

Mohan Chandra Joshi, Ph.D.

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Specialization:

Bacterial genetics and Chromosome biology

Research Grants:

Feb 2022: ICMR grant (PI), entitled "An investigative study to probe for prognostic biomarkers for disease progression and severity through urine metabolomics profiling in COVID-19 patients".

Sanctioned amount: ₹ 76,95,236/-

Feb 2020-Feb 2023 (Co-PI): SERB-CRG, title " "Demonstrating the mechanism of host protein sequestration by plasmids in the events of the elevated replication transcription conflicts in *Escherichia coli*". **Sanctioned amount: ₹ 55,73,859/-**

July 2018-July 2021(PI) : SERB-Early Career Research grant, title "Investigating the role of cohesion in nucleoid dynamics under antibiotic stress." **Sanctioned amount: ₹ 47,85,000/-**

Dec 2016-Dec 2021(PI): Wellcome Trust/DBT India Alliance Intermediate Fellow, title "Chromosome cohesion mediated regulation of Homologous Recombination process in *E. coli*". **Sanctioned amount: ₹ 3,19,85,470.00/-**

Publications:

1. Sinha P, Joshi MC, Tiwari S, Saxena R (2023). Editorial: Linkage between membrane composition, cellular functions and membrane-mediated stress. **Frontier of Genetics (In press)**.
2. Md Imam Faizan, Rituparna Chaudhuri, Shakti Sagar, Sarah Albogami, Nisha Chaudhary, Iqbal Azmi, Areej Akhtar, Syed Mansoor Ali, Rohit Kumar, Jawed Iqbal, **Mohan C Joshi**, Gaurav Kharya, Pankaj Seth, Soumya Sinha Roy, Tanveer Ahmad (2022) NSP4 and ORF9b of SARS-CoV-2 induce pro-inflammatory mitochondrial DNA release in inner membrane-derived vesicles. **Cells**, 11: 2969.
3. Iqbal Azmi, Imam Faizan, Rohit Kumar, Siddharth Raj Yadav, Nisha Chaudhary, Deepak Kumar Singh, Ruchika Butola, Aryan Ganotra, Joshi Datt Gopal, **Jawed Iqbal***, **Mohan Chandra Joshi***, **Tanveer Ahmad*** (2021) A saliva-based RNA extraction-free workflow integrated with Cas13a for SARS-CoV-2 detection. **Frontiers in cellular and infection microbiology**, 11:144. (* corresponding author)
4. Tiwari P, bharti, I; Bohidar H, Quadir, S; **Joshi MC**, Arfin, N (2020) Complex Coacervation and overcharging during interaction between hydrophobic zein and hydrophilic laponite in aqueous ethanol solution. **ACS omega** 51:33064–33074.
5. Tanveer Ahmad, Rituparna Chaudhuri, **Mohan C Joshi** and Syed M Ali. COVID-19: The emerging immunopathological determinants for recovery or death (2020) **Review, Front in Microbiology**, 11.
6. Jun Xia, Li-Ya Chiu, Ralf B. Nehrin, María Angélica Bravo Núñez, Qian Mei, Mercedes Perez, Yin Zhai, Devon M. Fitzgerald, John P. Pribis, Yumeng Wang, Chenyue W. Hu, Reid T. Powell,

