

CV of Munia Ganguli

1. Name and full correspondence address
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3. Institution: CSIR-Institute of Genomics and Integrative Biology
4. Date of Birth: 28.07.1969
5. Gender (M/F/T): F
6. Category Gen/SC/ST/OBC: Gen
7. Whether differently abled (Yes/No) No
8. Academic Qualification (Undergraduate Onwards)

	Degree	Year	Subject	University/Institution	% of marks
1.	BSc	1990	Chemistry	Jadavpur University, Kolkata	76
2.	MSc	1992	Chemistry	Jadavpur University, Kolkata	70
3.	PhD	1997, 1998 (degree awarded)	Solid State Chemistry	Indian Institute of Science, Bangalore	-

9. Ph.D thesis title, Guide's Name, Institute/Organization/University, Year of Award.
Structure and electrical transport studies of lithium ion conducting glasses
Prof. K.J.Rao
Indian Institute of Science
1998

10. Work experience (in chronological order).

S.No.	Positions held	Name of the Institute	From	To
1	Post doctoral researcher Work area: Materials chemistry	Philipps Universitaet, Marburg, Germany	September 2000	July 2001
2	Research Associate Work area: Amorphous materials	Indian Institute of Science, Bangalore	August 2001	July 2002
3	Research Associate Work area: Nanomaterials and nanobiotechnology	CSIR-IGIB	September 2002	September 2003

4	Scientist C Research area: Nanomaterials and nanobiotechnology	CSIR-IGIB	March 2004	March 2008
5	Scientist EI Research area: Nanomaterials, peptides, gene delivery, skin biology, transfection agents	CSIR-IGIB	March 2008	March 2012
6	Principal Scientist Research area: Nanomaterials, gene and drug delivery, skin biology, transfection agents	CSIR-IGIB	March 2012	March 2016
7	Senior Principal Scientist Research area: Nanomaterials, gene and drug delivery to skin and lungs, transfection agents	CSIR-IGIB	March 2016	Till date

11. Professional Recognition/ Award/ Prize/ Certificate, Fellowship received by the applicant.

S.No	Name of Award	Awarding Agency	Year
1	National Bioscience Award for Career Development	Department of Biotechnology, Government of India	2012

12. Publications (*List of papers published in SCI Journals, in year wise descending order*).

S.No	Author(s)	Title	Name of Journal	Volume	Page	Year
1	Gupta A, Soni R, Ganguli M*	Frostbite-manifestation and mitigation	Burns Open	5	96-103	2021
2	Mishra S, Ganguli M*	Functions of, and replenishment strategies for, chondroitin sulfate in the human body	Drug Discov Today	Feb 4:S1359-6446(21)00060-X. doi: 10.1016/j.drudis.2021.01.029.		2021
3	Mishra S, G Reshma B, Pal S, Bano S, Gupta A, Kumari A, Ganguli M*	Topical Application of Chondroitin Sulfate Nanoparticles Allows Efficient Photoprotection in Skin	ACS Appl. Mater. Interfaces	13	2382-2398	2021
4	Gupta N, Singh A, Dey N, Chattopadhyay S, Joseph JP, Gupta D, Ganguli M, Pal A*	Pathway driven peptide bioglass nanocomposites as the dynamic and self-healable matrix	Chem. Mater.	33	589-599	2021

