BIO DATA

1 **DEBI PRASAD SARKAR**
JC Bose National Fellow, FNA, FASc, FNASc, FAScT

2 **Date of birth:** 15/01/1958
Date of Superannuation: 31st January 2023

3 Address

(a) Official with telephone number and email:

Guest Professor, Department of Biological Sciences and Engineering, Indian Institute of Technology, Palaj, Gandhinagar, Gujarat 382055

Visiting Professor, Department of Chemistry, Ashoka University, Sonipat, Haryana
Telephone: +91-9810696767
Former Senior Professor, Department of Biochemistry, University of Delhi South Campus, New Delhi-110021
Email: debi.sarkar@south.du.ac.in and debi.sarkar@iitgn.ac.in

(b) **Residential with mobile number**: Flat 2E, Shivalika Apts., CGHS, Sector 9, Plot 16, Dwarka, New Delhi-110077

4 **Field of specialization:** Biochemistry, Molecular and Cellular Virology, Biotechnology

ACADEMIC QUALIFICATIONS

5 Highest academic qualifications

Degree	University	Subject(s)	Year of passing
PhD	Calcutta University	Biochemistry	1986

6. Details of the currently held position or the last position held with pay scale (grade pay/pay level)
Visiting Professor,
Department of Chemistry,
Ashoka University, Sonipat, Haryana
Former Senior Professor, Department of Biochemistry, University of Delhi South Campus, New Delhi-110021
Former Director, IISER, Mohali (MoE)

SIGNIFICANT CONTRIBUTIONS (DURING LAST 10 YEARS)

7. Complete list of publications
Total Publications: 63 (Sixty-Three)

S. No.	Date	Title	Name of journal	Refereed Journal or not	Number of citations (where possible)
1.	2024	Dibyakanti Mandal, Deeksha Pandey, **Debi P Sarkar**, and Manish Kumar, Nucleoside and Non-nucleoside Reverse Transcriptase inhibitor drugs (NRTIs and NNRTIs) are capable of binding Chandipura virus polymerase protein (L) and inhibit virus replication	**VirusDisease** , [EMID: cec730eb2d92115d]	Yes	In Press, On line 8th July2024
2.	2024	Sharmistha Sarkar, Surajit Ganguly, Nirmal K Ganguly, **Debi P Sarkar** and Niahi Raj Sharma, Chandipura Virus Forms	**Viruses, 16, June, 2024, https://doi.org/10.3390/v16071027**	Yes	In Press

		Cytoplasmic Inclusion Bodies through Phase Separation and Proviral Association of Cellular Protein Kinase R and Stress Ganule Protein TIA-1			
3.	2023	Yama Arti, H. Bharti, N. Sahani, **Debi P Sarkar** and Alo Nag , CUL4A silencing attenuates cervical carcinogenesis and improves Cisplatin sensitivity	**Molecular and Cellular Biochemistry, Published on 7th June, 2023, doi: 10:1007/s11010-023-04776-2**	Yes	Given Separately Below
4.	2023	Atish Nag,Kumarjeet Banerjee, Ranajit Barman, Joy Kar, ,**Debi P. Sarkar**, Siddhartha Sankar Jana and Suhrit Ghosh **Direct Correlation between the Secondary Structure of an Amphiphilic Polymer and its Prominent Antiviral Activity.**	**J. Am. Chem. Soc, 145, 579-584**	Yes	Given Separately Below
5.	2021	NR Sharma, K.Gadhave, P Kumar, MSM Khan, **Debi P. Sarkar**, VN Uversky and Rajanish Giri. The dark proteome analysis in Chandipura virus reveals maximum propensity for intrinsic disorders in phosphoprotein.	**Scientific Reports 2021, 11, 13253**	Yes	Given separately below
6.	2020	Ratul Ahuja, Neha Panwar, Jairam Meena, Mamta Singh, **Debi P. Sarkar** and Amulya K. Panda. Natural products and polymeric nanocarriers for cancer treatment: A review	**Environmental Chemistry Letters**	July 2020, Published	Given separately below
7.	2020	Maynka Awasthi, Sahil Gulati, Debi P. Sarkar, Swasti Tiwari, Suneel Kateriya, Peeyush Ranjan and Santosh K Verma. The sialoside-binding pocket of SARS-CoV-2 spike glycoprotein structurally resembles MERS-CoV	**Viruses, 12(9), 909, http://doi.org/10.3390/012090909**	2020	Given separately below
8.	2019	Sunandini Chandra, Manoj Kumar, Nishi Raj Sharma and **Debi P. Sarkar**. Site-specific phosphorylation of villin remodels actin cytoskeleton to regulate Sendai viral glycoprotein-mediated membrane fusion.	***FEBS Letter 2019, 593 (15), 1927-1943***	Yes	Given separately below
9.	2017	Sunandini Chandra, Raju Kalaivani, Manoj Kumar, Narayanaswamy Srinivasan and **Debi P. Sarkar**. Sendai virus recruits cellular villin to remodel actin cytoskeleton during fusion with hepatocytes.	**Molecular Biology of the Cell** 2017, 28:26 3801-3814. IF:4.08	Yes	Given separately below
10.	2018	Nirmalya Ganguli, Nilanjana Ganguli, Sunandini Chandra, Mayank Choubey, **Debi P. Sarkar** and Subeer S. Majumdar. A Combinatorial Approach for Robust Transgene Delivery and Targeted Expression in Mammary Gland for Generating Biotherapeutics in Milk, Bypassing Germline Gene Integration.	**Applied Microbiology and Biotechnology** 2018**,** 102**,** 6221-6234. IF:3.42	Yes	Given separately below
11.	2017	Induction of Transcriptional Gene Silencing by Expression of shRNA Directed to c-Myc P2 Promoter in Hepatocellular Carcinoma by Tissue-Specific Virosomal Delivery. Mohammad Khalid Zakaria, **Debi P. Sarkar** and Parthaprasad Chattopadhyay.	**Methods in Molecular Biol** 2017; 1543:245-257. IF:1.2	Yes	Given separately below
12.	2015	Imran Khan, Mohammad Khalid Zakaria, Mukesh Kumar, Prashant Mani, Parthaprasad Chattopadhyay, **Debi P. Sarkar** and Subrata Sinha. A novel placental like alkaline phosphatase promoter driven transcriptional silencing combined with single chain variable fragment based virosomal delivery for neoplastic cell targeting.	**Journal of Translational Medicine** 13, 254; DOI 10.1186/s/12967-015-0602-1 (2015) IF:3.93	Yes	Given separately below
13.	2015	Provas Das, Shekhar Saha, Sunandini Chandra, Alakesh Das, Sumit K. Dey, MahuaR Das, Shamik Sen, **Debi P Sarkar** and Siddhartha S Jana. Phosphorylation of	**Scientific Reports (Nature Group)**, 5, 10395; doi:10.038/srep 10395 (2015) IF:5.578	Yes	Given separately below

