealed an interesting correlation between genetic factors, deficiency of vitamin B_{12} and CAD. We identified polymorphisms in gene that codes for transcobalamin II, a protein to which vitamin B_{12} binds to get delivered inside the cells and this might link vitamin B_{12} deficiency with CAD The effects of homocysteine and its correlation with several complex disorders are also investigated. Using a plasma proteomics approach we have clearly demonstrated that proteins in the reverse cholesterol pathway are altered in CAD patients in India, which could be a reason for the characteristic low HDL levels in Indian CAD patients. We have recently established a high content lipidomics assay using LC-MS. This assay utilizes a novel approach of scheduled MRM with variable retention time enabling us to identify more than 1000 lipid species in a single LC-MS run. Using this approach, we showed that long chain triglycerides are elevated in CAD patients, while medium chain triglycerides, which are thought to be protective, are low.

Role of mal-nutrition and epigenetics in CAD: In collaboration with NIN and CCMB Hyderabad, we developed a maternal vitamin B_{12} deficiency rat model that mimics the vitamin deficiency observed in our population we have shown that pups born to mothers fed with vitamin B12 deficient diet develop risk factors of atherosclerosis like increased body weight, adiposity and have high levels of truglyceride and low levels of HDL, the two factors that account for a majority of CAD cases in India. Using whole genome methylation and proteomics approach, we show that dysregulation of PPAR pathway probably results in high triglyceride and low HDL. Our work on DNA methylation in CAD patients led us to pioneer

the view that coronary artery disease is associated with hypermethylation, which has been subsequently independently shown by other groups.

Molecular / cellular role of homocysteine: We had hypothesized that altered metabolic levels of homocysteine in various tissues can differentially perturb metabolic processes. We demostrated the mechanistic understanding of this phenomenon by using yeast as a model organism in which elevated levels of homocysteine was shown to result in endoplasmic reticulum stress and mitochondrial dysfunction leading to apoptosis and the pathways were altered depending on the flux of homocysteine metabolism.

Interaction between genetic factors and nutrition: We also identified novel single nucleotide polymorphisms that modulate homocysteine levels in Indian population and demonstrated a three way interaction of vegetarian diet and two single nucleotide polymorphisms that could explain the elevation in homocysteine levels. The altered levels of homocysteine can perturb the thiol-disulfide equilibrium in several proteins and thus could result in downstream effects further leading to various diseases.

Our work has thus established an interesting link between nutritional status, epigenetic modification, role of small thiol amino acids and their cumulative correlation to complex diseases.

Research at Cleveland Clinic Foundation (1998- 2002)

Epidemiologic evidence indicates that an increased level of homocysteine (homocysteinemia) in blood enhances the risk for atherosclerosis in the coronary, cerebral, and peripheral vasculature. However, the molecular mechanism by which increased levels of homocysteine promote atherosclerosis is unknown. My postdoctoral work involved the study of the role of homocysteine in vascular biochemistry and metabolism aiming to identify the proteins in the plasma that bind homocysteine. We have elucidated the mechanism of interaction of homocysteine with albumin and also the role of albumin in the oxidation of homocysteine and other biological thiols. We had identified two other proteins-fibronectin and transthyretin in plasma that interact with homocysteine, and showed that fibronectin's ability to bind fibrin is inhibited when fibronectin is homocysteinylated.

Postdoctoral work at National Institute of Immunology (1996-98)

Worked on the mechanism of hemoglobin endocytosis in protozoan parasites under Dr. Sandip K. Basu. Trypanosomatid parasites, *Trypanosoma* and *Leishmania*, lack the heme biosynthetic pathway and need to acquire heme from external sources for survival. We established that in *Leishmania* a 46 KDa protein located in the flagellar pocket mediates endocytosis and intracellular

degradation of hemoglobin suggesting the intriguing possibility that *in vivo* hemoglobin may be a potential source for the heme essentially required by the parasites for growth.

Work done during Ph. D. (1990-95)

Studied the kinetics of Pronase-catalysed acylation of alcohols (mono and dihydric) with different acyl donors in various organic solvents as well as purified and charecterized the enzyme fractions responsible for the acylation reactions in Pronase, which contains eleven proteolytic enzymes.