- Sandra A. LaBonte, Ali Jalali, Meztli L. Matadamas Guzmán, Alfred M. Lentzsch, Adam T. Szafran, **Mohan C. Joshi**, Megan Richters, Janet L. Gibson, Ryan L. Frisch, P.J. Hastings, David Bates, Christine Queitsch, Susan G. Hilsenbeck, Cristian Coarfa, James C. Hu, Deborah A. Siegele, Kenneth L. Scott, Han Liang, Michael A. Mancini, Christophe Herman, Kyle M. Miller, Susan M. Rosenberg (2019) Bacteria-to-human protein networks reveal origins of endogenous DNA damage. **Cell Jan 10;176(1-2):127-143.e24.**
7. Sood A, Mahajan R, Juyal G, Midha V, Grewal CS, Mehta V, Singh A, Joshi MC, Narang V, Kaur K, Sidhu H. (2018) Efficacy of fecal microbiota therapy in steroid dependent ulcerative colitis: a real world intention-to-treat analysis. **Intest Res.** Nov 20. doi: 10.5217/ir.2018.00089. [Epub ahead of print]
 8. Magnan D, **Joshi MC**, Barker AK, Visser BJ, Bates D (2015) DNA Replication Initiation Is Blocked by a Distant Chromosome-Membrane Attachment. **Curr Biol.** 25:2143-2149.
 9. Lies M, Visser BJ, **Joshi MC**, Magnan D, Bates D (2015) MioC and GidA proteins promote cell division in *E. coli*. **Front Microbiol.** 6:516.
 10. **Joshi MC**, Magnan D, Montminy TP, Lies M, Stepankiw N, Bates D (2013) Regulation of sister chromosome cohesion by the replication fork tracking protein SeqA. **PLOS Genetics**, 9: e1003673.
 11. Chandan Shee, Ben D Cox, Franklin Gu, Elizabeth M Luengas, **Mohan C Joshi**, David Magnan, Jennifer A. Halliday, Ryan L Frisch, Ralf Bernd Nehring, Janet L Gibson, Huong G Dod, Marcos, Hernandez, Lei Lid, Philip J. Hastings, Christophe Herman, David Bates, Reuben S Harris, Kyle M, Miller, Susan M Rosenberg. (2013) Engineered proteins detect DNA breaks in human and bacterial cells. **ELife**, 2:e01222.
 12. **Joshi MC**, Bourniquel A, Fisher J, Ho BT, Magnan D, Kleckner N, Bates D. (2011) *Escherichia coli* sister chromosome separation includes an abrupt global transition with concomitant release of late- splitting intersister snaps. **Proc. Natl. Acad. Sci. USA.** 108:2765-2770.
 13. **Joshi MC**, Sharma A, Kant S, Birah A, Gupta GP, Khan SR, Bhatnagar R, Banerjee N. (2008) An insecticidal GroEL protein with chitin binding activity from *Xenorhabdus nematophila*. **J. Biol. Chem.** 283: 28287-28296.
 14. Banerjee J, Singh J, **Joshi MC**, Ghosh S, Banerjee N. (2006) The cytotoxic fimbrial structural subunit of *Xenorhabdus nematophila* is a pore-forming toxin. **J. Bacteriol.** 188: 7957-7962.
 15. Singh J, **Joshi MC**, Bhatnagar R. (2004) Cloning and expression of mycobacterial glutamine synthetase gene in *Escherichia coli*. **Biochem. Biophys. Res. Comm.** 317:634-638.

Book Chapter:

1. Visser BJ, **Joshi MC**, Bates D (2017) Multilocus Imaging of the *E. coli* Chromosome by Fluorescent In Situ Hybridization. **Methods Mol Biol.** 1624:213-226.

Book Review:

1. **Book Review, Current Science**, vol. 112, No. 4, 862 2017.
Book: 'Annual Review of Microbiology, Vol 69, 2015' edited by Susan Gottesman, Caroline S. Harwood and Olaf Schneewind.

Patents:

2023: India:

2020: India:

Application file number: E-2/1364/2021/DEL

Title of the invention: "A portable detection system for sensitive estimation of analytes".

Inventors/Applicants: Mohan Chandra Joshi, Tanveer Ahmad, Jawed Iqbal, Rohit Kumar, Gagan Deep Jhingan.

2008: European Union:

Publication number WO2008142707 A2

Application PCT/IN2008/000316

Publication date: Nov 27, 2008

Filing date: May 19, 2008

Priority date: May 21, 2007

Title of the invention: "Insecticidal XnGroEL Protein of *Xenorhabdus Nematophila*".

Inventors/Applicants: Mohan Chandra Joshi, Animesh Sharma, Ajanta Birah, Gorakh Prasad Gupta, Nirupama Banerjee, Rakesh Bhatnagar

Weblink: <http://www.google.com/patents/WO2008142707A2>

2007: India:

Application file number: 1092-DEL-07

Title of the invention: "Insecticidal XnGroEL Protein of *Xenorhabdus Nematophila*".

Inventors/Applicants: Mohan Chandra Joshi, Animesh Sharma, Ajanta Birah, Gorakh Prasad Gupta, Nirupama Banerjee, Rakesh Bhatnagar.