		Nonmuscle myosin II-A regulatory light chain resists Sendai virus fusion with host cells.			
14.	2015	Mukesh Kumar, Prashant Mani, Pooja Pratheesh, Sunandini Chandra, MeghalaJeyakkodi, Parthaprasad Chattopadhyay , **Debi P. Sarkar** and Subrata Sinha. Membrane fusion mediated targeted cytosolic drug delivery through scFv engineered Sendai viral envelopes.	**Current Molecular Medicine**, 15:1-15, 2015 IF:3.621	Yes	Given separately below
15.	2015	Zakaria Khalid Mohammad, Khan Imran, Mani Prashant, Chattopadhyay Parthaprasad, **Sarkar P Debi**, Sinha Subrata. Hepatocellular Carcinoma Specific Transcriptional Interference of c-Myc promoter by alpha-fetoprotein and Sendai Virosome Based dsRNA System.	**The FASEB Journal**, vol. 29 no. 1 Supplement, April 2015. IF:5.043	Yes	Given separately below
16.	2014	Zakaria Khalid Mohammad, Khan Imran, Mani Prashant, **Sarkar P Debi**, Chattopadhyay Parthaprasad, Sinha Subrata. Epigenetic repression of c-Myc P2 promoter by Sendai F-virosome mediated delivery of tumor specific shRNA in Hepatoma cells.	**Molecular Biology of Cell**, vol. 25 no. 25, 3987, Dec 15 2014. IF:4.466	Yes	Given separately below
17.	2014	Zakaria Khalid Mohammad, Khan Imran, Mani Prashant, Chattopadhyay Parthaprasad, **Sarkar P Debi**, Sinha Subrata. Combination of hepatocyte specific delivery and transformation dependent expression of shRNA inducing transcriptional gene silencing of c-Myc promoter in hepatocellular carcinoma cells.	**BMC Cancer**, 14:582, 2014. IF:3.362	Yes	Given separately below
18.	2012	Prasanna Bhat, Sivakumar Vadivel Gnanasundram, Prashant Mani, **Debi P Sarkar** and Saumitra Das. Targeting ribosome assembly on the HCV RNA using a small RNA molecule.	**RNA Biology**, 9, 1-10, 2012 IF: 5.5	Yes	Given separately below
19.	2013	Upasana Ray, Chaitrali Laha Roy, Anuj Kumar, Prashant Mani, Angel Praveen Joseph, G. Sudha, **Debi P Sarkar**, N. Srinivasan and Saumitra Das. Inhibition of the interaction between NS3 protease and HCV IRES with a small peptide: A novel therapeutic Strategy.	**Molecular Therapy**, 21:57-67, 2013 IF: 6.8	Yes	Given separately below
20.	2010	Sharma, NR., Mani, P., Nandwani, N., Mishra, R., Rana, A. and **Sarkar, Debi P**. Reciprocal regulation of AKT and MAP Kinase dictates virus-host cell fusion.	**Journal of Virology**, 84: 4366-4382, 2010. IF: 5.0	Yes	Given separately below
21.	2009	Wang, X., **Sarkar, Debi P**., Mani, P., Steer, Clifford J., Chen, Y., Guha, C., Chandrasekhar, V., Chaudhuri, A., Roy-Chowdhury, N., Kren, Betsy T., Roy-howdhury, J. Long-term reduction of jaundice in Gunn rats by non-viral liver-targeted delivery of Sleeping Beauty transposon.	**Hepatology**, 50: 815-824, 2009. IF: 12.0	Yes	Given separately below
22.	2009	Subramanian, N., Mani, P., Roy, S., **Sarkar, Debi P**., and Das, S. Targeted delivery of hepatitis C virus specific shRNA in mouse liver using Sendai virosomes.	**Journal of General Virology**, 90: 1812-1819, 2009. IF: 3.2	Yes	Given separately below
23.	2009	Kohaar, I., Hussain, S., Thakur, N., Tiwari, P., Nasare, V., Batra, S., Singh, V., Bhambani, S., Das, B.C., **Sarkar, Debi P.,** Bharadwaj, M. Association between HLA Class II alleles with HPV mediated Cervical Cancer in Indian women,	**Human Immunology**, 70: 222-229, 2009. IF: 2.5	Yes	Given separately below
24.	2009	Krishnan, A., Verma, S. K., Mani, P., Gupta, R., Kundu S. and **Sarkar Debi P**. A histidine	**Journal of Virology**, 83: 1727-1741, 2009. IF: 5.0	Yes	Given separately

		switch in hemagglutinin-neuraminidase triggers paramyxovirus-cell membrane fusion.			below
25.	2008	Surolia. I., Sinha, S., **Sarkar, Debi P.,** Reddy, P. Y., Reddy G. B., and Surolia A. Concurrence of Danish dementia and cataract: Insights from the interactions of dementia associated peptides with eye lens ß-Crystallin.	**PloS One**, 3, e2927, 2008. IF: 4.0	Yes	Given separately below
26.	2008	Surolia, I., **Sarkar, Debi P**., and Sinha, S. Form and dimensions of aggregates dictate cytotoxicities of Danish dementia peptides.	**Biochim. Biophys. Res. Commun**., 372: 62-66, 2008. IF: 2.5	Yes	Given separately below
27.	2008	Surolia, I., Chhiber, M., **Sarkar, Debi P.,** and Sinha, S. Fibrillogenesis in Adan peptides is inhibited by biphenyl ethers.	**Biochim. Biophys. Res. Commun**., 370: 681-686, 2008. IF: 2.5	Yes	Given separately below
28.	2007	Kohaar, I., Thakur, N., Salhan, S., Batra, S., Singh, V., Sharma, A., Sodhani, P., Das, B.C., **Sarkar, Debi P**. and Bharadwaj, M. -308G/A polymorphism as a risk factor for HPV associated cervical cancer in Indian population.	**Cellular Oncology**, 29: 249-256, 2007. IF: 2.4	Yes	Given separately below
29.	2005	Verma, S. K., Mani, P., Sharma, N. R., Krishnan, A., Kumar, V. V., Reddy, B. S., Chaudhuri, A., Roy, R. P. and **Sarkar, Debi P**. Histidylated Lipid - Modified Sendai Viral Envelopes Mediate Enhanced Membrane Fusion And Potentiate Targeted Gene Delivery.	**J. Biol. Chem**., 280: 35399-35409, 2005. IF: 4.8	Yes	Given separately below
30.	2002	Jana, S. S., Bharali, D. J., Mani, P., Maitra, A., Gupta, C. M. and **Sarkar, Debi P**. Targeted Cytosolic Delivery of Hydrogel Nanoparticles into HepG2 Cells Through Engineered Sendai Viral Envelopes.	**FEBS Lett**, 515: 184-189, 2002. IF: 3.5	Yes	Given separately below
31.	2002	**Sarkar, Debi P.,** Ramani, K. and Tyagi, S. K. Targeted Delivery of Genes.	**Proc. Indian Natn Sci Acad.**, B68 No. 4, 315-332, 2002.	Yes	Given separately below
32.	2001	Nijhara, R., Jana, S. S., Goswami, S. K., Kumar, V., and **Sarkar, Debi P**. An Internal Segment (residues 58 to 119) of the Hepatitis B Virus X Protein is Sufficient to Activate MAP Kinase Pathways in Mouse Liver.	**FEBS Lett**, 504: 59-64, 2001. IF: 3.5	Yes	Given separately below
33.	2001	Nijhara, R., Jana, S. S., Goswami, S. K., Rana, A., Majumdar, S. S., Kumar, V., and **Sarkar, Debi P**. Sustained Activation of Mitogen-Activated Protein Kinases and AP-1 by the Hepatitis B Virus X Protein in Mouse Hepatocytes in vivo.	**J. Virol.** 75: 10348-10358, 2001. IF: 5.0	Yes	Given separately below
34.	1998	Ramani, K., Hassan, M. Q., Venkaiah, B., Hasnain, S. E. and **Sarkar, Debi P.** Site-Specific Gene Delivery in vivo through Engineered Sendai Viral Envelopes.	**Proc. Natl. Acad. Sci. USA**, 95: 11886-11890, 1998. IF: 9.0	Yes	Given separately below
35.	1997	Kumar, Mukesh, Hassan, M. Q., Tyagi, Sandeep K. and **Sarkar, Debi P.** A 45,000-Mr Glycoprotein in Sendai Viral Envelope Triggers Virus-Cell Fusion.	**J. Virol**, 71: 6398-6406, 1997. IF: 5.0	Yes	Given separately below
36.	1997	Ramani, Komal, Bora, Roop S., Kumar, Mukesh, Tyagi, Sandeep K. and **Sarkar, Debi P**. Novel Gene Delivery To Liver Cells Using Engineered Virosomes.	**FEBS Lett.,**404: 164-168,1997. IF: 3.5	Yes	Given separately below
37.	1996	Blumenthal, Robert, **Sarkar, Debi P**., Durrell, Stewart, Howard, Daniel E. and Morris, Stephen J. Dilation of the Influenza Hemagglutinin Fusion Pore Revealed by the Kinetics of Individual Cell-Cell Fusion Events.	**J.Cell Biol**., 135: 63-71, 1996. IF: 8.0	Yes	Given separately below
38.	1996	Kumar, Mukesh and **Sarkar, Debi P**. F Protein Induced Fusion of Sendai Viral	**FEBS Lett**. 391: 17-20, 1996. IF: 3.5	Yes	Given separately