Completed Projects

Intramural Projects

Sr. No.	Title of Project & duration	Role in the project
1	Centre for Cardiovascular and Metabolic Disease Research (CARDIOMED) CSIR Network Project	PI and coordinator
2	Epigenetics in Health and Disease	PI and Coordinator, IGIB
3	Plasma Proteomics: Health environment and disease (2007-2012) CSIR Network Project	PI and coordinator, IGIB
4	Predictive medicine using repeat and single nucleotide polymorphism (2002-2007) CSIR Network Project	Participant*
5	Animal models and animal substitute technologies(2002-2007) CSIR Network Project	Participant*
6	Validation of identified screening models and development of new alternative models for evaluation of new drug entities (2007-2012) CSIR Network Project	Participant*
7	An integrative biology approach in deciphering genotype-phenotype correlation for human complex disorders (2007-2012) CSIR Network Project	Participant*
8	Genomics and Epigenomics in Health and Disease CSIR Network Project	PI and coordinator, IGIB
9	A long term longitudinal observations cohort study of health outcomes-Preparatory phase (2020-2022)	PI and Coordinator
10	Transgenerational effect of Paternal and Maternal vitamin B12 deficiency (2020-2023)	PI and coordinator, IGIB

*contributed as PI for individual project's Objectives/Work Packages

Extramural

Sl. No.	Title of Project & duration	Funding Agencies Govt. Agencies R & D Projects (ICMR/DST/DBT etc.) and Amount	Role in the project
1	Role of homocysteine in coronary artery disease: genetic and epigenetic studies (2004-2008)	DBT IGIB part ~ Rs. 27.80 lakhs	PI and Coordinator
2	Maternal vitamin B12 and/or folate restriction induced changes in body composition (adiposity), insulin resistance and atherogenic risk in WNIN rat offspring: molecular / epigenetic basis of the changes and validation in Zebrafish model (2007-2010)	DBT IGIB part ~ Rs. 31.502 Lakhs	Co-PI (PI for IGIB)
3	Protein-S-Homocysteinylation as a biomarker in the vascular damage: analytical aspects and clinical evaluations (2009-2012)	DST (INDO-ITALY grant) Rs. 1.50 Lakhs	PI
4	Genotyping, Gene expression analysis and Antibody Titres of some hsps in Coronary Artery disease samples (2011-2014)	DRDO 46.88 Lakhs	PI
5	Probing endothelial dysfunction in Coronary Artery Disease (2012-2015)	DBT (Bioscience Award Grant) 6 Lakhs	PI
6	Genetic Studies in Raica Community: Determination of possible genetic resistance of Raica community to Type 2 Diabetes Mellitus. (2006-2008)	ICMR Rs. 31.565 Lakhs	Co-investigator
7	Prevalence and predictors of Vitamin B12 deficiency: genetic associations for low vitamin B12 levels-multi-center a pan India study (2016-2019)	DBT Total project cost: Rs.40219510/-	Co-PI
8	Search of novel prognostic biomarkers in acute decompensated heart failure in India (2017-2020)	DHR Total project cost Rs. 8276264/-	Co-PI (PI for IGIB)
9	Department of Biotechnology- Consortium on Celiac Disease. Funded by Department of Biotechnology (2017-2022)	DBT Total project cost Rs. 16299680/-	Co-PI (PI for IGIB)

Ongoing Projects (Extramural)

Sl. No.	Title of Project & duration	Funding Agencies Govt. Agencies R & D Projects (ICMR/DST/DBT etc.) and Amount	Role in the project
1	High Resolution plasma proteomic and lipidomic analysis for fibrosis related metabolic assessment in dialated Cardiomyopathy (DCM) patients in India: A multi center based study (2021-2024)	ICMR Total project cost Rs. 8891400/-	Co-PI (PI for IGIB)

Intramural

Sl. No.	Title of Project & duration	Role in the project
1	Phenome India-CSIR Health Cohort Knowledgebase	PI

Academic Achievements (As Faculty of CSIR-IGIB)

1. For the first time showed that vitamin B12 deficiency is associated with Coronary Artery Disease in Indian population
2. Our work has established that pathways and processes that are perturbed by the amino acid homocysteine depend on the flux of homocysteine metabolism
3. Provided the physico-chemical parameters that could dictate if a protein will bind to homocysteine.
4. Established an interesting link between nutritional status, epigenetic modification, vitamin B12, small thiol amino acids and their cumulative correlation to complex diseases.
5. We were the first to report that Coronary Artery Disease is associated with hypermethylation of DNA. This work has been cited more than 100 times.
6. Provided the first whole genome DNA methylation map for any rat tissue and reported that DNA methylation plays an important role in splicing.

