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Dr. Aditya Mojumdar

Correspondence language: English
Sex: Male
Date of Birth: 1/10
Designated Group: Visible Minority
Canadian Residency Status: Canadian Citizen
Country of Citizenship: Canada

Contact Information

The primary information is denoted by (*)

Address

Primary Affiliation (*)

Dept. of Biochemistry and Microbiology
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Dr. Aditya Mojumdar

Degrees

2012/1 - 2015/4 — Doctorate, Doctorate in Philosophy, Molecular Biomedicine, Università degli Studi Di Trieste
Degree Status: Completed
Thesis Title: Structural and biochemical characterization of human RecQ4 helicase.

Supervisors: Silvia Onesti, 2012/1 - 2015/4

Research Disciplines: Biochemistry, Molecular Biology

Areas of Research: Genetic Diseases

Fields of Application: Biomedical Aspects of Human Health

2008/8 - 2010/12 — Master's non-Thesis, Master in Science, Applied Biotechnology, Uppsala University
Degree Status: Completed

2002/8 - 2006/7 — Bachelor's, Bachelors in Science, Biotechnology, Allahabad Agricultural Institute
Degree Status: Completed

Credentials

2022/4 — Certificate in University Teaching and Learning, The University of Calgary
Certificate in University Teaching and Learning from Taylor Institute of Teaching and Learning, University of Calgary.

Recognitions

2020/6 — BMB Postdoctoral Award - 500 (Canadian dollar)
The University of Calgary
Prize / Award
BMB Postdoctoral Award from Department of Biochemistry and Molecular Biology, University of Calgary

2020/2 — Howard Research Excellence Award - 250 (Canadian dollar)
The University of Calgary
Prize / Award
Howard Research Excellence Award from Charbonneau Cancer Institute, University of Calgary

2019/2 — Best Poster award - 250 (United States dollar)
Spatial Genome Organization Conference, Fusion Conferences
Prize / Award
Best Poster award on the project - "Nej1 interacts with the Mre11/Rad50/Xrs2 complex and regulates Dna2 and end-tethering at DNA double-strand breaks" in Spatial Genome Organization Conference organized by Fusion Conferences in Nassau, Bahamas

2016/9 - 2017/8	TRIL postdoctoral fellowship - 20,000 (Euro) International Centre for Theoretical Physics Prize / Award TRIL postdoctoral fellowship from International Centre for Theoretical Physics, Trieste Research Disciplines: Biochemistry, Molecular Biology
2012/1 - 2015/4	PhD fellowship - 36,000 (Euro) Università degli Studi Di Trieste Prize / Award PhD fellowship from University of Trieste awarded based on the academic excellence Research Disciplines: Biochemistry, Molecular Biology
2010/11	Best Poster award in Nov2k symposium - 7,000 (Swedish krona/kronor) Institute of Biosciences at NOVUM Prize / Award Best poster award on the project - "Purification of human heat shock factor DNA binding domain for crystallization trials."

User Profile

Researcher Status: Researcher
Research Career Start Date: 2015/07/01
Engaged in Clinical Research?: No

Research Interests: My research interest focusses on studying the mechanisms that play role in maintaining our genomic integrity and how these mechanisms go berserk with aging and in cancer cells. I am interested in studying DNA replication and repair, Genome organization using tools from Molecular biology, Biochemistry, Microbiology, Yeast genetics and Biotechnology.

Research Specialization Keywords: Genomic instability

Research Centres: University of Victoria

Technological Applications: Gene therapy, Peptides, proteins, enzymes

Disciplines Trained In: Biochemistry, Molecular Biology, Microbiology

Research Disciplines: Biochemistry, Molecular Biology

Areas of Research: Genomic Damage and Repair, DNA and RNA Chips

Fields of Application: Biomedical Aspects of Human Health

Employment

2025/8	Assistant Professor Biochemistry and Microbiology, University of Victoria Full-time, Assistant Professor Tenure Status: Tenure Track Supervising undergraduate and graduate students. Developing, teaching and coordinating undergraduate courses. Developing a research program in Molecular Life Sciences. Service to the department and the University. Research Disciplines: Biochemistry, Molecular Biology Areas of Research: Genomic Damage and Repair, DNA and RNA Chips Fields of Application: Biomedical Aspects of Human Health