		Envelopes with Mouse Teratocarcinoma Cells Through Lex-Lex Interaction.			below
39.	1995	Lowy, R.Joel, **Sarkar, Debi P.,** Whitnall, Mark H. and Blumenthal, Robert. Differences in Dispersion of Influenza Virus Lipids and Proteins During Fusion as Observed by Fluorescence Video Microscopy.	**Exp. Cell. Res**. 216: 411-421, 1995. IF: 3.6	Yes	Given separately below
40.	1995	Morris, Stephen J., Howard, Daniel E., Chang, Teng H., **Sarkar, Debi P**. and Blumenthal, Robert. Hemagglutinin-Catalyzed Cell-Cell Fusion: Kinetics of Initial Pore Formation from Video Rate Multi-Wavelength Fluorescence Microscopy.	**J. Microscopy Soc. of America**. 1: 47-54, 1995. IF: 3.0	Yes	Given separately below
41.	1994	Bagai, Sangeeta and **Sarkar, Debi P**. Effect of Substitution of Hemagglutinin-Neuraminidase with Influenza Hemagglutinin on Sendai Virus F Protein Mediated Membrane Fusion.	**FEBS Lett.** 353: 332-336, 1994. IF: 3.5	Yes	Given separately below
42.	1994	Zimmerberg, Joshua, Blumenthal, Robert, **Sarkar, Debi P**., Curran, Michael and Morris, Stephen J. Restricted Movement of Lipid and Aqueous Dyes Through Pores Formed by Influenza Hemagglutinin During Cell Fusion.	**J. Cell. Biol**. 127: 1885-1894, 1994. IF: 8.0	Yes	Given separately below
43.	1993	Bagai, Sangeeta and **Sarkar, Debi P**. Kinetics of Fusion With Cells of Reconstituted Sendai Virus Envelopes Lacking Hemagglutinin-Neuraminidase.	**Indian Journal of Biochemistry and Biophysics**, 30: 395-399, 1993. IF: 1.0	Yes	Given separately below
44.	1993	Bagai, Sangeeta and **Sarkar, Debi P**. Reconstituted Sendai Virus Envelopes as Biological Carriers; Dual Role of F Protein in Binding and Fusion With Liver Cells.	**Biochim. Biophys. Acta**, 1152: 15-25, 1993. IF: 3.7	Yes	Given separately below
45.	1994	Bagai, Sangeeta and **Sarkar, Debi P**. Fusion-Mediated Microinjection of Lysozyme into HepG2 Cells Through Hemagglutinin Neuraminidase-Depleted Sendai Virus Envelopes.	**J. Biol. Chem**., 269: 1966-1972, 1994. IF: 5.0	Yes	Given separately below
46.	1993	Bagai, Sangeeta and **Sarkar, Debi P**. Targeted Delivery of Hygromycin B Using Reconstituted Sendai Viral Envelopes Lacking Hemagglutinin-Neuraminidase.	**FEBS Lett.**, 326: 183-188, 1993. IF: 3.5	Yes	Given separately below
47.	1993	Bagai, Sangeeta, Puri, Anu, Robert Blumenthal and **Sarkar, Debi, P**. Hemagglutinin-Neuraminidase Enhances F Protein-Mediated Membrane Fusion of Reconstituted Sendai Viral Envelopes with Cells.	**J. Virol**, 67: 3312-3318, 1993. IF: 5.4	Yes	Given separately below
48.	1993	Morris, Stephen, J., Zimmerberg, Joshua, **Sarkar, Debi P**. and Blumenthal Robert. Kinetics of Cell Fusion Mediated by Viral Spike Glycoproteins.	**Methods in Enzymology**, 221: Part B, 42-58, 1993. IF: 8.0	Yes	Given separately below
49.	1991	Kaplan, Doron, Zimmerberg, Joshua, Puri, Anu, **Sarkar, Debi P**. and Blumenthal Robert. Single Cell Fusion Events Induced by Influenza Hemagglutinin:Studies with Rapid-Flow, Quantitative Fluorescence Microscopy.	**Exp. Cell. Res**., 195: 137-144, 1991. IF: 2.5	Yes	Given separately below
50.	1989	Morris, Stephen, J., **Sarkar, Debi P.,** Zimmerberg, Joshua and Blumenthal Robert. Kinetics of Viral Envelope Protein-Induced Cell Fusion by Continuous Monitoring of Fluorescent Dyes in Membrane Technology, 1989	(R. Verna, ed) Vol 64, pp 125-135. Raven Press, New York.	Yes	Given separately below
51.	1990	Lowy, R. Joel, **Sarkar, Debi P**., Chen, Yider, Blumenthal, Robert. Observation of	**Proc. Natl. Acad. Sci. (USA)**, 87: 1850-1854, 1990. IF: 9.0	Yes	Given separately

		Single Influenza Virus-Cell Fusion and Measurement by Fluorescent Video Microscopy.			below
52.	1989	**Sarkar, Debi P.**, Morris, Stephen J., Eidelman, Ofer, Zimmerberg, Joshua and Blumenthal, Robert. Initial Stages of Influenza Hemagglutinin-Induced Cell Fusion Monitored Simultaneously by two Fluorescent Events: Cytoplasmic Continuity and Membrane Mixing.	**J. Cell Biol**., 109: pp 113-122, 1989. IF: 8.0	Yes	Given separately below
53.	1989	Blumenthal, Robert, Puri, Anu, **Sarkar, Debi P.**, Chen. Yi-der., Eidelman, Ofer and Morris, Stephen J. Membrane Fusion Mediated by Viral Spike Glycoproteins in Cell Biology of Virus Entry, Replication and Pathogenesis Vol.90 pp 197-217, 1989 (eds. Compans, R., Helenius, Ari and Oldstone, M., Alam R. Liss Inc.).	Vol.90 pp 197-217, 1989 (eds. Compans, R., Helenius, Ari and Oldstone, M., Alam R. Liss Inc.)	Yes	Given separately below
54.	1989	Morris, Stephen J., **Sarkar, Debi P.**, White, Judith M. and Blumenthal, Robert. Kinetics of pH Dependent Fusion Between 3T3 Fibroblasts Expressing Influenza Hemagglutinin and Red Blood Cells: Measured by Dequenching of Fluorescence.	**J. Biol. Chem**., 264: 3972-3978, 1989. IF: 5.0	Yes	Given separately below
55.	1988	**Sarkar, Debi P**. and Blumenthal, Robert. The Role of Target Membrane Structure in Fusion with Sendai virus.	**Membrane Biochemistry**, 7: 231-247, 1988. IF: 2.0	Yes	Given separately below
56.	1984	**Sarkar, Debi P**. and Das, Manoj K. Binding of Antigalactosyl Antibody to Galactosylated Liposomes.	**Immunology Letters**, 8: 257-260, 1984. IF: 2.0	Yes	Given separately below
57.	1985	**Sarkar, Debi P**. and Das, Manoj K. A Simple Procedure to Elicit Sugar Specific Antibodies Using Liposomes.	**Indian Journal of Biochemistry and Biophysics**, 22: 244-246, 1985. IF: 1.0	Yes	Given separately below
58.	1984	**Sarkar, Debi P**. and Das, Manoj K. The effect of Membrane Composition on the Immune Reactivity of Galactosylated Liposomes.	**Indian Journal of Biochemistry and Biophysics**, 21: 155-157, 1984. IF: 1.0	Yes	Given separately below
59.	1984	Das, Manoj K., Bachhawat, Bimal K., Das, Pijush K. and **Sarkar, Debi P**. Dual Role of Liposomes as Adjuvant and Carrier for the Production of Sugar Specific Antibodies.	**Proceedings of Indian Academy of Sciences (Chemical Sciences)**, 93: 1111-1115, 1984.	Yes	Given separately below
60.	1984	Das, Manoj K., Roy, Samir K. and **Sarkar, Debi P**. Characterization of Anti-N-Acetyl-D-Glucosamine Antibodies Elicited through Haptenated Liposomes.	**Carbohydrate Research**, 128: 335-340, 1984. IF: 2.0	Yes	Given separately below
61.	1984	**Sarkar, Debi P.** and Das, Manoj K. Properties of Antigalactosyl Antibodies Raised Through Liposomes.	**Indian J. of Exp. Biology**, 22: 175-178, 1984. IF: 0.7	Yes	Given separately below
62.	1984	**Sarkar, Debi P**. and Das, Manoj K. Immunogenicity of Galactosylated Liposomes.	**Immunological Communications**, 13: 5-13, 1984. IF: 1.5	Yes	Given separately below
63.	1983	Das, Manoj K. and **Sarkar, Debi P**. Antibody with Galactocerebroside Liposomes.	**Immunology Letters**, 6: 223-226, 1983. IF: 2.3	Yes	Given separately below
64.	1982	**Sarkar, Debi P.**, Das, Pijush K., Bachhawat, Bimal K. and Das, Manoj K. The Adjuvant Role of Liposomes in Eliciting Antigalactosyl Antibodies.	**Immunological Communications**, 11: 175-188, 1982. IF: 1.5	Yes	Given separately below
65.	1982	**Sarkar, Debi P.**, Das, Pijush K. and Das, Manoj K. Antibody Induced Agglutination of Galactocerebroside Liposomes.	**Indian J. Exp. Biology**, 20: 522-524, 1982. IF: 0.7	Yes	Given separately below