7. We for the first time developed a map of mitochondrial methylome and showed that there are distinct patterns of epigenetic regulation in mitochondria
8. We for the first time reported that DNA methylation pattern varies between long non-coding RNA and mRNA.
9. Using plasma proteomics approach showed that four proteins involved in the reverse cholesterol pathway along with hypertension and Diabetes could account for 88% of CAD cases and using an untargeted metabolomics approach identified about 32 metabolites that are associated with CAD.
10. Published the first untargeted metabolomics paper in the country and identified metabolites associated with CAD in Indian population
11. We have established an interesting link between nutritional status, epigenetic modification, vitamin B12, small thiol amino acids and their cumulative correlation to complex diseases
12. Using yeast as a model system showed changes in protein levels in various organelles including mitochondria in response to ER stress and reported that a large proportion of these changes were dependent on UPR signaling.
13. In charge of Proteomics Facility at IGIB, have trained several students and young faculties from Universities and other research Institutes. Played a major role in popularizing the field of proteomics
14. Member of the Scientific Committee, 11th International Conference on Homocysteine and One-Carbon Metabolism.

Publications:

Total Number of papers published: 119

Book Chapters: 3

1. Singh MK, Yadav R, Bhaskar AK, **Sengupta S**, Sachidanandan C. A diet-independent zebrafish model for NAFLD recapitulates patient lipid profiles and offers a system for small molecule screening. ***BIOCHIMICA ET BIOPHYSICA ACTA. MOLECULAR AND CELL BIOLOGY OF LIPIDS*** 2022 OCT 4;1;1868;159246

2. Deblina Raychaudhuri, Purbita Bandopadhyay, Ranit D'Rozario, Jafar Sarif, Yogiraj Ray, Shekhar Ranjan Paul, Praveen Singh, Kausik Chaudhuri, Ritwik

Bhaduri, Rajesh Pandey, Prasun Bhattacharya, Shantanu Sengupta, Shilpak Chatterjee, Dipyaman Ganguly. Clinical Trial Sub-Group Analyses to Investigate Clinical and Immunological Outcomes of Convalescent Plasma Therapy in Severe COVID-19. ***Mayo Clinic Proceedings: Innovations, quality and outcome***. 2022, (online 14 September 2022)