2024/8 - 2025/7	Interim Assistant Teaching Professor Biochemistry and Microbiology, University of Victoria Full-time, Term, Assistant Professor Tenure Status: Non Tenure Track Teaching and coordinating undergraduate courses offered by the department.
2022/9 - 2024/7	Sessional Instructor University of Victoria Part-time, Sessional, Lecturer Teaching and coordinating undergraduate courses offered by the department Research Disciplines: Biochemistry
2022/5 - 2024/7	Research Associate Biochemistry and Microbiology, University of Victoria Full-time Research in Genomic instability using tools from Molecular biology, Biochemistry and Yeast genetics. Write research articles and publish them in internationally peer-reviewed journals. Present research in national and international conferences.
2018/1 - 2022/4	Postdoctoral Researcher Biochemistry and Molecular Biology, Cumming School of Medicine, The University of Calgary Full-time Research in Genomic instability using tools from Molecular biology, Biochemistry and Yeast genetics. Write research articles and publish them in internationally peer-reviewed journals. Present research in national and international conferences.
2015/7 - 2017/8	Postdoctoral Researcher Elettra Sincrotrone Trieste Full-time Research in factors playing role in DNA replication and repair using tools from Molecular biology, Protein Biochemistry and Protein Structural biology. Write research articles and publish them in internationally peer-reviewed journals. Present research in national and international conferences.
2011/9 - 2011/12	Research Assistant Elettra Sincrotrone Trieste Full-time Research on Structural studies of human RecQ helicases.

Affiliations

The primary affiliation is denoted by (*)

(*) 2025/8	Assistant Professor, Biochemistry and Microbiology, University of Victoria Research, Teaching and Service to the department and the University

Courses Taught

2025/09/03 - 2025/12/03	Instructor, Biochemistry and Microbiology, University of Victoria Course Title: Biochemistry and Human Health Course Code: BIOC102 Course Level: Undergraduate Academic Session: Fall

2025/09/03 - 2025/12/03	Course coordinator and Instructor, Biochemistry and Microbiology, University of Victoria Course Title: General Biochemistry I Course Code: BIOC300A Course Level: Undergraduate Academic Session: Fall
2025/01/07 - 2025/04/04	Course coordinator and Instructor, Biochemistry and Microbiology, University of Victoria Course Title: Biotechnology and Synthetic Biology Course Code: MICR405 Course Level: Undergraduate Academic Session: Spring
2025/01/07 - 2025/04/04	Course coordinator and Instructor, Biochemistry and Microbiology, University of Victoria Course Title: Biochemistry for Non-Majors Course Code: BIOC299 Course Level: Undergraduate Academic Session: Spring
2025/01/07 - 2025/04/04	Course coordinator and Instructor, Biochemistry and Microbiology, University of Victoria Course Title: Special Topics: Microbial Pathogenesis Course Code: BCMB489 Course Level: Undergraduate Academic Session: Spring
2024/09/04 - 2024/12/04	Course coordinator and Instructor, Biochemistry and Microbiology, University of Victoria Course Title: General Biochemistry I Course Code: BIOC300A Course Level: Undergraduate Academic Session: Fall
2024/01/03 - 2024/04/03	Course coordinator and Instructor, Biochemistry and Microbiology, University of Victoria Course Title: Biotechnology and Synthetic Biology Course Code: MICR405 Course Level: Undergraduate Academic Session: Spring
2024/01/03 - 2024/04/03	Course coordinator and Instructor, Biochemistry and Microbiology, University of Victoria Course Title: Special Topics: Microbial Pathogenesis Course Code: BCMB489 Course Level: Undergraduate Academic Session: Spring
2023/01/03 - 2023/04/04	Course coordinator and Instructor, Biochemistry and Microbiology, University of Victoria Course Title: Microbial Pathogenesis Course Code: MICR408 Course Level: Undergraduate Academic Session: Spring
2022/09/05 - 2022/12/01	Course coordinator and Instructor, Biochemistry and Microbiology, University of Victoria Course Title: Biotechnology and Synthetic Biology Course Code: MICR405 Course Level: Undergraduate Academic Session: Fall

