DEBOJYOTI CHAKRABORTY

Principal Scientist & Assistant Professor

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SUMMARY

Molecular biologist and group leader with extensive experience in CRISPR/Cas9 genome editing technologies. Active contributions to groundbreaking research in gene therapy and diagnostics, including leadership in biotechnological advancements and clinical translation of gene editing therapies.

EXPERIENCE

Principal Scientist	10/2020-till date
CSIR- Institute of Genomics and Integrative Biology	New Delhi
Senior Scientist	10/2016 - 10/2020
CSIR- Institute of Genomics and Integrative Biology	New Delhi
Assistant Professor	02/2017 - till date
Faculty of Biological Sciences, Academy of Scientific ar Research	nd Innovative
Scientist Fellow	01/2016 - 10/2016
CSIR- Institute of Genomics and Integrative Biology	New Delhi
EDUCATION	

Post Doctoral Researcher

Technical University Dresden

PhD in Molecular Biology

Max Planck Institute of Molecular Cell Biology and Genetics & Medical Faculty TU Dresden

Master of Science in Molecular Biology West Bengal University of Technology Bachelor of Science

University of Kalyani

MEMBERSHIPS

DBT Expert Committee on mRNA Therapeutics DBT Expert Committee on Cell & Gene Therapy Mission Lead, National Sickle Cell Anemia Clinical Trial [DST & Ministry of Tribal Affairs] Ethics Committee (AIIMS, Kalyani) Ad hoc proposal review committees (ICMR, DBT, EMBO) Ad hoc reviewer Nature, Nature Biotechnology, Science Advances, Nucleic Acids Research, Biosensors & Bioinformatics, etc.

DOB: 28th August 1985 Nationality: Indian



STRENGTHS

Molecular Biology & Therapeutic Genome Editing

Expertise in molecular biology, CRISPR technology, and genetic engineering.

AWARDS (selected)

Ananda Mohan Chakraborty Gen.
Eng. Inspiration Award, Institute of
Genetic Engineering [2023]

CSIR Technology Award, Council for Scientific & Industrial Research [2021]

EMBO Young Investigator, European Molecular Biology Organization [2021]

 VASVIK Award in Life Sciences & Technology [2020]

 Young Scientist Award, Indian National Science Academy (INSA)
[2020]

Young Scientist Award, Council for Scientific & Industrial Research [2020]

Young Scientist Award, Merck[2019 & 2020]

Young Investigator Award, Lady TATA Trust [2019]

• Wellcome Trust IA Early Career Fellowship (not activated) [2016]

INSPIRE Faculty Award, Department of Science and Technology (not activated) [2016]

German Stem Cell Network Travel and Poster Awards [2015, 2014]

Future of Science Foundation Scholarship, Keystone USA [2012]

Topper, MSc & BSc. and University Merit Scholarship [2009 & 2007]

Lindau Meeting of Nobel Laureates Award, DST & DFG [2007]

09/2009 - 03/2014 Dresden, Germany 08/2007 - 07/2009

03/2014 - 12/2015

Dresden, Germany

Kolkata, India

07/2004-07/2007

Kalyani, India

Selected Publications

PAM-flexible Engineered FnCas9 variants for robust and ultra-precise genome editing and diagnostics. Sundaram Acharya, Asgar Ansari... Souvik Maiti and **Debojyoti Chakraborty^{*}. Nature Communications** (2024)

Emerging opportunities for gene editing therapies in India Souvik Maiti, Arkasubhra Ghosh, **Debojyoti Chakraborty**^{*} **Nature Medicine** (2024)

TOBF1 modulates mouse embryonic stem cell fate through regulating alternative splicing of pluripotency genes Meghali Aich, Asgar Hussain Ansari... **Debojvoti Chakraborty**[#] **Cell Reports** (2023)

CriSNPr, a single interface for the curated and de novo design of gRNAs for CRISPR diagnostics using diverseCas systems.

Asgar Hussain Ansari, Manoj Kumar, Sajal Sarkar, Souvik Maiti and Debojyoti Chakraborty. eLife (2023). FnCas9

Editor Linked Uniform Detection Assay for COVID 19.

Rhythm Phutela, Sneha Gulati, Souvik Maiti and **Debojyoti Chakraborty**^{*}. **Multiplex Biomarker Techniques, Springer** (2022).

FnCas9 based CRISPR diagnostic for rapid and accurate detection of major SARS- CoV2 variants on a paper strip.