3. Akash Kumar Bhaskar, Salwa Naushin, Arjun Ray, Praveen Singh, Anurag Raj, Shalini Pradhan, Khushboo Adlakha, Towfida Jahan Siddiqua, Dipankar Malakar, Debasis Dash, **Shantanu Sengupta**. A high throughput lipidomics method using scheduled multiple reaction monitoring. ***Biomolecules***. 2022 (in press)
4. Prateek Singh, Rajat Ujjainiya, Satyartha Prakash, Salwa Naushin, Viren Sardana, Nitin Bhatheja, Ajay Pratap Singh, Joydeb Barman, Kartik Kumar, Saurabh Gayali, Raju Khan, Birendra Singh Rawat, Karthik Bharadwaj Tallapaka, Mahesh Anumalla, Amit Lahiri, Susanta Kar, Vivek Bhosale, Mrigank Srivastava, Madhav Nilakanth Mugale, CP Pandey, Shaziya Khan, Shivani Katiyar, Desh Raj, Sharmeen Ishteyaque, Sonu Khanka, Ankita Rani, Jyotsna Sharma, Anuradha Seth, Mukul Dutta, Nishant Saurabh, Murugan Veerapandian, Ganesh Venkatachalam, Deepak Bansal, Dinesh Gupta, Prakash M Halami, Muthukumar Serva Peddha, Ravindra P Veeranna, Anirban Pal, Ranvijay Kumar Singh, Suresh Kumar Anandasadagopan, Parimala Karuppanan, Syed Nasar Rahman, Gopika Selvakumar, Subramanian Venkatesan, Malay Kumar Karmakar, Harish Kumar Sardana, Anamika Kothari, Devendra Singh Parihar, Anupma Thakur, Anas Saifi, Naman Gupta, Yogita Singh, Ritu Reddu, Rizul Gautam, Anuj Mishra, Avinash Mishra, Iranna Gogeri, Geethavani Rayasam, Yogendra Padwad, Vikram Patial, Vipin Hallan, Damanpreet Singh, Narendra Tirpude, Partha Chakrabarti, Sujay Krishna Maity, Dipyaman Ganguly, Ramakrishna Sistla, Narender Kumar Balthu, Kiran Kumar, Siva Ranjith, B Vijay Kumar, Piyush Singh Jamwal, Anshu Wali, Sajad Ahmed, Rekha Chouhan, Sumit G Gandhi, Nancy Sharma, Garima Rai, Faisal Irshad, Vijay Lakshmi Jamwal, Masroor Ahmad Paddar, Sameer Ullah Khan, Fayaz Malik, Debashish Ghosh, Ghanshyam Thakkar, SK Barik, Prabhanshu Tripathi, Yatendra Kumar Satija, Sneha Mohanty, Md Tauseef Khan, Umakanta Subudhi, Pradip Sen, Rashmi Kumar, Anshu Bhardwaj, Pawan Gupta, Deepak Sharma, Amit Tuli, Srinivasan

Krishnamurthi, L Prakash, Ch V Rao, BN Singh, Arvindkumar Chaurasiya, Meera Chaurasiyar, Mayuri Bhadange, Bhagyashree Likhitkar, Sharada Mohite, Yogita Patil, Mahesh Kulkarni, Rakesh Joshi, Vaibhav Pandya, Sachin Mahajan, Amita Patil, Rachel Samson, Tejas Vare, Mahesh Dharne, Ashok Giri, Shilpa Paranjape, G Narahari Sastry, Jatin Kalita, Tridip Phukan, Prasenjit Manna, Wahengbam Romi, Pankaj Bharali, Dibyajyoti Ozah, Ravi Kumar Sahu, Prachurjya Dutta, Moirangthem Goutam Singh, Gayatri Gogoi, Yasmin Begam Tapadar, Elapavalooru VSSK Babu, Rajeev K Sukumaran, Aishwarya R Nair, Anoop Puthiyamadam, Prajeesh Kooloth Valappil, Adrash Velayudhan Pillai Prasannakumari, Kalpana Chodankar, Samir Damare, Ved Varun Agrawal, Kumardeep Chaudhary, Anurag Agrawal, **Shantanu Sengupta**, Debasis Dash. A machine learning based approach to determine infection status in recipients of BBV152 (Covaxin) whole-virion inactivated SARS-CoV-2 vaccine for serological surveys. ***Computers in Biology and Medicine***. 2022, 146, 105419

5. Rajat Ujjainiya, Akansha Tyagi, Viren Sardana, Salwa Naushin, Nitin Bhatheja, Kartik Kumar, Joydeb Barman, Satyartha Prakash, Rintu Kutum, Akash Kumar Bhaskar, Prateek Singh, Kumardeep Chaudhary, Menka Loomba, Yukti Khanna, Chestha Walecha, Rizwan Ahmed, Ashutosh Yadav, Archana Bajaj, Gaurav Malik, Sahar Qureshi, Swati Waghdhare, Samreen Siddiqui, Kamal Krishan Trehan, Manju Mani, Rajiv Dang, Poonam Das, Pankaj Dougall, Monica Mahajan, Sudipta Sonar, Kamini Jakhar, Reema Kumar, Mahima Tiwari, Shailendra Mani, Sankar Bhattacharyya, Sandeep Budhiraja, Anurag Agrawal, Debasis Dash, Sujeet Jha, **Shantanu Sengupta**. High failure rate of ChAdOx1-nCoV19 immunization against asymptomatic infection in healthcare workers during a Delta variant surge. ***Nature Communications***, 2022, 13, 1726 https://doi.org/10.1038/s41467-022-29404-3