Supervision and Mentorship:

June 2019 – Aug 2019: Supervised Summer Research Fellow project of Miss. Aishwarya Kodavoor "Investigating gut microbial diversity and its biochemical activity associated with UC patients disease state using selection media and broth".

May 2019 – July 2019: Supervised Summer Research Fellow project of Miss. Sneha P Nair "Validation of Gut microbiota of Individuals categorised on the basis of Ayurveda".

May 2019 – July 2019: Supervised Summer Research Fellow project of Miss. Shreya Joshi entitled "Biochemical Validation of Gut Microbiota of Inflammatory Bowel Disease Patients."

Jan 2018 – June 2018: Supervised MSc dissertation project of Miss. Akanksha Negi entitled "Investigating the role of DNA repair protein at highly cohesed loci in *E. coli* genome."

Jan 2018 – June 2018: Supervised MSc dissertation project of Miss. Divya Jain entitled "Investigating DNA double strand break repair efficiency along the *E. coli* genome in wild type and mutants".

Teaching and e-content Development:

- **2022-2023: M.Sc Virology**
 - (a) **Basic Microbiology**
- **2021-2022: B.Sc. Biotechnology**
 - (a) **Bioethics and Biosafety**
- **2021-2022: M.Sc. Biotechnology**
 - (a) **Bioprocess Engineering and Fermentation Technology**
- **2019- Present: Post-graduate Diploma in Molecular Diagnostics**
 - (a) **OMICs based diagnostics**
 - (b) **Microbial pathogenesis**
- **2018-Present: Teaching PhD Coursework on;**
 - (a) **Chromosome Dynamics**
 - (b) **Research methodology**
- **2017: Paper coordinator** for the paper “Genetic Engineering and Recombinant DNA Technology” under **UGC ePG pathshala programme**, “an E-content Creation of Postgraduation Students (An MHRD project under NME-ICT)”.
- **2017: E-content writer for paper “Genetic Engineering and Recombinant DNA Technology” under UGC ePG pathshala programme**, “an E-content Creation of Postgraduation Students (An MHRD project under NME-ICT)”.

Research experience & Positions:

- **September 1st, 2016 – Present: Assistant professor (UGC-FRP)**, Multidisciplinary Centre for Advance Research and Studies (MCARS), Jamia Millia Islamia, Delhi, New Delhi-110025.
- **August 25th 2015- Aug 31st 2016: Scientific Group Head (Ramalingaswami Fellow)**, Laboratory of Chromosome Structure and Dynamics (LCSD), CDFD, Hyderabad.
- **March 2008- July 2015: Post Doc. Associate**, Department of Molecular and Human Genetics, Baylor College of Medicine (BCM), Houston, Texas, 77030, USA.
- **2002-2007: Ph.D. Scholar, Mentor: Prof. Rakesh Bhatnagar**, School of Biotechnology, Jawaharlal Nehru University, New Delhi, India 110067. **Thesis title:** “Characterization of GroEL homolog of *Xenorhabdus nematophila* with insecticidal activity in crop pest”.

Academic Background:

- **Ph.D. (Biotechnology), 2008**, School of Biotechnology, Jawaharlal Nehru University (JNU), India.
- **M.Sc. (Biotechnology), 2001**, School of Biotechnology, Jawaharlal Nehru University (JNU)

India.

- **B.Sc. (Zoology, Botany, Chemistry)**, 1999, Meerut College, Chaudhary Charan Singh University, Meerut, India.
- **Senior Secondary (Physics, Chemistry, Biology)**, 1996, Govt. inter college, Meerut, UP Board.
- **Secondary (Science)**, 1994, Ram Sahai Inter College, Meerut, UP Board.