Citation indices	**All**	**Since 2016**
Citations	3108	572
h-index	29	22
i10-index	54	17

8. Complete list of Patents filed and granted in India and Abroad

Details of granted patents:

1. Sarkar, Debi P. Ramani, Komal, Bora, Roop S., Kumar, Mukesh, and Tyagi, Sandeep K. Process for Producing A Targeted Gene. *US Patent Application Granted*. Patent No. 5,683,866; Date. 4th Nov, 1997.

2. Debi P. Sarkar *et. al*. (2005) "Process for producing modified reconstituted Sendai viral envelope specific for drug and/or gene delivery to liver cells" Indian Patent Applications Filed. #1003/Del/2005 dated 21/4/2005. PCT application filed, October, 2005 (PCT No. PCT/IN2006/000061 dated 6th Nov., 2009). USA Patent Application Published, Pub. No. US 2010/0047897 A1, dated 25th Feb., 2010, Accepted/Published other countries March, 2011.

9. List of books/ reviews authored

Books authored: 03

1. Sarkar, Debi. P., Ramani, K. and Tyagi, S.K. Targeted Gene Delivery by Virosomes. In a book chapter entitled "*Liposome Methods And Protocols"* Edited by Subhash C. Basu and Manju Basu, Series Editor, John M. Walker, Humana Press Inc. Totowa, New Jersey, USA, ISBN 0-89603-845-9 (alk. paper) in Methods In Molecular Biology Series Vol. 199 pp. 163-173, 2002.
2. Kumar, Vijay and Sarkar, Debi P., *"Hepatitis B Virus X Protein: Structure-Function Relationships and Role in Viral Pathogenesis"* in Handbook of Experimental Pharmacology/Transcription Factors Edited by Drs. JorgKaufmann, Atugen AG, Berlin, Germany, and S. Triezenberg, MSU, East Lansing, USA, vol. 166, pp. 377-407, Springer-Verlag , Germany, 2004.
3. Wang, X., Mani, P., Sarkar, Debi P., Roy-Chowdhury, N. and Roy-Chowdhury, J., "*Ex Vivo Gene Transfer into Hepatocytes*" in a book chapter entitled "Hepatocyte Transplantation" edited by Anil Dhawan and Robin D. Hughes (eds.), Methods In Molecular Biology Series, Chapter 11, Humana Press, New Jersey, USA, vol. 481, 2009.

Editor in Chief:
Editorships:

1. Former member of Editorial Board of Indian Journal of Biochemistry & Biophysics
2. Member, Editorial Board of "Human Gene Therapy", MaryAnn Liebert Inc. Publishers, A J. of European Society for Gene and Cell Therapy w.e.f. August 2009
3. Elected member of the editorial board of Indian Journal of Biochemistry and Biophysics.
4. Member, Editorial Board of "Human Gene Therapy", MaryAnn Liebert Inc. Publishers, A J. of European Society for Gene and Cell Therapy w.e.f. August 2009

Peer reviewer for:

1. Reviewer of research papers from "FEBS Letters".
2. Reviewer of research papers from "Molecular Pharmaceutics" USA.
3. Reviewer of research papers from "Molecular Membrane Biology", USA.
4. Reviewer of research papers from "BioTechniques", *USA.*
5. Reviewer of research papers from "Antiviral Research", Belgium.
6. Reviewer of research papers from "Archaea", Canada. (Member, Editorial Review Board).
7. Regional manuscript reviewer of "PDA Journal of Pharmaceutical Science and Technology", USA.
8. Reviewer of research papers from "International Medical Journal for Experimental and Clinical Research, Poland, USA.
9. Reviewer of Research papers from BBA-Biomembrane, Elsevier Press.
10. Reviewer of research papers from "Journal of Infectious Diseases" (The University of Chicago Press)
11. Reviewer of research papers from "Nanotechnology", IOP Publishing Limited Registered in England under Registration No 467514. Registered Office: Dirac House, Temple Back, Bristol BS1 6BE England Vat No GB 461 6000 84.
12. Reviewer of research papers from "Langmuir", ACS Publications.

10. Awards and Honours received

(a) International

S. No	Name of Award/Fellowship etc.	Elected/Honorary fellow	Awarded by	Year of Award

13	Awarded an ICRETT Fellowship		International Union Against Cancer to work in NCI/NIH, USA	1989
14	Awarded a Travel Fellowship by the International Union of Biochemistry to attend the 13th International Congress of Biochemistry, Amsterdam, The Netherlands		International Union of Biochemistry	1985
16		Member of International Union Against Cancer (Switzerland)	International Union Against Cancer (Switzerland)	1989
17		Member of Biophysical Society (USA)	Biophysical Society (USA)	1988
18		Member of The New York Academy of Sciences (USA, By Invitation)	The New York Academy of Sciences, USA	2001

(b) National

S. No	Name of Award/Fellowship etc.	Elected/Honorary fellow	Awarded by	Year of Award
1	**Awarded Shanti Swarup Bhatnagar Prize in *Biological Sciences*, 1998**		CSIR, GoI	1998
2	**Recipient of J.C. BOSE National Fellowship (DST) Award, September, 2010-2020**		DST, GoI	2010
3	**Selected for delivering the Platinum Jubilee Lecture in the Section of New Biology at the 102nd Indian Science Congress**		Indian Science Congress	2015
4	Conferred Prof. B.K. Bachhawat Memorial Lecture Award 2011		The National Academy of Sciences, India, Allahabad	2011
5	Delivered Prof. R. Nath Memorial Oration entitled "Liver gene therapy from basic to preclinical applications"		PGI, Chandigarh	Dec. 2018
6		Elected Fellow of the West Bengal Academy of Science & Technology (WAST)	West Bengal Academy of Science & Technology (WAST)	December 2011
7		Elected Fellow of the Indian National Science Academy (INSA), New Delhi	Indian National Science Academy (INSA), New Delhi	2010
8		Elected, Fellow of the Indian Academy of Sc.	Indian Academy of Sciences	2007
9	Conferred M. Sreenivasaya Memorial Award		Society of Biological Chemists, India	2005
10		Elected, Fellow of The National Academy of Sciences, India	National Academy of Sciences, India	1996
11		Society of Biological Chemists, Life Member	Society of Biological Chemists, India	1995
12		Member of Guha Research Conference (India, Elected, 1994)	Member of Guha Research Conference, India	1994
15	Awarded a Gold Medal from the Banaras Hindu University for standing first in the M.Sc. (Biochemistry) examination in 1980		Banaras Hindu University	1980
19		Member of Molecular Immunology Forum (India, Elected)	Member of Molecular Immunology Forum, India	1994
20	Chief Guest	Annual Convocation, Burdwan University	1st December 2017	2017
21	Chief Guest	Annual Convocation, Vidyasagar University	8th March 2018	2018

22	**Excellence Awards for Teachers in Service in University Departments - Age above 45 years**	Awarded on 11th September 2021 by the University of Delhi (99th Foundation Day of University of Delhi)	University of Delhi	2021