6. Ravindra Pal Singh, Raja Bhaiyya, Raksha Thakur, Jayashree Niharika, Chandrajeet Singh, Dimitrios Latousakis, Gerhard Saalbach, Sergey A Nepogodiev, Praveen Singh, Sukesh Chander Sharma, **Shantanu Sengupta**, Nathalie Juge, Robert A Field. Biochemical basis of xylooligosaccharide utilisation by gut bacteria. ***Int. J. Mol. Sci***, 2022, 23, 2992

7. Shankar Sharma, Anuj Mittal, Nar Singh Chauhan, Sangeeta Saini, Jyoti Yadav, Manoj Kushwaha, Rahul Chakraborty, **Shantanu Sengupta**, Kavitha Kumari, Naveen Kumar. Mechanistic investigation of RhB photodegradation under low power visible LEDs using a Pd-modified TiO2/Bi2O3 photocatalyst: Experimental and DFT studies. J***. of Phy Chem of Solids***. 2022, 162, 110510
8. Yogiraj Ray, Shekhar Ranjan Paul, Purbita Bandopadhyay, Ranit D'Rozario, Jafar Sarif, Deblina Raychaudhuri, Debaleena Bhowmik, Abhishake Lahiri, Janani Srinivasa Vasudevan, Ranjeet Maurya, Akshay Kanakan, Sachin Sharma, Manish Kumar, Praveen Singh, Rammohan Roy, Kausik Chaudhury, Rajsekhar Maiti, Saugata Bagchi, Ayan Maiti, Md Perwez, Abhinandan Mondal, Avinash Tewari, Samik Mandal, Arpan Roy, Moumita Saha, Durba Biswas, Chikam Maiti, Ritwik Bhaduri, Sayantan Chakraborty, Biswanath Sharma Sarkar, Anima Haldar, Bibhuti Saha, **Shantanu Sengupta**, Rajesh Pandey, Shilpak Chatterjee, Prasun Bhattacharya, Sandip Paul, Dipyaman Ganguly. A phase 2 single center open label randomised control trial for convalescent plasma therapy in patients with severe COVID-19. ***Nature Communications***, 2022, 13, doi.org/10.1038/s41467-022-29404-3

9. Tripti Nair, Rahul Chakraborty, Praveen Singh, Sabnam Sahin Rahman, Akash Kumar Bhaskar, **Shantanu Sengupta**, Arnab Mukhopadhyay. Adaptive capacity to dietary Vitamin B12 levels is maintained by a gene-diet interaction that ensures optimal life span. ***Aging Cell***. 2022, 21 e13518

10. Aanchal Gupta, Betsy Reshma G, Praveen Singh, Ekta Kohli, **Shantanu Sengupta**, Munia Ganguli. A combination of synthetic molecules acts as antifreeze for the protection of skin against cold-induced injuries. ***ACS applied biomaterials***. 2022, 5, 252-264
11. Naveen Kumar, Anuj Mittal, Monika Yadav, Shankar Sharma, Tarun Kumar, Rahul Chakraborty, **Shantanu Sengupta**, Nar Singh Chauhan. Photocatalytic TiO2/CdS/ZnS nanocomposite induces Bacillus subtilis cell death by disrupting its metabolism and membrane integrity. ***Ind. J. Microbio***l. 2021, 61, 487-496
12. Mahesh S Dhar , Robin Marwal , Radhakrishnan Vs , Kalaiarasan Ponnusamy , Bani Jolly , Rahul C Bhoyar , Viren Sardana , Salwa Naushin , Mercy Rophina , Thomas A Mellan , Swapnil Mishra , Charles