5	Choukate K, Gupta A, Basu B, Virk K, Ganguli M, Chaudhuri B.	Higher order assembling of the mycobacterial polar growth factor DivIVA/Wag31.	J Struct Biol.	209	107429	2020
6	Dahiya UR, Mishra S, Chattopadhyay S, Kumari A, Gangal A, Ganguli M.*	Role of Cellular Retention and Intracellular State in Controlling Gene Delivery Efficiency of Multiple Nonviral Carriers.	ACS Omega	4	20547-20557	2019
7	Dahiya, UR, Ganguli M.*	Exocytosis - a putative road-block in nanoparticle and nanocomplex mediated gene delivery.	J. Controlled Release	303	67-76	2019
8	Subia B, Reinisalo M, Dey N, Tavakoli S, Subrizi A, Ganguli M, Ruponen M.	Nucleic acid delivery to differentiated retinal pigment epithelial cells using cell-penetrating peptide as a carrier.	European Journal of Pharmaceutics and Biopharmaceutics	140	91-99	2019
9	Iqbal B, Ali J, Ganguli M, Mishra S, Baboota S.	Silymarin-loaded nanostructured lipid carrier gel for the treatment of skin cancer.	Nanomedicine (Lond.)	14	1077-1093	2019
10	Khan S, Ganguli M, Aditya A, Khan S, Baboota, S, Ali J.	Improved in vivo performance and immunomodulatory effect of novel Omega-3 fatty acid based Tacrolimus nanostructured lipid carrier.	Journal of Drug Delivery Science and Technology	52	138-149	2019
11	Nisakar, D, Vij M, Pandey T, Natarajan P, Sharma R, Mishra S, Ganguli M*	Deciphering the role of Chondroitin Sulfate in increasing the transfection efficiency of amphipathic peptide-based nanocomplexes.	ACS Biomaterials Science and Engineering	1	45-55	2019
12	Aditya A, Chattopadhyay S, Gupta N, Alam S, Veedu AP, Pal M, Singh A, Santhiya D, Ansari	ZnO nanoparticles modified with an amphipathic peptide show improved photoprotection in skin.	ACS Appl. Mater. and Interfaces	11	56-72	2018

	KM, Ganguli M.*					
13	Gupta N, Santhiya D, Murugavel S, Kumar A, Aditya A, Ganguli M, Gupta S.	Effects of transition metal ion dopants (Ag, Cu and Fe) on the structural, mechanical and antibacterial properties of bioactive glass.	Colloids and Surfaces A: Physicochemical and Engineering Aspects	538	393-403	2018
14	Chawla M, Mishra S, Anand K, Parikh P, Mehta M, Vij M, Verma T, Singh P, Jakkala K, Verma HN, AjitKumar P, Ganguli M, Narain Seshasayee AS, Singh A.	Redox-dependent condensation of the mycobacterial nucleoid by WhiB4.	Redox Biology	19	116-133	2018
15	Aditya A, Chattopadhyay S, Jha D, Gautam HK, Maiti S, Ganguli M*.	Zinc Oxide nanoparticles dispersed in Ionic Liquids show high antimicrobial efficacy to skin-specific bacteria.	ACS Appl Mater Interfaces	10	15401 - 15411	2018
16	Yadav AK, Dey N, Chattopadhyay S, Ganguli M*, Fernandes M*.	Dendrimeric amide- and carbamate-linked lysine- based efficient molecular transporters.	Org. Biomol Chem.	15	9579-9584	2017
17	Vij M, Alam S, Gupta N, Goherwal V, Gautam H, Ansari KM, Santhiya D, Natarajan VT, Ganguli M*.	Non-invasive Oil-Based Method to Increase Topical Delivery of Nucleic Acids to Skin.	Mol Ther.	25(6)	1342-1352	2017
18	Balavigneswaran CK, Mahto SK, Subia B, Prabhakar A, Mitra K, Rao V, Ganguli M, Ray B, Maiti P, Misra N.	Tailored Chemical Properties of 4-Arm Star Shaped Poly(d,l-lactide) as Cell Adhesive Three-Dimensional Scaffolds.	Bioconjugate Chem.	28(4)	1236-1250	2017
19	Shukla V, Dalela M, Vij M, Weichselbaum R, Kharbanda S, Ganguli M, Kufe D, Singh H.	Systemic delivery of the tumor necrosis factor gene to tumors by a novel dual DNA-nanocomplex in a nanoparticle system.	Nanomedicine	13(5)	1833-1839	2017