Student/Postdoctoral Supervision

Bachelor's Honours [n=2]

2022/8 - 2023/4 Co-Supervisor	Liam Mitchell (Completed) , University of Victoria Student Canadian Residency Status: Canadian Citizen Thesis/Project Title: Dissecting the role of acidic-patch in Sgs1 in DSB repair regulation.
2022/5 - 2024/12 Co-Supervisor	Courtney Granger (Completed) , University of Victoria Student Canadian Residency Status: Canadian Citizen Thesis/Project Title: Characterizing role of the known DSB repair factors in MMEJ repair

Master's Thesis [n=1]

2023/9 Co-Supervisor	Lizzie Burke (In Progress) , University of Victoria Student Canadian Residency Status: Canadian Citizen Thesis/Project Title: Characterizing the role of Sgs1-Sumoylation in DSB repair.

Presentations

1. (2024). Dna2 nuclease resolves end-joining promoting RNA:DNA hybrids at double-strand breaks.EMBO Workshop on Chromatin dynamics and nuclear organization in genome maintenance, Leiden, Netherlands
   Main Audience: Researcher
2. (2024). Role of damage induced RNA:DNA hybrids in Double strand break repair pathway choice.Genome Regulation through RNA Conference, Cancun, Mexico
   Main Audience: Researcher
3. (2023). Dna2 nuclease resolves end-joining promoting RNA:DNA hybrids at double-strand breaks.NHEJ in Health and Diseases, Paris, France
   Main Audience: Researcher
4. (2022). During aging, changes in DNA double-strand break repair correlate with an increased rate of mutation.5th Canadian Symposium on Telomeres & Genome Integrity, Canmore, Alberta, Canada
   Main Audience: Researcher
5. (2021). A cellular model to study genome instability.Alberta Cancer Foundation Conference, Calgary, Canada
   Main Audience: Knowledge User
6. (2019). Nej1 interacts with the Mre11/Rad50/Xrs2 complex and regulates Dna2 and end-tethering at DNA double-strand breaks.Elettra Sincrotrone, Trieste, Italy
7. (2018). An alternative method to assay helicase activity.BMB Methods day, University of Calgary, Calgary, Canada
   Main Audience: Researcher
8. (2013). Structural and Biochemical study of RecQ Helicases.CSB X-ray Reunion, Stockholm, Sweden
   Main Audience: Researcher
   Invited?: Yes