11. Membership of Scientific/Societies/other Professional bodies

Administrative Experience

S. No.	Post	Organization/ University	Duration		Experience (In Years and Months)
			From (Date)	To (Date)	
1.	Head of the Department	Dept. of Biochemistry, University of Delhi, South Campus, New Delhi	16th August, 2005	15th August, 2008	Three Years
			27th September, 2016	17th September, 2017	11 months and 17 days
2.	Chairman, Board of Studies and Senate	IISER Mohali	Sep. 2017	Feb 2019	1 year 5 months
3	Member, Board of Studies, FAIS, UDSC DU	FAIS, UDSC DU	April 1989	August 2017	By rotation in between
4.	Dean of Faculty	Faculty of Applied and Interdisciplinary Sciences, University of Delhi, South Campus, New Delhi	16th August, 2005	September, 2006.	1 year 1 month
5.	Member of Academic Council	Delhi University	16th August 2005	15th August 2008	Three Years
6	Member of Academic Council	Delhi University	23rd September	14th January 2023	Three Months 21 days
6.	Member of Executive Council	Delhi University	Sep. 2005	Aug. 2006	1 year
7.	Member of Professional/AcademicBodies				
8.	Member of Academic Advisory Council, CIIDRET, UDSC	Delhi University	12th April 2020	Till Date	Continuing
9.	Director	Indian Institute of Science Education and Research, Mohali	September, 2017	February, 2019	1 year 5 months
10.	Expert	LMMB, NIH/NCI, Bethesda, USA and Div. Mol. Bio.& Biochemistry, UMKC, USA.	NOV 1994	DEC 1994	2 months
11.	Expert	LMMB, NIH/NCI, Bethesda, MD 20892 USA.	June 1995	July 1995	2 months

Academic/Teaching Experience

S. No.	Post	Organization/ University	Duration		Experience (In Years and Months)
			From(Date)	To(Date)	
1	Visiting Scientist	Albert Einstein College of Medicine (AECOM), Bronx, NY, USA	June, 2006	June, 2006	1 month
2	Expert	LMMB, NIH/NCI, Bethesda, MD 20892 USA.	JUNE, 1995	JULY 1995	2 months
3	Expert	LMMB, NIH/NCI, Bethesda, MD 20892, USA and Division of Molecular Biology & Biochemistry, UMKC, USA.	NOV, 1994	DEC 1994	2 months
4	Visiting Scientist	Division of Molecular Biology & Biochemistry, School of Basic Life Science, Univ. of Missouri, Kansas City, U.S.A.	JUNE 1993	JULY 1993	2 months

5	Courtesy Associate	LMMB, NIH/NCI, Bethesda, MD 20892, U.S.A.	MAY 1992	JULY, 1992	3 months
6	Courtesy Associate	LMMB, NIH/NCI, MD 20892, U.S.A.	MAY 1991	AUG, 1991	4 months
7	Courtesy Associate	LMMB, NIH/NCI, Bethesda, MD 20892, U.S.A.	OCT- 1990	DEC, 1990	3 months
8	ICRETT Awardee	LMMB, NIH/NCI, Bethesda, MD 20892, U.S.A.	MAY- 1989	AUG-1989	4 months
9	**Director**	Indian Institute of Science Education and Research, Mohali	Sep, 2017	Feb, 2019	1 year 5 months
10	**Senior Professor**	Dept. of Biochemistry, University of Delhi, South Campus, New Delhi.	2018	2023	4 years 7 months
11	Full Professor	Dept. of Biochemistry, University of Delhi, South Campus, New Delhi.	2002	2018	16 years 5 months
12	Reader	Dept. of Biochemistry, University of Delhi, South Campus, New Delhi.	1996	2002	6 years
13	Senior Lecturer	Dept. of Biochemistry, University of Delhi, South Campus, New Delhi.	1993	1996	3 years
14	Lecturer	Dept. of Biochemistry, University of Delhi, South Campus, New Delhi.	1988	1993	5 years
15	Visiting Fellow	Lab of Mathematical Biology, National Cancer Institute, NIH, Bethesda, MD 20892, U.S.A.	1986	1988	2 years
16	SRF/ Research Associate	Dept. of Biochemistry University of Delhi, South Campus, New Delhi	1985	1986	2 years
17	JRF/SRF (DST/ CSIR)	Indian Institute of Chemical Biology, (CSIR) Calcutta.	1981	1985	3 years

Participation and contribution in relevant areas in higher education

	Organization	Area of Specialization
Visiting Professor	Honorary Lecturer, Jawaharlal Nehru University, New Delhi.	Biochemistry
Resource Person: Served as a subject expert for a fresh selection of teaching posts and assessment in various colleges of DU from 2000 to date	Delhi University	Biochemistry, Zoology, and Botany
Resource Person: Served as a member for DU central library committee nominated by VC/DU	Delhi University	2016
Resource Person: Served as a member for drafting IPR/patent submission guidelines and royalty sharing in DU	Delhi University	2003
Served as a member of a screening committee of DU for appointing faculty in PG departments, 2014	Delhi University	Biochemistry/Life Sciences
Acted as Advisor in UPSC, GOI, New Delhi as jury member in selecting civil services final selection process, 02/03/2020 to 06/03/2020 and earlier in 2016	UPSC, GOI, New Delhi	Personality Test Expert
Invited as a subject expert, chairperson, of staff selection (teaching and admin positions both) and as member of SAC of various GOI, R&D institutes of eminence in India and Central/State Universities, CSIR, DBT, DST etc. since 2002 till date	SAC of various GOI, R&D institutes of eminence in India and Central/State Universities, CSIR, DBT, DST etc.	Biochemistry
Member of the Special Committee of Center for Biotechnology, JNU, New Delhi.	Center for Biotechnology, JNU, New Delhi.	Biochemistry and Biotechnology
Member of the Academic Committee of ICGEB, New Delhi	ICGEB, New Delhi.	Biochemistry and Biotechnology
Member of the Special Committee of SLS, JNU, New Delhi	SLS, JNU, New Delhi	Biochemistry and Biotechnology
Member of the Task Force on Fast Track Project, DST, New Delhi	DST, New Delhi	Biochemistry and Biotechnology
Member (#21220M, Regular, w.e.f. 1st Jan. to 31st Dec. 2006, By Invitation, sponsored by Prof. Charles E.	American Society of Biochemistry and Molecular Biology (ASBMB),	Biochemistry and Molecular Biology