20	Vij M, Grover R, Gotherwal V, Wani NA, Joshi P, Gautam H, Sharma K, Chandna S, Gokhale RS, Rai R, Ganguli M, Natarajan VT.	Bioinspired Functionalized Melanin Nanovariants with a Range of Properties Provide Effective Color Matched Photoprotection in Skin.	Biomacromolecules	17(9)	2912-2919	2016
21	Vij M, Natarajan P, Yadav AK, Patil KM, Pandey T, Gupta N, Santhiya D, Kumar VA, Fernandes M*, Ganguli M*.	Efficient Cellular Entry of (r-x-r)-Type Carbamate-Plasmid DNA Complexes and Its Implication for Noninvasive Topical DNA Delivery to Skin.	Mol Pharm.	13(6)	1779-1790	2016
22	Alajangi H, Natarajan P, Vij M, Ganguli M, Santhiya D.	Role of Unmodified Low Generation – PAMAM Dendrimers in Efficient Non-Toxic Gene Transfection.	Chemistry Select	1(16)	5206–5217	2016
23	Vij M, Natarajan P, Pattnaik BR, Alam S, Gupta N, Santhiya D, Sharma R, Singh A, Ansari KM, Gokhale RS, Natarajan VT, Ganguli M*.	Non-invasive topical delivery of plasmid DNA to the skin using a peptide carrier.	J Control Release	222	159-168	2016
24	Suryawanshi H, Sarangdhar MA, Vij M, Roshan R, Singh VP, Ganguli M, Pillai B.	A Simple Alternative to Stereotactic Injection for Brain Specific Knockdown of miRNA.	J Vis. Exp.	106	e53307	2015
25	Naik RJ, Sharma R, Nisakar D, Purohit G, Ganguli M*.	Exogenous chondroitin Sulphate glycosaminoglycan associate with arginine-rich peptide-DNA complexes to alter their intracellular processing and gene delivery efficiency.	Biochim Biophys Acta	1848 (4)	1053-1064	2015
26	Patil KM, Naik RJ, Vij M, Yadav AK, Kumar VA, Ganguli M*, Fernandes M*.	Second generation, arginine-rich (R-X'-R)(4)-type cell-penetrating α - ω - α -peptides with constrained, chiral ω -amino acids (X') for enhanced cargo delivery into cells.	Bioorg. Med. Chem. Lett.	24(17)	4198-4202	2014
27	Sharma R, Nisakar D, Shivpuri S, Ganguli M*.	Contrasting effects of cysteine modification on the transfection efficiency of amphipathic peptides.	Biomaterials	35(24)	6563-6575	2014

28	Mann A, Shukla V, Khanduri R, Dabral S, Singh H, Ganguli M*.	Linear short histidine and cysteine modified arginine peptides constitute a potential class of DNA delivery agents.	Mol.Pharm.	11(3)	683-696	2014
29	Mishra A, Vij M, Kumar D, Taneja V, Mondal AK, Bothra A, Rao V, Ganguli M, Taneja B.	Integration host factor of Mycobacterium tuberculosis, mIHF, compacts DNA by a bending mechanism.	PLoS One	8(7)	e69985	2013
30	Sharma R, Shivpuri S, Anand A, Kulshreshtha A, Ganguli M*.	Insight into the role of physicochemical parameters in a novel series of amphipathic peptides for efficient DNA delivery.	Mol. Pharm.	10(7)	2588-2600	2013
31	Santhiya D, Alajangi H, Anjum F, Murugavel S, Ganguli M.	Bio-inspired synthesis of microporous bioactive glass-ceramic using CT-DNA as a template.	J. Mater. Chem. B	1(1)	6329-6338	2013
32	Naik RJ, Chatterjee A, Ganguli M*.	Different roles of cell surface and exogenous glycosaminoglycans in controlling gene delivery by arginine-rich peptides with varied distribution of arginines.	Biochim. Biophys. Acta	1828(6)	1484-1493	2013
33	Ahmed V, Kumar J, Kumar M, Chauhan MB, Vij M, Ganguli M and Chauhan NS.	Synthesis, characterization of penicillin G capped silver nanoconjugates to combat β -lactamase resistance in infectious microorganism.	J. Biotechnol.	163(4)	419-424	2013
34	Patil KM, Naik RJ, Rajpal, Fernandes M, Ganguli M*, Kumar VA*.	Highly efficient (R-X-R)-type carbamates as molecular transporters for cellular delivery.	J. Am. Chem. Soc.	134(17)	7196-7199	2012
35	Rajpal, Mann A, Khanduri R, Naik RJ, Ganguli M*.	Structural rearrangements and chemical modifications in known cell penetrating peptide strongly enhance DNA delivery efficiency.	J. Control. Release	157(2)	260-271	2012
36	Mann A, Thakur G, Shukla V, Singh AK, Khanduri R, Naik R, Jiang Y, Kalra N, Dwarakanath BS, Langel U, Ganguli M*.	Differences in DNA condensation and release by lysine and arginine homopeptides govern their DNA delivery efficiencies.	Mol. Pharm.	8(5)	1729-1741	2011