Fellowships/Honors/Awards/Memberships:

- **2016: DBT-Wellcome Trust India Alliance Intermediate fellow**
- **2015: UGC- Faculty Recharge Programme Fellow** in Biological Sciences.
- **2015: Ramalingaswami Fellowship (Re-entry)**, Department of Biotechnology (DBT).
- **2015: Ramanujan Fellowship**, Department of Science and Technology (DST).
- **2015: Ramachandran Fellowship**, Centre for DNA Fingerprinting and Diagnostic (CDFD) tenure track faculty position.
- **2016: Associate editor** of “Microbiological Research” Journal, Elsevier.
- **2014: Third prize** for poster presentation at “Department of Molecular Virology and Microbiology Retreat, BCM”, Houston, Texas, USA.
- **2013: Ad-hoc Reviewer** for PLOS One Journal
- **2013: Second prize** for poster presentation at “Department of Molecular Virology and Microbiology Retreat, BCM”, Houston, Texas, USA.
- **2011: Third prize** for poster presentation at “Department of Molecular Virology and Microbiology Retreat, BCM”, Houston, Texas, USA.
- **2009: NSF Travel Grant** to attend “Bacterial and Phage meeting” in Wisconsin, Madison USA.
- **2008: First prize** for poster presentation at “Department of Molecular Virology and Microbiology Retreat BCM” in Houston, Texas, USA.
- **2007-2008: Student member** of American Society for microbiology (ASM).
- **2007: International Student Affairs Travel Award**, to attend 107th ASM General Meeting.
- **2004-2007: Received Senior Research Fellowship (SRF)** from Council of Scientific and Industrial Research (CSIR), Human Resource and Development ministry (HRD), Government of India.
- **2002-2004: Received Junior Research fellowship (JRF)** from CSIR, Government of India.
- **1999-2001: Scholarship** from Department of Biotechnology (DBT), Government of India.

Conferences, Meetings and Workshop:

- **May 19, 2023:** Invited talk at **Chaudhary Charan Singh University, Meerut, Uttar Pradesh**, titled “Nucleoid Painting: Spatial mapping of bacterial genome in high-resolution”.
- **March 18, 2023:** Invited talk at **SPSF’s National Annual Conference on “CRISPR and the Clinic : So Near and Yet So Far,”** at NAMS Auditorium, Near AIIMS, New Delhi.
- **10-12th July 2019:** Invited speaker at Meeting on Molecular Microbiology at CDFD Hyderabad, titled “Role of chromosome cohesion in double strand DNA breaks (DSBs) in *E. coli*”.
- **12-14 November 2018:** Attended “**10 year India alliance celebration**” in New Delhi.
- **June 2018-Sept 2018:** **Visiting scientist at University of Edinburgh** in the lab of Prof. David Leach.

- **March 6, 2018**: Invited talk at NISER, Bhubaneswar titled “Cohesion: A Twist in the Tale of Chromosome Segregation in *E. coli*”.
- **Oct 12th-13th, 2017**: Attended DBT-EMBL meeting on “**Towards India’s Associate Membership of EMBL**”, at Pravasi Bharatiya Kendra, New Delhi-India.
- **Feb 10th-11th, 2017**: Invited speaker in ““**Meeting on Molecular Microbiology**” (M³ or Mcube), at CDFD in Hyderabad. Title of the talk” Chromosome cohesion mediated DNA double strand break (DSB) repair in *E. coli*”.
- **October 20th, 2016**: Participated in “ Wellcome Trust/DBT India Alliance, Consort Strategy-Research Management and Administration Workshop” in New Delhi organized by “Wellcome Trust”, UK.
- **September 26-27th, 2016**: Participated as a “**Mentor**” in “14th Science Communication Workshop” organized by India Alliance, Hyderabad India.
- **Feb 27th -March 2nd, 2016**: Participated as a “young investigator” in **8th Young Investigators’ Meeting (YIM) 2016** at Manesar (or New Gurgaon), Haryana.
- **2011: Poster presentation on** “Topo IV mediated release of late splitting snap sites during chromosome segregation in *E. coli*” at “**Chromosome Dynamics: Gordon Research conference**” in Vermont, USA.
- **2010: Poster presentation on** *E. coli* Chromosome Dynamics: From single locus visualization to spatial 3D mapping” at “**Bacterial Cell Biology, Zing conference**”, Cancun, Mexico.
- **2009: Poster presentation on** “Role of TopoIV in *E. coli* Chromosome cohesion ” in **Bacterial and Phage meeting**” at Wisconsin, Madison, USA.
- **2008: Poster presentation on** “Characterization of GroEL homolog with insecticidal activity in crop pest” at **108th General meeting of American Society for Microbiology (ASM)**, Toronto, Canada.

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