Samuel, UC, Santa Barbara, USA), American Society of Biochemistry and Molecular Biology (ASBMB), USA, 2005	USA	
Member, Task Force, RCGM, DBT, New Delhi	RCGM, DBT, New Delhi	Biochemistry, Biotechnology and Molecular Biology
Member, Task Force, Biotech Facilities and Infrastructure, DBT, New Delhi	DBT, New Delhi	Biotech Facilities and Infrastructure
Member, Task Force, Basic Research in Modern Biology, DBT, New Delhi	DBT, New Delhi	Basic Research in Modern Biology
Member, Thematic-Group on "National S&T Human Resource Development", CSIR, for the formulation of 11thFive Year Plan.	CSIR, New Delhi	Human Resource Development
Member, of the Academic Committee of CCMB (CSIR), Hyderabad	CCMB (CSIR), Hyderabad	
Member, of the Academic Committee of IMTECH (CSIR), Chandigarh	IMTECH (CSIR), Chandigarh	
Member, of the RC of CIMAP (CSIR), Lucknow	CIMAP (CSIR), Lucknow	
Member, Award Committee, SBC(I), India, 2007-08	SBC(I), India	
Member, Planning and Monitoring Board of National Brain Research Centre (NBRC, DBT), Manesar, Gurgaon	National Brain Research Centre (NBRC, DBT), Manesar, Gurgaon	
Expert Member, RAB/CSIR	CSIR	
Member, Standing Committee on Recognized Research Institute, JNU	JNU	
Member, Course committee, IISER, Mohali, Chandigarh	IISER, Mohali	
Member of the expert committee of CSIR RA/SRF selection	CSIR	
Co-Convener CSIR/UGC NET Examination Board	CSIR-UGC, New Delhi	
Expert member of the task force of "Animal Science Committee", CSIR	CSIR	
Elected Member, NII Finance Committee	NII, New Delhi	
Panel of Expert in National Institute of Biologicals, Noida	National Institute of Biologicals, Noida	
Elected Member Sectional Committee X, INSA, New Delhi w.e.f. Jan. 2014	INSA, New Delhi	
Member, Advisory Committee, School of Biotechnology, JNU	School of Biotechnology, JNU	
Elected Member Sectional Committee "General Biology", Indian Academy of Sciences, Bangalore, w.e.f. 1st January, 2016	Indian Academy of Sciences, Bangalore	
Expert Member, DBT task force, IYBA	DBT	
Organized (as a Secretary) the ***4th National Symposium on Liposome Research***, 1st - 4th March, 1992, University of Delhi South Campus (UDSC)	University of Delhi South Campus	
Organized (as a Convener) the ***4th International Symposium on Cell Surface Macromolecules***, 6th-10th January, 1996, National Institute of Immunology, New Delhi	National Institute of Immunology, New Delhi	
Organized (as a Member) the ***5th International Symposium on Cell Surface Macromolecules,*** 4th-8th January, 1999, Indian Institute of Science, Bangalore	Indian Institute of Science, Bangalore	
Co-Convener**, Guha Research Conference (**GRC**), 2008 at Gangtok, Sikkim**	**Guha Research Conference (**GRC**), Gangtok, Sikkim**	
Organized ***International Conference on Frontiers in Biochemistry and Biotechnology Strategies to Combat Human Diseases***, Feb. 12-13th, 2020, Biochemistry Dept., Shivaji College, DU and UDSC	Biochemistry Dept., Shivaji College, DU and UDSC	
Represented India through DBT, GOI to WHO, Geneva, International Gene Therapy Committee Expert Member	Geneva, Switzerland	Gene Therapy Expert
Serving as member in Selection committee of the "Gandhian Young Technological Innovation Award" (GYTI) selection committee of young scientist award by SRISTI, GIAN, Honey Bee Network founded by Padmashree Prof. Anil K Gupta since last almost 3 years	SRISTI, GIAN, Honey Bee Network founded by Padmashree Prof. Anil K Gupta	Biotechnology

Member of board of research studies of School of Life Sciences and School of Nanoscience, CUG, Gandhinagar, Gujarat	Central University of Gujarat, Gandhinagar	Life Sciences and Nanoscience
Member of IQAC	Sri Venkateswar College, DU	Biochemistry
Member, BRS, Science Faculty, DU as VC, DU Nominee	University of Delhi	Biochemistry
Member, BRS, FIAS, UDSC	University of Delhi South Campus	Biochemistry

Involvement with formulation of academic programmes:

S. No.	Nomenclature of Innovative Academic Programs formulated	Date of approval byAcademic Council	Year of Introduction
1	NEP2020, Member of subcommittee, MoE, GOI	Under chairmanship of Prof. P Balram, Former Director, IISc, Bangalore, March, 2019	2020

Position of Chairs:

S. No.	Name of Chair	Name of Agencies/Departments involved	Period of holding the Chair
1	Serving/Served as a member/chairperson of Governing Bodies various of DU Colleges as VC/DU nominee	Holy Family College of Nursing, as a member	Since 2019
2	Serving/Served as a member/chairperson of Governing Bodies various of DU Colleges as VC/DU nominee	Hindu College, as a member	2015-2018
3	Serving/Served as a member/chairperson of Governing Bodies various of DU Colleges as VC/DU nominee	Shivaji College, both as chairperson and a member from 2005 to 2008	2005-2008
4	Serving/Served as a member/chairperson of Governing Bodies various of DU Colleges as VC/DU nominee	Shri Venkateswara College	2005-2008
5	Serving/Served as a member/chairperson of Governing Bodies various of DU Colleges as VC/DU nominee	Bhagini Nibedita College	2008-2011
6	Appointed Co-Chairperson of Scientist Selection committee, DRDO, Ministry of Defense	DRDO, Ministry of Defense, GOI	Since February, 2021-
7	Invited by the Secretariat, Non-Specified Food and Food Ingredients (Science & Standards) FSSAI (Food Safety and Standards Authority of India), New Delhi to be a member of expert committee of FSSAI, GOI to examine the approval of Non-Specified Food and Food Ingredients w.e.f. 3rd September 2021.	FSSAI (Food Safety and Standards Authority of India), New Delhi	Since September 2021
8	Nominated as a Member by The HONORABLE UNION MINISTER FOR SCIENCE & TECHNOLOGY, Govt of India of the SOCIETY of IBSD, w.e.f. 28th September 2021, Institute of Bioresources and Sustainable Development (IBSD), Imphal an autonomous Institute under Department of Biotechnology, Ministry of Science and Technology, Govt. of India, Takyelpat, Imphal 795001, Manipur	Institute of Bioresources and Sustainable Development (IBSD), Imphal	Since September, 2021

International academic Exposure

S. No.	Post/Assignment	Organization/University	Area of Assignment	Duration		
				From	To	In Years & Months
1	Member (#21220M, Regular, w.e.f. 1st Jan. to 31st Dec. 2006, By Invitation, sponsored by Prof. Charles E. Samuel, UC, Santa Barbara, USA), American Society of Biochemistry and Molecular Biology (ASBMB), USA]	American Society of Biochemistry and Molecular Biology (ASBMB), USA	Biochemistry and Molecular Biology	2005	2005	1 year
2	Participated in clinical trials on behalf of the university, including a preclinical study with a Gunn rat model, in collaboration with National Research Development Corporation and AECOM. This significant preclinical trial on jaundice gene therapy was carried out in 2009 in collaboration with Prof. Jayanta	National Research Development Corporation and AECOM and Albert Einstein College of Medicine, New York, USA	Preclinical trial on jaundice gene therapy	2009	TillDate	11 years

	Roy Chowdhury, MD, Chief Gene Therapy Core, Head Molecular Genetics, Albert Einstein College of Medicine, New York, USA.					
3	Visiting Scientist	Albert Einstein College of Medicine (AECOM), Bronx, NY, USA; (NRDC, Govt. of India Sponsored)	Pre-clinical Gene Therapy studies for Type I Jaundice	2002	2010	8 years

12. Mentorship provided (Students guided, teaching, skill development programs etc.)

No. of Research Scholars successfully guided:

Ph.D. awarded: Fourteen; Ph.D. students currently working: one; post-doctoral fellow: Six; MSc student dissertation: 1-2/ year; Internship students: 1-2/yr

Name of Programme	Award (No.) (Under-progress not to be included)
PhD	All 14 Awarded, One more is working for PhD

Participation and scholarly presentations in conferences:

National (From 1998 till Dates)

S. No.	Date	Title of Conference or Institution	Title/Subject of presentation (If made)
1		Centre for Cellular & Molecular Biology (CSIR), Hyderabad	Targeted Gene Delivery
2		National Institute of Immunology, Delhi	Do
3		Department of Biotechnology, Punjab University, Chandigarh, 1992	Do
4		Cancer Research Institute, Bombay	Do
5		BARC, Bombay	Do
6		Seth G.S. Medical College, Bombay	Do
7		National Chemical Laboratory, Pune	Do
8		National Facility for Animal Tissue and Cell Culture, Later NCCS, Pune	Do
9		Institute of Microbial Technology, Chandigarh	Do
10		*Annual Meeting of Society of Biological Chemists, 1995*; Central Drug Research Institute, Lucknow	Do
11		Jawahar Lal Nehru University, New Delhi	Do
12		University of Calcutta, Indian Institute of Chemical Biology (CSIR), Calcutta	Do
13		Indian Institute of Technology, Delhi	Do
14		National Centre for Cell Science, Pune	Do
15		NIPER, Mohali, Chandigarh	Do
16		Shivaji College, University of Delhi	Do
17		Delivered several course talks in the academic staff college refresher courses of JNU, New Delhi on the official invitation.	Do
18		Attended foundation day celebration as chief guest& delivered a popular talk, CSIR-IICB, Kolkata, 2017	Do
19		Delivered several popular scientific and motivational talks in several high schools, DU colleges and other universities (both central and state and private), under DST, INSPIRE programme and Times of India groups in India and abroad.	Do
20		Delivered a popular talk in a meeting arranged by TOI group, Chandigarh on modern education and its impact on school/college students. Role of classical style of education on modern teaching methods.	Do