37	Naik RJ, Chandra P, Mann A, Ganguli M*.	Exogenous and cell surface glycosaminoglycans alter DNA delivery efficiency of arginine and lysine homopeptides in distinctly different ways.	J. Biol. Chem.	286 (21)	18982 - 18993	2011
38	Kapoor P, Kumar A, Naik R, Ganguli M, Siddiqi MI, Sahasrabuddhe AA, Gupta CM.	Leishmania actin binds and nicks kDNA as well as inhibits decatenation activity of type II topoisomerase.	Nucleic Acids Res.	38(10)	3308-3317	2010
39	Gupta K, Singh VP, Kurupati RK, Mann A, Ganguli M, Gupta YK, Singh Y, Saleem K, Pasha S, Maiti S.	Nanoparticles of cationic chimeric peptide and sodium polyacrylate exhibit striking antinociception activity at lower dose.	J. Control. Release	134(1)	47-54	2009
40	Naik R, Mukhopadhyay A, Ganguli M*.	Gene delivery to the retina: focus on non-viral approaches.	Drug Discov. Today	14(5-6)	306-315	2009
41	Ram EV, Naik R, Ganguli M, Habib S.	DNA organization by the apicoplast-targeted bacterial histone-like protein of Plasmodium falciparum.	Nucleic Acids Res.	36(15)	5061-5073	2008
42	Mann A, Thakur G, Shukla V, Ganguli M*.	Peptides in DNA delivery: current insights and future directions.	Drug Discov, Today	13 (3-4)	152-160	2008
43	Mann A, Richa R, Ganguli M*.	DNA condensation by poly-L-lysine at the single molecule level: role of DNA concentration and polymer length.	J. Control. Release	125(3)	252-262	2008
44	Das U, Hariprasad G, Ethayathulla AS, Manral P, Das TK, Pasha S, Mann A, Ganguli M, Verma AK, Bhat R, Chandrayan SK, Ahmed S, Sharma S, Kaur P, Singh TP, Srinivasan A.	Inhibition of protein aggregation: supramolecular assemblies of arginine hold the key.	PLoS One	2(11)	e1176	2007

45	Baweja RB, Zaman MS, Mattoo AR, Sharma K, Tripathi V, Aggarwal A, Dubey GP, Kurupati RK, Ganguli M, Chaudhury NK, Sen S, Das TK, Gade WN, Singh Y.	Properties of Bacillus anthracis spores prepared under various environmental conditions.	Arch. Microbiol.	189(1)	71-79	2008
46	Das U, Hariprasad G, Pasha S, Mann A, Ganguli M, Sharma S, Kaur P, Singh TP, Srinivasan A.	Interface peptide of Alzheimer's amyloid beta: application in purification.	Biochem Biophys Res Commun.	362(2)	538-542	2007
47	Mann A, Khan MA, Shukla V, Ganguli M*.	Atomic force microscopy reveals the assembly of potential DNA "nanocarriers" by poly-L-ornithine.	Biophys. Chem.	129 (2-3)	126-136	2007
48	Kainthan RK, Gnanamani M, Ganguli M, Ghosh T, Brooks DE, Maiti S, Kizhakkedathu JN.	Blood compatibility of novel water soluble hyperbranched polyglycerol-based multivalent cationic polymers and their interaction with DNA.	Biomaterials	27(31)	5377-90	2006
49	Khan JA, Kainthan RK, Ganguli M, Kizhakkedathu JN, Singh Y, Maiti S.	Water soluble nanoparticles from PEG- based cationic hyperbranched polymer and RNA that protect RNA from enzymatic degradation.	Biomacromolecules	7(5)	1386-1388	2006
50	Gupta K, Ganguli M, Pasha S, Maiti S.	Nanoparticle formation from poly(acrylic acid) and oppositely charged peptides.	Biophys. Chem.	119(3)	303-306	2006
51	Zaman MS, Goyal A, Dubey GP, Gupta PK, Chandra H, Das TK, Ganguli M, Singh Y.	Imaging and analysis of Bacillus anthracis spore germination.	Microsc. Res. Tech.	66(6)	307-311	2005
52	Ganguli M*, Babu JV, Maiti S.	Complex formation between cationically modified gold nanoparticles and DNA: an atomic force microscopic study.	Langmuir	20(13)	5165-5170	2004

