

Curriculum Vitae

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Google scholar:

https://scholar.google.se/citations?hl=en&user=nGAIL_0AAAAJ&view_op=list_works&sortby=pubdate#

Educational Qualifications:

S. No	Degree	Year	University
1.	PhD, Molecular Medicine	2011	Special Centre for Molecular Medicine, Jawaharlal Nehru University New Delhi, India-110067
2.	M.Sc, Life Sciences	2004	Jawaharlal Nehru University, New Delhi India-110067

Work Experience: ≈ 10 years of post PhD research and teaching experience.

1. **2020 – Present:** Assistant Professor at the Department of Biotechnology, Central University of Haryana, Mahendergarh 123031, India.
2. **2018- 2020:** Assistant Professor at Department of Sports Bioscience, Central University of Rajasthan, Bandarsindri, Ajmer, India.
3. **2016 – 2018:** Researcher at the Department of Biochemistry and Biophysics, Stockholm University, Sweden.
4. **2011- 2015:** Wennergrain Foundation Postdoctoral Fellow and researcher at the Department of cell and molecular biology, Uppsala University, Sweden.

Teaching experience: ≈ 4 years of teaching experience at university level. Some of the courses which I have taught at Masters (M. Sc Biotechnology, M. Sc sports Biochemistry) and PhD (Biotechnology) level are as follows. 1. Cell and Molecular Biology, 2. Principles of Biochemistry, 3. Biophysics and Nanosciences, 4. Animal Biotechnology, 5. Metabolic Engineering, 6. Pharmaceutical Biotechnology, 7. Advances in genetic engineering, 8. Biomolecules and metabolism, 8. Sports and Exercise metabolism, 9. Sports genetics and performance, 10. Laboratory etc.

Ongoing Research Projects

1. Project 1 (2021-2023, two years) titled-Elucidating the role of superoxide-dismutase (SOD) and other accessory constituents of the Mycobacterial Respiratory chain Supercomplex III-IV. Total sanctioned amount is Rs 3105776. **Project summary-** Recently we have shown that in Mycobacterium smegmatis respiratory complex III and IV assemble into larger structure, called supercomplex III-IV (SC). Structural

and biochemical characterisation of SC led to identify three novel constituents; SOD, MSMEG_4692 and MSMEG_4693. This project proposal deals with finding the roles of these three new components with respect to SC and respiratory chain. It is hypothesised that SOD provide the e- to SC. This will be tested employing various biochemical and biophysical experiments. These three proteins will be isolated and biochemically characterised. The null mutants of these genes will be generated and SC will be isolated and characterised from these.

2. **Project 2** (2021-2024, three years) titled-Docking and validation of compound inhibitors for mycobacterial electron transfer chain supercomplex III-IV. Sanctioned amount is Rs 1000000. **Project summary-** In the recent times electron transfer chain (ETC) is emerging an attractive target for drug discovery for treatment of Mycobacterium tuberculosis infections. Drugs such as Bedaquiline is approved for the treatment of drug resistant TB. The drug Q203 (Bc1 inhibitor) is under clinical trial. Clofazimine, originally anti-epileptic drug binds to complex I and has been repurposed to treat tuberculosis. Therefore, this project aims to find out the novel inhibitors of the electron transfer chain through computational and biochemical approaches.

Laboratory members

Current

1. Ms Indu, PhD student
2. Ms Sarika Thakur, Junior research fellow

Past (supervisor to Msc Thesis)

1. Aritra Chakraborty, M. Sc thesis (2021)
2. Deepika, M. Sc thesis (2021)
3. Manoj, M. Sc thesis (2021)
4. Subrata Bairy, M. Sc thesis (2021)
5. Sakshi Singh, M. Sc thesis (2020)
6. Saketi Rangarao, M. Sc thesis (2020)

Publications:

1. Malavika Ramesh, **Ram Gopal Nitharwal**, Phani Rama Krishna Behra, B. M. Fredrik Pettersson, Santanu Dasgupta & LeifA. Kirsebom (2021) Intracellular localization of the mycobacterial stressosome complex. *Scientific Reports* | (2021) 11:10060 | <https://doi.org/10.1038/s41598-021-89069-8>.
2. Benjamin Wiseman, **Ram Gopal Nitharwal**, Göran Widmalm, Martin Högbom (2021) Structure of a full-length bacterial polysaccharide co-polymerase. *Nature communications* 12(1), 1-12. <https://doi.org/10.1038/s41467-020-20579-1>
3. **Ram Gopal Nitharwal***, Benjamin Wiseman*, Olga Fedotovskaya, et al. (2018) Structure of a functional obligate complex III IV respiratory supercomplex from Mycobacterium smegmatis. *Nature Structural & Molecular Biology* | VOL 25 | DECEMBER 2018 | 1128–1136. * **Equal first author**
4. Isao Masuda, Takao Igarashi, Reiko Sakaguchi, **Ram G Nitharwal**, Ryuichi Takase, et al. (2016) A genetically encoded fluorescent tRNA is active in live-cell protein synthesis. *Nucleic Acids Research*, 45 (7), 4081-4093.
5. V Verma, A Kumar, **RG Nitharwal**, J Alam (2016) Modulation of the enzymatic activities of replicative helicase (DnaB) by interaction with Hp0897: a possible mechanism for helicase loading in Helicobacter pylori. *Nucleic acids research*, 44 (7), 3288-3303.
6. Singh B, **Nitharwal RG**, Ramesh M, et al. (2013) Asymmetric growth and division in Mycobacterium spp.: compensatory mechanisms for non-medial septa. *Mol Microbiol*. 88(1):64-76.
7. Pettersson BM, **Nitharwal RG**, Das S, et al. (2013) Identification and expression of stressosomal proteins in Mycobacterium marinum under various growth and stress conditions. *FEMS Microbiol Lett*. 342(2):98-105.

8. **Nitharwal RG**, et al. (2012) DNA binding activity of *Helicobacter pylori* DnaB helicase: the role of the N-terminal domain in modulating DNA binding activities. **FEBS J.** 279(2):234-50. **Cover page paper.**
9. **Nitharwal RG**, et al. (2010) *Helicobacter pylori* chromosomal DNA replication: current status and future perspectives. **FEBS Lett.** 585(1):7-17.
10. **Ram G. Nitharwal***, Atul Sharma* et al. (2009) *Helicobacter pylori* single-stranded DNA binding protein-functional characterization and modulation of *H. pylori* DnaB helicase activity. **FEBS Journal**, 276 519-531. * **Equal first author**
11. Kashav T, **Nitharwal R**, et al. (2009) Three-dimensional structure of N-terminal domain of DnaB helicase and helicase-primase interactions in *Helicobacter pylori*. **PLoS One**, (10) :e7515
12. **Ram Gopal Nitharwal**, et al. (2007) The domain structure of *Helicobacter Pylori* DNA B helicase: The 'N' Terminal domain can be dispensable for Helicase activity whereas the extreme 'C' terminal region is essential for its function. **Nucleic Acids Research**, 35(9), 2861–2874.
13. Ashish Gupta, Parul Mehra, **Ram Gopal Nitharwal**, et al. (2006) Analogous expression pattern of *Plasmodium Falciparum* Replication initiation proteins PfMCM4 and PfORC1 during the asexual and sexual stages of intraerythrocytic developmental cycle. **FEMS Microbiology Letter**, 261, 12-18.

Technical Expertise

Extensive experience in working with pathogenic bacteria such as *Helicobacter pylori*, *Mycobacterium* spp, *Corynebacterium* and *E. coli*. Target discovery, docking, Cryo-EM structure determination, protein expression and purification, size exclusion chromatography, Immunofluorescence, Immunohistology, antibody production and purification, Western Blotting, Molecular Biology techniques, Various Biochemical assays, Polymerase chain reaction and oligo designing, Cell culture, Proteomic, DNA and RNA techniques. Data analysis using various softwares.

Presentations:

- First Prize (poster presentation) at- 'Antimicrobial Drug Resistance and the Development of New Antibiotics', Nov 22-25, 2007, jointly held by Indian National Science Academy and German Academy of Science Leopoldina in new Delhi.
- Presentation at 6th Rajasthan Science Congress 13-15 Oct 2018, at Central University of Rajasthan.
- Invited lecture at Department of Biochemistry Central University of Rajasthan, April 4, 2018.
- Presentation at 'Architecture and Functional Dynamics of the Cellular Power Plant' Meeting at Sigtunastiftelsen, Sigtuna September 30 – October 1, 2016.
- Poster presentation at International symposium on aminoacyl-tRNA synthetases, Barcelona, Spain, 18 Oct 2015 - 22 Oct 2015.