CURRICULUM VITAE – NANDINI RANI

Nationality : Indian
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PROFESSIONAL SUMMARY

A researcher seeking to advance scientific knowledge through interdisciplinary research and continuous learning. Committed to contributing positively while pursuing excellence in sciences.

CURRENT

Oct 2026 – current	Position:	PhD scholar in Genetics, Molecular and Cellular biology
	Sector:	Department of biology and biotechnology , University of Pavia, Italy
	Supervisor and co-supervisor:	Dr. Claudia Binda
	Project title:	Biochemical and structural studies on Monoamine Oxidases as drug targets for neurodegenerative diseases

WORK EXPERIENCE

Jan 2026 – May 2026	position:	Graduate researcher
	Type of Sector:	Department of Chemistry, University of Milan
	Name of employer:	Dr. Carlo Morelli
	Project title:	Enzyme catalysis and biosynthesis using lipase activity for non-canonical transformations

EDUCATION AND QUALIFICATIONS

Sept 2023 – Oct 2025	Master of Science:	Molecular Biotechnology and Bioinformatics (LM-8)
	Final grade:	109/110
	Thesis title:	Dissecting the Catalytic and Autoregulation mechanism and Actin interaction of human MICAL1
	University:	University of Milan
	Country:	Italy
Aug 2019 – May 2023	Bachelor:	Biotechnology
	Final grade:	8.51/10
	Theses title:	1. Molecular docking study of sars-cov-2 main protease against natural molecules 2. Identification and characterization of Antimicrobial Activity in Rhizosphere Fungal Metabolites
	University:	UIET., Kurukshetra University
	Country:	India

RESEARCH EXPERIENCE

- ***Enzyme catalysis and biosynthesis using lipase activity for non canonical transformations***:
  - Lipase-mediated synthesis, reaction optimization
  - Analytical Chemistry: Multi-dimensional NMR spectroscopy (^{1}H, ^{13}C, 2D techniques), HPLC method development, TLC analysis, Flash chromatography, polarimetry.
- ***Dissecting the Catalytic and Autoregulation mechanism and Actin interaction of human MICAL1 | 10/08/2024 - 01/08/2025***
  - Investigated the molecular "on/off" switches of human MICAL1 proteins, essential regulators of the cell's structural framework (actin cytoskeleton), using biophysical and biochemical methods.
  - Engineered and purified recombinant proteins using multi-step chromatography (Affinity, Ion-Exchange, SEC), achieving high-purity samples for structural analysis.

- Characterized enzyme kinetics and inhibitory profiles using steady-state and stopped-flow techniques to map the protein's structure-function relationship.
- Analyzed complex protein-protein interactions with F-actin through high-speed co-sedimentation.
- Contributed to structural studies using cryo-EM

❖ ***MOLECULAR DOCKING STUDY OF SARS-COV-2 MAIN PROTEASE AGAINST NATURAL MOLECULES. |11/03/2023 - 15/05/2023***

- Conducted virtual screening of a library of natural compounds to identify potential inhibitors of the SARS-CoV-2 main protease (Mpro).
- Modeled enzyme-ligand binding interactions to predict therapeutic efficacy, contributing to the global effort in discovering novel treatments for COVID-19.
- Utilized computational docking tools to evaluate binding affinities and structural stability of drug candidates.

PROFESSIONAL CERTIFICATIONS AND TRAININGS

COURSE NAME	INSTITUTION	SKILLS ACQUIRED
Advanced techniques of molecular biology, proteomics and industrial microbiology	Rapture Biotech International, Noida, India	
Drug discovery and development	Decode Life	Linux environment, Machine learning, MD simulation, Molecular docking, Python
Protein engineering and enzymology	Unimi	
Python for genomic data science	Coursera	Biopython and next generation data analysis

LANGUAGES

Mother tongue - Hindi

Other languages	**Understanding**		**Speaking**		**Writing**
	Listening	Reading	Spoken interaction	Spoken production	
English	Fluent	Fluent	Fluent	Fluent	Fluent
Italian	Intermediate	Intermediate	Basic	Basic	Basic

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Piacenza, 02/07/2026 *Nandini Rani*