53	Nisha CK, Manorama SV, Ganguli M, Maiti S, Kizhakkedathu JN.	Complexes of poly(ethylene glycol)- based cationic random copolymer and calf thymus DNA: a complete biophysical characterization.	Langmuir	20(6)	2386- 2396	2004
54	Ganguli M, Jayachandran KN, Maiti S.	Nanoparticles from cationic copolymer and DNA that are soluble and stable in common organic solvents.	J. Am. Chem. Soc.	126(1)	26-27	2004
55	Bhat HM, Ganguli M, Rao KJ.	Investigation of the mixed alkali effect in boro- tellurite glasses – the role of NBO-BO switching in ion transport.	Curr. Sci.	86(5)	676- 691	2004
56	Bhat HM, Kandavel M, Ganguli M, Rao K J.	Li ⁺ ion conductivities in boro-tellurite glasses.	Bull.Mat. Sci.	27(2)	189- 198	2004
57	Bhat HM, Ganguli M, Rao KJ.	Conductivity in SnO- NaPO ₃ glasses.	Bull. Mat. Sci.	26(4)	407- 413	2003
58	Rao KJ, Vaidhyanathan B, Ganguli M, Ramakrishnan PA.	Synthesis of inorganic solids using microwaves.	Chem. Mater.	11(4)	882- 895	1999
59	Ganguli M, Rao KJ.	Studies of ternary Li ₂ SO ₄ -Li ₂ O-P ₂ O ₅ glasses.	J. Non-Cryst. Solids	243(2- 3)	251- 257	1999
60	Ganguli M, Rao KJ.	Studies on the effect of Li ₂ SO ₄ on the structure of lithium borate glasses.	J. Phys. Chem. B	103(6)	920- 930	1999
61	Ganguli M, Rao K. J.	Structural role of PbO in Li ₂ O-PbO-B ₂ O ₃ glasses.	J. Solid State Chem.	145(1)	65-76	1999
62	Ganguli M, Bhat HM, Rao KJ.	Role of PbO in lithium ion transport in Li ₂ O- PbO-B ₂ O ₃ glasses,	Mater. Res. Bull.	34 (10- 11)	1757- 1772	1999
63	Ganguli M, Bhat HM, Rao KJ.	Lithium ion transport in Li ₂ SO ₄ -Li ₂ O-P ₂ O ₅ glasses.	Solid State Ionics	122(1- 4)	23-33	1999
64	Ganguli M, Bhat HM, Rao K J.	Lithium ion transport in Li ₂ SO ₄ -Li ₂ O-B ₂ O ₃ glasses.	Phys. Chem. Glasses	40(6)	297- 304	1999
65	Vaidhyanathan B, Ganguli M, Rao K J.	Microwave assisted selective deoxygenation of layer and chain containing oxides.	J. Mater. Chem.	6(3)	391- 394	1996
66	Vaidhyanathan B, Ganguli M, Rao KJ.	Fast solid state synthesis of metal vanadates and chalcogenides using microwave irradiation.	Mater. Res. Bull.	30(9)	1173- 1177	1995
67	Vaidhyanathan B, Ganguli M, Rao K J.	Novel method of preparation of inorganic glasses by microwave irradiation.	J. Solid State Chem.	113(2)	448- 450	1994

68	Ramesh PD, Vaidhyanathan B, Ganguli M, Rao K J.	Synthesis of beta SiC powder by use of microwave radiation.	J. Mater. Res.	9(12)	3025-3027	1994
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13. Detail of patents.