Manoj Kumar, Sneha Gulati,..., Souvik Maiti and Debojyoti Chakraborty. eLife (2021) Low-

cost CRISPR diagnostics for resource-limited settings

Sneha Gulati, Souvik Maiti and Debojyoti Chakraborty^{*}. Trends in Genetics (2021)

Rapid identification and tracking of SARS-CoV-2 variants of concern

Debojyoti Chakraborty*, Anurag Agrawal and Souvik Maiti. The Lancet (2021) Rapid,

field-deployable nucleobase detection and identification using FnCas9

Mohd. Azhar, Rhythm Phutela, Manoj Kumar, Asgar Hussain Ansari, Riya Rauthan, ... **Debojyoti Chakraborty**^{*}, Souvik Maiti^{*}. **Biosensors and Bioelectronics** (2021)

Voices of Biotech Research

Annabi N, Baker M, Boettiger A, Chakraborty D,... Wang J. Nature Biotechnology (2021)

TUTase mediated site-directed access to clickable chromatin employing CRISPR-dCas9

Jerrin Thomas George, Mohd. Azhar, Meghali Aich, Dipanjali Sinha, Uddhav B. Ambi, Souvik Maiti^{*}, **Debojyoti Chakraborty**[#], Seergazhi Srivatsan[#]. **JACS** (2020)

Francisella novicida Cas9 interrogates genomic DNA with very high specificity and can be used for mammalian genome editing

Sundaram Acharya, Arpit Mishra, Deepanjan Paul.. Debojyoti Chakraborty[#]. PNAS (2019)

RNA G-quadruplex mediated structural enhancement of CRISPR-Cas9 based genome editing

Smita Nahar, Paras Sehgal.. Debojyoti Chakraborty^{*} and Souvik Maiti^{*}. Chemical Communications (2018)

LncRNA *Panct1* maintains mouse embryonic stem cell identity by recruiting TOBF1 to Oct-Sox sequences in early G1

Debojyoti Chakraborty, Maciej Paszkowski-Rogacz, Nicolas Berger, Li Ding, Jovan Mircetic *et al.* **Cell Reports** (2017)

CRISPR/Cas9: a historical and chemical biology perspective of targeted genome engineering

Amrita Singh, Debojyoti Chakraborty[#], and Souvik Maiti[#]. Chem. Soc. Rev. (2016)

Directed evolution of Brec1: A broad-range recombinase that inactivates HIV-1 in patient-specific humanized mice

Janet Karpinski, Ilona Hauber, Jan Chemnitz, Carola Schäfer, Maciej Paszkowski-Rogacz, **Debojyoti Chakraborty** *et al.* **Nature Biotechnology** (2016)

Targeting Human Long-Noncoding Transcripts by Endoribonuclease-prepared siRNAs

Mirko Theis, Maciej Paszkowski-Rogacz, Ina Weisswange, **Debojyoti Chakraborty**, Frank Buchholz. **Journal of Biomolecular Screening** (2015)

Systems Analyses Reveal Shared and Diverse Attributes of Oct4 Regulation in Pluripotent Cells

Li Ding, Maciej Paszkowski-Rogacz, Maria Winzi, Debojyoti Chakraborty, Mirko Theis et al. Cell Systems (2015)

Universal Tre (uTre) recombinase specifically targets the majority of HIV-1 isolates

Janet Karpinski, Jan Chemnitz, Ilona Hauber Josephine Abi-Ghanem, Maciej Paszkowski-Rogacz, Vineeth Surendranath, **Deboyoti Chakraborty** *et al.* **Journal of the International AIDS Society** (2014)

Combined RNAi and localization for functionally dissecting long noncoding RNAs

Debojyoti Chakraborty, Dennis Kappei, Mirko Theis, Anja Nitzsche, Li Ding, Maciej Paszkowski-Rogacz *et al.* Nature Methods (2012)

corresponding/co-corresponding author

PATENTS

KINETICALLY ENHANCED ENGINEERED FNCAS9 AND ITS USES THERE OF

Publication no: 20230146664, GRANTED in USA, being processed in other countries

METHOD AND KIT FOR DETECTION OF POLYNUCLEOTIDE

Publication no: 20230031670, GRANTED in multiple countries

Invited by Ministry of Commerce, Government of India to participate in the Republic Day Parade Celebrations in Kartavya Path as one of the most prolific patent holders of the country [2024]

MISCELLANEOUS

Work covered in all major national electronic media (Doordarshan, AajTak, ABP, Republic etc.], print media [Hindu, Telegraph, Hindustan Times, Times of India etc.], International Media [BBC, CNN, The Scientist etc.]. and in two books [including Space Life Matter: The coming of Age of Indian Science by Hari Pulakkat and Indian Innovation, not Jugaad: 100 ideas that Transformed India by Dinesh C. Sharma].

CRISPRDx Technology transferred to TATA Medical & Diagnostics (more than 100,000 units sold). CRISPR gene editing technology licensing in progress with \sim 10 start-ups and multinational companies.

Have supervised multiple PhDs, Postdoctoral, project and internship students many of who have gone to win awards like Sun Pharma Research Scholar Awards, Fullbright Scholarships, Stellar Foundation Award etc. and prestigious postdoctoral positions in Universities or Industrial positions.