Whittaker , Saman Fatihi , Meena Datta , Priyanka Singh , Uma Sharma , Rajat Ujjainiya , Nitin Bhatheja , Mohit Kumar Divakar , Manoj K Singh , Mohamed Imran , Vigneshwar Senthivel , Ranjeet Maurya , Neha Jha , Priyanka Mehta , Vivekanand A , Pooja Sharma , Arvinden Vr , Urmila Chaudhary , Namita Soni , Lipi Thukral , Seth Flaxman , Samir Bhatt , Rajesh Pandey , Debasis Dash , Mohammed Faruq , Hemlata Lall , Hema Gogia , Preeti Madan , Sanket Kulkarni , Himanshu Chauhan , **Shantanu Sengupta** , Sandhya Kabra , Indian SARS-CoV- Genomics Consortium (INSACOG); Ravindra K Gupta , Sujeet K Singh , Anurag Agrawal , Partha Rakshit , Genomic characterization and epidemiology of an emerging SARS-CoV-2 variant in Delhi, India. ***Science,*** 2021 Oct 14;eabj9932. doi: 10.1126/ science . abj9932

13. Krishan Kumar, Nitin Yadav, Jyotirmoy Banerjee, Manjari Tripathi, MC Sharma, Sanjeev Lalwani, Fouzia Siraj, P Sarat Chandra, **Shantanu Sengupta**, Aparna Banerjee Dixit Mass spectrometry-based lipidomic analysis reveals altered lipid profile in brain tissues resected from patients with focal cortical dysplasia (FCD). ***Epilepsy Research*** 2021, 177, 106773
14. Petra Mlcochova, Steven A Kemp, Mahesh Shanker Dhar, Guido Papa, Bo Meng, Isabella ATM Ferreira, Rawlings Datir, Dami A Collier, Anna Albecka, Sujeet Singh, Rajesh Pandey, Jonathan Brown, Jie Zhou, Niluka Goonawardane, Swapnil Mishra, Charles Whittaker, Thomas Mellan, Robin Marwal, Meena Datta, **Shantanu Sengupta**, Kalaiarasan Ponnusamy, Venkatraman Srinivasan Radhakrishnan, Adam Abdullahi, Oscar Charles, Partha Chattopadhyay, Priti Devi, Daniela Caputo, Tom Peacock, Chand Wattal, Neeraj Goel, Ambrish Satwik, Raju Vaishya, Meenakshi Agarwal, Antranik Mavousian, Joo Hyeon Lee, Jessica Bassi, Chiara Silacci-Fegni, Christian Saliba, Dora Pinto, Takashi Irie, Isao Yoshida, William L Hamilton, Kei Sato, Samir Bhatt, Seth Flaxman, Leo C James, Davide Corti, Luca Piccoli, Wendy S Barclay, Partha Rakshit, Anurag Agrawal, Ravindra K Gupta. SARS-CoV-2 B. 1.617. 2 Delta variant replication and immune evasion. ***Nature*** 2021, 599(7883):114-119
15. Angira Dasgupta, Rahul Chakraborty, Bodhisattwa Saha, Himanshi Suri, Praveen Singh, Anurag Raj, Bhupesh Taneja, Debasis Dash, **Shantanu Sengupta**, Anurag Agrawal Sputum Protein Biomarkers in Airway Diseases: A

Pilot Study. ***International Journal of Chronic Obstructive Pulmonary Disease***, 2021,16, 2203

16. Paras Sehgal, Samatha Mathew, Ambily Sivadas, Arjun Ray, Jyoti Tanwar, Sushma Vishwakarma, Gyan Ranjan, KV Shamsudheen, Rahul C Bhoyar, Abhishek Pateria, Elvin Leonard, Mukesh Lalwani, Archana Vats, Rajeev R Pappuru, Mudit Tyagi, Saumya Jakati, **Shantanu Sengupta**, Binukumar BK, Subhabrata Chakrabarti, Inderjeet Kaur, Rajender K Motiani, Vinod Scaria, Sridhar Sivasubbu. LncRNA *VEAL2* regulates PRKCB2 to modulate endothelial permeability in diabetic retinopathy. ***The EMBO Journal***. 2021, e107134. doi: 10.15252/embj.2020107134
17. Manoj K Singh, Rijith Jayarajan, Swati Varshney, Sindhuri Upadrasta, Archana Singh, Rajni Yadav, Vinod Scaria, **Shantanu Sengupta**, Dhanasekaran Shanmugam, Sridhar Sivasubbu, Sheetal Gandotra, Chetana Sachidanandan ***BBA-Molecular and Cell Biology of Lipids***, 2021, 1866, 158905
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