S.No	Patent Title	Name of Applicant(s)	Patent No.	Award Date	Agency /country	Status
1	Nanocomplex containing amphipathic peptide for efficient transfection of biomolecules	Munia Ganguli, Rajpal Sharma, Shivangi Shivpuri	U.S. Patent Number 9,669,104	6 June 2017	US	Granted
2	Nanocomplex containing cationic peptide for biomolecule delivery	Munia Ganguli, Anita Mann, Vasundhara Shukla, Manika Vij	U.S. Patent Number 9,572,893	21 February 2017	US	Granted
3	Synthetic melanin nanoparticles for skin pigmentation and method of preparation thereof	Manika Vij, Ritika Grover, Vidhvabandhu Gotherwal, Naiem Ahmad Wani, Prashant Joshi, Munia Ganguli, Rajkishor Rai, TN Vivek, RS Gokahle	Application number: 201611014 933	April 2017	India	Filed

14. Books/Reports/Chapters/General articles etc.

Sr. No.	Title	Author names	Publisher	Year
1	Lithium ion conducting glasses, 'Handbook of Solid State Batteries and Capacitors' Edited by M.Z.A. Munshi, pp. 189 - 208. (book chapter)	K.J. Rao and Munia Ganguli	World Scientific, Singapore	1995
2	Inorganic Particle Synthesis via Macro and Microemulsions: A Micrometer to Nanometer Landscape (Book)	Dibyendu Ganguli and Munia Ganguli	Springer	2003
3	Emerging trends in genomics: applications in health and disease (Editorial, general article)	Munia Ganguli and RS Gokhale (guest editors)	Science and Culture	2011

4	Nanocomplexes and nanoparticles for delivery of therapeutic cargo to the skin (general article)	Munia Ganguli and Manika Vij	Fakir Chand College Diamond Harbour, West Bengal	2016
5	Mucus penetrating Non-viral vectors in lung gene therapy	Anupama Kumari and Munia Ganguli	SMC Bulletin (A publication of the Society of Materials Chemistry)	2019

15. Any other Information (maximum 500 words)

In my independent research laboratory, me and my students have been working in the area of design, synthesis and biological activities of nanomaterials for gene and drug delivery-with particular focus on peptide and polymer based nanocomplexes and inorganic nanoparticles for the last more than 15 years. We have developed a set of peptide based agents for efficient delivery of large nucleic acids to different cells and tissue. These have application both in cellular transfections as well as in vivo gene delivery. We have published more than 30 research papers in this area- both independently and in collaboration, in many reputed journals including J. Am. Chem. Soc., J. Biol. Chem., J. Controlled Release, Biomaterials, ACS Applied Materials and Interfaces and so on. My laboratory is also involved in using Atomic Force Microscopy to understand nanostructures and DNA-protein interactions. We have extensive collaborations all over India in this area and have many publications in reputed journals including Nucleic Acids Research, Redox Biology, J. Structural Biology etc.

I have been the nodal coordinator from CSIR-IGIB, of the CSIR sponsored program on Nanomaterials and Nanodevices in health and disease from 2007-2012. I have also received funding from CSIR in the skin biology program from 2012-2017 to develop several methodologies for non-invasive delivery of both biomolecules and nanoparticles to skin. These are useful for drug delivery, UV protection and gene delivery to skin. Some of the technologies of transfection developed by us have been granted US patents. Currently my laboratory is also funded by projects from DST and DRDO on different aspects of gene and drug delivery. I have been one of the recipients of the National Bioscience Award for Career Development from the Department of Biotechnology from 2013-2015 and granted a SERB POWER fellowship from the Department of Science and Technology from 2021-2023.