International from 1997 till Date

S.N.	Date	Title of Conference or Institution	Title/Subject of presentation (If made)
1		National Institutes of Health, Bethesda, MD, USA	Host-Virus Interaction and it's application in Somatic Gene Therapy
2		University of Missouri at Kansas City, USA	Host-Virus Interaction and it's application in Somatic Gene Therapy
3		University of Notre Dame, USA	Host-Virus Interaction and it's application in Somatic Gene Therapy

4		Wright State University, Dayton, USA	Host-Virus Interaction and it's application in Somatic Gene Therapy
5		Dept of Biological Chemistry, The University of Michigan, USA	Host-Virus Interaction and it's application in Somatic Gene Therapy
6		Invited speaker in the workshop entitled "The cell biology of viral entry, 21st - 24th September 1997, NCI - FCRDC, NIH, MD, USA"	Host-Virus Interaction and it's application in Somatic Gene Therapy
7		Liver Research Center, Albert Einstein College of Medicine of Yeshiva University, New York, USA	Host-Virus Interaction and it's application in Somatic Gene Therapy
8		North Western University, Evanston, Chicago, USA	Host-Virus Interaction and it's application in Somatic Gene Therapy
9		McMaster University, Hamilton, Ontario, Canada	Host-Virus Interaction and it's application in Somatic Gene Therapy
10		The Texas A&M University System Health Science Center College of Medicine, Temple, Texas	Host-Virus Interaction and it's application in Somatic Gene Therapy
11		Cleveland Clinic Foundation	Host-Virus Interaction and it's application in Somatic Gene Therapy
12		Boston University	Host-Virus Interaction and it's application in Somatic Gene Therapy
13		University of North Dakota	Host-Virus Interaction and it's application in Somatic Gene Therapy
14		Harvard University, Boston, USA	Host-Virus Interaction and it's application in Somatic Gene Therapy
15		Delivered several popular scientific and motivational talks in several high schools, DU colleges and other universities, under DST, INSPIRE programme and TOI groups.	Host-Virus Interaction and it's application in Somatic Gene Therapy
16		Delivered a popular talk in a meeting arranged by TOI group. Role of classical style of education on modern teaching methods.	Host-Virus Interaction and it's application in Somatic Gene Therapy

Participation and contribution in National/International For a in the area of your academic and professional expertise

		Number(s)
Plenary Lectures/Invited Talks	International	>15
	National	>80
Congresses attended	International	>5
	National	>10
Examinership etc.	International	
	National	>100
Others (Specify)	International	
	National	

Research Projects:

S. No.	Client/Organisation's name	Nature of project	Duration of project	Amount of grant (Rupees)
1	PI on a DST (Govt. of India) sponsored Research Project	"An Approach for Target Specific Delivery of Biologically active Molecules Using Virosomes and Fusogenic Vesicles"	1991-1995	Rs. 21,79,000
2	PI on a CSIR (Govt. of India) sponsored Research Project	"Biophysical studies on the Formation and Dynamics of Viral Components and Evaluation of their Potential as Fusogenic Particulate Carriers for Introducing Biological Molecules into the Cells"	1992-1996	Rs. 14,27,677
3	PI on a DBT (Govt. of India) sponsored Research Project	"Role of Glycosylation of Sendai Viral Fusion Protein--------Targeted Cytosolic and Nuclear Delivery System"	Feb.1995 -	Rs. 32,86,000
4	Co-PI in a DBT (Govt. of India) sponsored Research Project	"Liposomal and Allied Lipid Vesicles ---- Development of Therapeutic Products"	Jan, 1996-	Rs. 32,81,000
5	PI on a CSIR (Govt. of India) sponsored Research Project	"Virosome-Mediated Delivery-----Antisense Therapeutics"	Sept, 1996-	Rs. 22,00,000

6	PI on a DBT (Govt. of India) sponsored Research Project	"Development of Recombinant Sendai Virus---Therapeutic Importance"	March, 1998-	Rs. 32,00,000
7	PI on a CSIR (Govt. of India) sponsored Research Project, NMITLI programme	"Development of Advanced Drug Delivery Systems"	March, 2001-2004	Rs. 72,00,000
8	PI on a PANACEA BIOTEC Ltd., Lalru, Punjab sponsored Project	"Virosome Mediated Anticancer Drug Delivery"	April, 2003-	Rs. 46,00,000
9	PI on a DBT sponsored Project	"Development of the Process for Mass Production of Targeted Delivery of Antigens Through Nanoparticles Using Sendai Virus System"	March, 2003-2006	Rs. 62,00,000
10	Co-PI with Dr. Saumitra Das, Dept. of Microbiology and Cell Biology, Indian Institute of Science, Bangalore-560012 on a DBT sponsored project	"Inhibition of HCV RNA translational and replication using small RNAs"	Nov. 2005-	Rs. 23,34,000
11	Co-PI in a DBT sponsored Project with Prof. Subrata Sinha, Dept. of Biochemistry, AIIMS, New Delhi	"Therapy of Infectious & Chronic Diseases-Targeted Gene Delivery & Long Term Specific Modulation of Gene Expression"	September, 2006	Rs. 93,43,000
12	Co-PI in a DBT sponsored project with Dr. Sandeep Saxena, NII, New Delhi	"Utilization of siRNA tools to study ---------- nanoparticle derived from Sendai virus"	2008-	Rs. 97,36,000
13	Co-PI in a DBT sponsored project with Dr. SS Jana, IACS (DST), Kolkata	"Role of Nonmuscle Myosin II in virus-cell fusion"	2011-2014	Rs. 8,82,000
14	Co-PI in a collaborative project with Prof. SS Ghosh, IIT-Guwahati, NE/DBT programme	"Novel nanoscale materials-----antimicrobial and anticancer activities"	April 2011-	Rs. 75,00,000
15	Co-PI in a collaborative project (DBT, COE, Phase II) with Prof. Saumitra Das, IISc, Bangalore	"Centre of Excellence for Research on Hepatitis C Virus-Phase II"	Sept. 2013-	Rs. 40,00,000
16	JC Bose Fellowship from 2010 to 2015, Rs. 50 Lakhs, and continued from 2015 for another 5 years	JC Bose Fellowship for pursuing extraordinary research in the field of expertise	2010-till date	Rs. 50,00,000 +
17	Invited by ICMR, GOI, New Delhi to submit a mega project	"Liver Gene Therapy of Jaundice, through a pre-selection process in collaboration with NII, GOI, New Delhi	2021	Fund received
18	DBT-BIRAC COVID-19	"Identifying therapeutics targets—pathogenic SARS-CoV-2—biohazard risk" in collaboration with SGPGI, Lucknow.	Granted May19, 2020	Rs. 87 Lakhs for two years

Consulting experience:

List key consulting assignments undertaken:

S. No.	Client/ Organization's name	Nature of assignment	Duration of assignment
1	Served as **project advisory committee member of DST, DBT & CSIR** (2002-2014)	Subject Expert	2002-2014
2	Served as member of **selection committees in CSIR and DBT for Shanti Swaroop Bhatnagar** prize and **Women Expert Scientist Awards** from 2002 to 2015	Expert	2002-2015
3	Served as **member of Indian University Association** 2 days meeting in Vigyan Bhavan, New Delhi in August 2018	Expert	August, 2018
4	Served as **core member of Principal Scientific Advisor committee** under Prof K Vijayraghavgan, **to make new academic policies** of Centrally Funded Technical Inst.	Member Expert	2017-2018
5	Member of UGC-Dr. DS Kothari postdoctoral award	Member Expert	2012 till date
6	Member of Selection committee of the "Gandhian Young Technological Innovation" (GYTI) award by SRISTI, GIAN, Honey Bee Network coordinated by Padmashree Prof. Anil K	Member Expert	2015 till date

	Gupta		
7	Serving as Member of Finance Committee of Central University of Sikkim, Gangtok	Member of Finance Committee	2018 till date.
8	Member Research Council, CSIR-IICB, Kolkata, GOI	Expert member	October 2020 till date
9	Member of IAEC, UDSC, DU, approved by CPCSEA	Sc. in Charge, UDSC, Animal House	October 2020 till date
10	Life Member	Indian Society of Trans. Research	2013
11	Invited Member	Steering Committee (Science), Midnapore College, West Bengal	2017 till date

13. Significant foreign assignments: Deputed by DBT, GOI to attend "International Gene Therapy Regulatory Meeting" held at WHO, Geneva, Switzerland, 2002 as an expert member.