Publications

Journal Articles

1. Mojumdar, A., Granger, C., Lunke, M., Evans, E., Cobb, JA. (2025). Dna2 nuclease resolves RNA:DNA hybrids at double-strand breaks.iScience. 28(9): 113235. http://dx.doi.org/https://doi.org/10.1016/j.isci.2025.113235,
2. Waheed, Y., Mojumdar, A., Shafiq, M., de Marco, A., De March, M. (2024). The fork remodeler helicase-like transcription factor in cancer development: all at once.Biochimica et biophysica acta. Molecular basis of disease. 1870(7): 167280. http://dx.doi.org/https://doi.org/10.1016/j.bbadis.2024.167280,
3. Mojumdar, A., Granger, C., Lunke, M., Cobb, JA. (2024). Loss of Dna2 fidelity results in decreased Exo1 mediated resection at DNA double-strand breaks.The Journal of biological chemistry. 300(3): 105708. http://dx.doi.org/https://doi.org/10.1016/j.jbc.2024.105708,
4. Mojumdar, A., Adam, N., Cobb, JA. (2022). Nej1 interacts with Sae2 at DNA double-stranded breaks to inhibit DNA resection.The Journal of biological chemistry. 298(6): 101937. http://dx.doi.org/https://doi.org/10.1016/j.jbc.2022.101937,
5. Mojumdar, A., Mair, N., Adam, N., Cobb, JA. (2022). Changes in DNA double-strand break repair during aging correlate with an increase in genomic mutations.Journal of molecular biology. 434(20): 167798. http://dx.doi.org/https://doi.org/10.1016/j.jmb.2022.167798,
6. Mojumdar, A., Adam, N., Cobb, J.A. (2022). Multifunctional properties of Nej1/XLF C-terminus promote end-joining and impact DNA double-strand break repair pathway choice.DNA Repair. 115: 103332. http://dx.doi.org/https://doi.org/10.1016/j.dnarep.2022.103332,
7. Moradi-Fard, S., Mojumdar, A., Chan, M., Harkness, T., Cobb, JA. (2021). Smc5/6 in the rDNA modulates lifespan independently of Fob1.Aging Cell. 20(6): e13373. http://dx.doi.org/https://doi.org/10.1111/acel.13373,
8. Kaur, J., Mojumdar, A. (2021). A Mechanistic Overview of Spinal Cord Injury, Oxidative DNA Damage Repair and Neuroprotective Therapies.The International Journal of Neuroscience. 133(3): 307-321. http://dx.doi.org/https://doi.org/10.1080/00207454.2021.1912040,
9. Hohl, M., Mojumdar, A., Hailemariam, S., Kuryavyi, V., Ghisays, F., Sorenson, K., et al. (2020). Modeling Cancer Genomic Data in Yeast Reveals Selection Against ATM Function During Tumorigenesis.PloS Genetics. 16(3): e1008422. http://dx.doi.org/https://doi.org/10.1371/journal.pgen.1008422,
10. Mojumdar, A. (2020). Mutations in conserved functional domains of human RecQ helicases are associated with diseases and cancer: A review.Biophysical Chemistry. 265: 106433. http://dx.doi.org/https://doi.org/10.1016/j.bpc.2020.106433,
11. Mojumdar, A., Deka, J. (2019). Recycling agro-industrial waste to produce amylase and characterizing amylase-gold nanoparticle composite.Int J Recycl Org Waste Agricult.8(1): 263-269. http://dx.doi.org/https://doi.org/10.1007/s40093-019-00298-4,
12. Mojumdar, A., Sorenson, K., Hohl, M., Toulouze, M., Lees-Miller, S., Dubrana, K., Petrini, JHJ., Cobb, JA. (2019). Nej1 Interacts with Mre11 to Regulate Tethering and Dna2 Binding at DNA Double-Strand Breaks.Cell Reports. 28(6): 1564-1573.e3. http://dx.doi.org/https://doi.org/10.1016/j.celrep.2019.07.018,
13. Mojumdar, A., De March, M., Marino, F., Onesti, S. (2017). The Human RecQ4 Helicase Contains a Functional RecQ C-terminal Region (RQC) That Is Essential for Activity.The Journal of biological chemistry. 292(10): 4176-4184. http://dx.doi.org/https://doi.org/10.1074/jbc.M116.767954,

14. Deka, J., Mojumdar, A., Parisse, P., Onesti, S., Casalis, L. (2017). DNA-conjugated gold nanoparticles based colorimetric assay to assess helicase activity: a novel route to screen potential helicase inhibitors.Scientific Reports. 7: 44358. http://dx.doi.org/https://doi.org/10.1038/srep44358,

15. Marino, F., Mojumdar, A., Zucchelli, C., Bhardwaj, A., Buratti, E., Musco, G., Vindigni, A., Onesti, S. (2016). Structural and biochemical characterization of an RNA/DNA binding motif in the N-terminal domain of RecQ4 helicases.Scientific Reports. 6: 21501. http://dx.doi.org/https://doi.org/10.1038/srep21501,

Book Chapters

1. Mojumdar, A., Deka, J. (2018) Assaying the activity of Helicases: An Overview.Helicases from all Domains of Life. Academic Press Elsevier. : 235-246. http://dx.doi.org/https://doi.org/10.1016/C2017-0-01756-1,