14. Significant scientific and technological contributions:

Reconstituted Sendai viral envelopes (Virosomes) are well recognized for their promising potential in membrane fusion mediated delivery of bioactive molecules to liver cells. Sarkar and his team in a successful pre-clinical trial had established that using Sendai virosomes a long-term reduction of Jaundice was achieved in a Gunn Rats model by Nonviral Liver-Targeted Delivery of Sleeping Beauty Transposon. In order to elaborate a bit, Asialoglycoprotein receptor (ASGPR)-mediated endocytosis has been used to target genes to hepatocytes in vivo. However, the level and duration of transgene expression have been low because of lysosomal translocation and degradation of the DNA and lack of its integration into the host genome. In this study we packaged the DNA of interest in proteoliposomes containing the fusogenic galactose-terminated F-glycoprotein of the Sendai virus **(FPL)** for targeted delivery to hepatocytes. After the FPL binds to ASGPR on the hepatocyte surface, fusogenic activity of the F-protein delivers the DNA into the cytosol, bypassing the endosomal pathway. For transgene integration we designed plasmids containing one transcription unit expressing the Sleeping Beauty transposase (SB) and another expressing human uridinediphosphoglucuronate glucuronosyltransferase-1A1 (pSB-hUGT1A1). The latter was flanked by inverted/direct repeats that are substrates of SB. In cell culture, FPL-mediated delivery of the E. coli β-galactosidase gene (LacZ) resulted in transduction of ASGPR-positive cells (rat hepatocytes or Hepa1 cell line), but not of ASGPR-negative 293 cells. Intravenous injection of the FPL-entrapped pSB-hUGT1A1 (4– 8 μg/day, 1–4 doses) into UGT1A1-deficient hyperbilirubinemic Gunn rats (**model of CriglerNajjar syndrome type 1**) resulted in hUGT1A1 expression in 5%–10% of hepatocytes, but not in other cell types. Serum bilirubin levels declined by 30% ± 4% in 2 weeks and remained at that level throughout the 7-month study duration. With histidine containing FPL, serum bilirubin was reduced by 40% ± 5%, and bilirubin glucuronides were excreted into bile. No antibodies were detectable in the recipient rats against the F-protein or human UGT1A1. To summarize, **FPL is an efficient hepatocyte-targeted gene delivery platform in vivo that warrants further exploration toward clinical application**

15. Technologies Developed/Transferred:
    (a) Number of Technologies developed (Please give details)

Details of granted patents:

1. Sarkar, Debi P. Ramani, Komal, Bora, Roop S., Kumar, Mukesh, and Tyagi, Sandeep K. Process for Producing A Targeted Gene. *US Patent Application Granted.* Patent No. 5,683,866; Date. 4th Nov, 1997.

2. Debi P. Sarkar *et. al*. (2005) "Process for producing modified reconstituted Sendai viral envelope specific for drug and/or gene delivery to liver cells" Indian Patent Applications Filed. #1003/Del/2005 dated 21/4/2005. PCT application filed, October, 2005 (PCT No. PCT/IN2006/000061 dated 6th Nov., 2009). USA Patent Application Published, Pub. No. US 2010/0047897 A1, dated 25th Feb., 2010, Accepted/Published other countries March, 2011.

(b) Number of Technologies transferred to industry / commercialized (Please give details)

S.No.	MoUs formulated	Name of Agencies/Departments involved	Year of MoU
1	Panacea Biotech, 2002	NRDC and DBT, GOI	2002 till date
2	Albert Einstein College of Medicine, New York, USA	NRDC and DBT GOI	2002 till date

Major Significant Contribution of Prof. Debi P. Sarkar for Last Ten Years (2014-Onwards):

1. An amphiphilic segmented polyurethane (F-PU-S), with pendant sulfate groups and a flexible hydrocarbon backbone, exhibits intra-chain H-bonding reinforced folding and hierarchical assembly, producing anionic polymersome with efficient display of sulfate groups at the surface. It shows excellent antiviral activity against **Sendai virus (SV)** by inhibiting its entry to the cells. Mechanistic investigation suggests, fusion of the SV and the polymersome to produce larger particles in which neither the folded structure of the polymer nor the fusogenic property of the SV exists anymore. In sharp contrast, a structurally similar polymer R-PU-S, in which the chain-folding pathway is blocked by replacing the flexible C6 chain with a rigid cyclohexane chain in the backbone, cannot form similar polymersome structure and hence does not exhibit any antiviral activity. On the other hand, the third polymer (F-PU-C), which is similar to F-PU-S except the pendant anionic groups (carboxylate instead of sulfate), also fails to exhibit any antiviral activity against SV, confirming the essential role of the chain-folding as well as the pendant sulfate groups for fusion-induced antiviral activity of F-PU-S, **which provides an important structural guideline for developing new antiviral polymers.** (*Nag et. al., JACS, 2023*)

2. Reconstituted Sendai viral envelopes (virosomes) are well recognized for their promising potential in membrane fusion–mediated delivery of bioactive molecules to liver cells. Despite the known function of viral envelope glycoproteins in catalyzing fusion with cellular membrane, the role of host cell proteins remains elusive. Here, we used two-dimensional differential in-gel electrophoresis to analyze hepatic cells in early response to virosome-induced membrane fusion. Quantitative mass spectrometry together with biochemical analysis revealed that villin, an actin-modifying protein, is differentially up-regulated and phosphorylated at threonine 206—an early molecular event during membrane fusion. We found that villin influences actin dynamics and that this influence, in turn, promotes membrane mixing through active participation of Sendai viral envelope glycoproteins. Modulation of villin in host cells also resulted in a discernible effect on the entry and egress of progeny Sendai virus. Taken together, these results suggest a novel mechanism of regulated viral entry in animal cells mediated by host factor villin. (*Chandra et al., MBoC, 2017*)

3. We have recently employed villin-null Chinese Hamster Ovary (CHO) cells, where villin expression led to an increased fusion with virosomes, which was further enhanced due to tyrosine-499 phosphorylation in the presence of c-src. However, villin RRI mutant, lacking actin-severing function, failed to augment membrane fusion. Our results demonstrate a critical role of villin and its cell-type dependent phosphorylation in regulating membrane fusion. **[***Chandra et al., FEBS Letter, 2019*]
4. Generation of immunovirosomes comprising of a fused recombinant scFv directed to the onco-fetal antigen, the Placental isozyme of Alkaline Phosphatase (PAP) with the trans-membrane and part of the cytoplasmic domain of the Sendai F protein (F^{TMC}). This has the novel ability to combine specific antibody mediated targeting with cytoplasmic delivery. [*Kumar et. al., Curr Mol Med 2015*]
5. Study of role of nonmuscle myosin II of the actomyosin complex of host cells in membrane fusion. Our investigation may pave the way in modulating host cells to regulate the viral fusion mediated delivery of drugs/genes for treatment of cancers, gene therapy for various metabolic disorders and infectious diseases [*Das et. al., Sci Rep 2015*].
6. Development of an efficient technique to generate human protein in the animal milk via transfection of transgene in dividing mammary-epithelial cells using virosomes [*Ganguli et. al.,2018*].
7. Combination of novel PLAP promoter and antibody-based specificities, with the potential for being developed as a possible therapeutic strategy for neoplasia [*Khan et. al., J Transl Med 2015*].
8. The AFP promoter in combination with various enhancer systems was found to be specific and efficient in expressing shRNA targeting *c-myc*promoter. After packaging in Sendai virosomes, it induced cell type as well as transformation specific activation of the apoptosis in the exposed cells as a result of heterochromatization and increased DNA methylation of the CpG islands of *c-myc* P2 promoter. [*Zakaria et. al., BMC Cancer 2014*].

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