

RACHANA NAGAR

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Trained Human Geneticist and Cancer Biologist with expertise in Molecular Biology, Mammalian cell culture and Animal (mice) Handling

OBJECTIVE

Working to understand the mechanisms of complex disorders like cancer: tumorigenesis, metastasis, and resistance mechanisms.

SKILLS

- **Cancer Biology**
Mammalian cell culture, transduction (editing using retro, lenti virus, si RNA transfection) Analysis of cancer cell proliferation, metastasis and apoptosis
- **Molecular Biology**
Nuclei acid purification and quantification, Cloning, PCR (qPCR), mutagenesis, CRISPR, Western, Southern, recombinant protein expression and purification, Co-Immunoprecipitation, Sanger sequencing, Library preparation for RNA seq, single cell, ATAC sequencing.
- **Imaging**
Immunofluorescence, ImmunoHistochemistry
- **Genetics**
Designing and setting up mice crosses, genotyping, xenografts studies. Cytogenetics: karyotyping
- **Bioinformatics**
BLAST, BLAT, CLUSTER-W, Primer designing, identification of promoter region, protein structure and function predictions tools. Basics for R
- **Biostatistics**
Knowledge of basic statistics used for cohort, case-control studies in population and clinical genetics

AWARDS & HONORS

- **2004-2006** Student fellowship for master's degree in Molecular and Human Genetics by Department of Biotechnology (DBT) Government of India.
- **2006** GATE- (Graduate Aptitude Test in Engineering)

EDUCATION

- **2007 – 2015**
Banaras Hindu University
PhD
Molecular and Human Genetics
Mentor: Prof. Rajiva Raman
- **2004 – 2006**
Banaras Hindu University
Master of Science (M.Sc)
Molecular and Human Genetics
Mentor: Prof. S. C. Lakhota
- **2004 – 2002**
Purvanchal University
Bachelors of Science (B.Sc)
Biotechnology

PROFESSIONAL EXPERIENCE

2021 - Present

Lupin Research Park, Pune-411057

- Focusing on developing small molecules as a therapeutic for cancer across different projects.
- Work done led to completion of one of the projects.
- Standardization of new invitro assays for clinically relevant targets.
- Contributed to the ongoing projects with competitive intelligence and literature updates.

2016-2021

Stony Brook University, NY, USA

Postdoctoral Assoc.

PI: Dr. Luis Martinez

Projects:

- Studying role of mtp53 in regulating sting machinery and hence activation of the innate immune response
- Role of a Ras-Gap, RasaL2, in regulation of NF- κ B signaling and hence inflammation and invasion
- Delineating the mechanisms involved in resistance against chemotherapy in melanoma.

Responsibilities: Planning and conducting the experiments. Training graduates (rotating students) and other interns. Project writing.

2007-2015

Banaras Hindu University, India

Graduate Scholar

Mentor: Prof. Rajiva Raman

Thesis Title: Genetic and clinical heterogeneity in Hemoglobinopathies in population from Varanasi and cities of eastern Indian states.

- Collected Blood sample from various healthy populations of the adjoining states
- Identified novel mutation and promoter region polymorphisms for Thalassemia cases.
- Established the genotypic – phenotypic co-relation in Thalassemia Patients

Publication: 4 Research Articles

2006-2014

Banaras Hindu University, India

Part time, Geneticist

Center for Genetics Disorders

Testing and Reporting of referrals cases of Genetic disorders by Karyotyping and DNA sequencing (Down syndrome, Turners, Thalassemia's), and Prenatal Diagnosis

PUBLICATIONS

- Monisankar Ghosh, Suchandrima Saha, Julie Bettke, **Rachana Nagar**, Alejandro Parrales, Tomoo Iwakuma, Adrianus W. M. van der Velden, Luis A. Martinez. Mutant p53 suppresses innate immune signaling to promote tumorigenesis. *Cancer Cell*. (in press)
- Valentina Schmidt, **Rachana Nagar**, Luis Martinez. Control of Nucleotide Metabolism Enables Mutant p53's Oncogenic Gain-of-Function Activity. *Int J Mol Sci*. (2017) Dec 19;18(12).
- **Rachana Nagar**, Rajiva Raman. Diversity of Sickle Cell trait in Jharkhand state in India: Is it the zone of contact between two geographically and ethnically distinct populations in *Indian Journal of biosciences* (2015) 40 (3), 539-547.
- **Rachana Nagar**, Sujata Sinha and Rajiva Raman. Genotype-Phenotype correlation and report of novel mutations in β -globin gene in thalassemia Patients. *Blood Cells, Molecules, and Diseases* (2015). 55 (1), 10-14.
- **Rachana Nagar**, Sujata Sinha and Rajiva Raman. Haemoglobinopathies in eastern Indian states: a demographic evaluation. *Journal of community genetics* (2015). 6 (1), 1-8.
- KK Sukla*, **Rachana Nagar***, R Raman. Vitamin-B12 and folate deficiency, major contributing factors for anemia: A population based study. *e-SPEN Journal* (2014). 9 (1), e45-e48.

*Equal contributions.

PRESENTATIONS

- Cold Spring Harbor meeting: Biology of Cancer: Microenvironment & Metastasis. CSHL, New York, USA. 24th – 28th September, 2019. (Oral)
- International symposium on Development and Complex disorders & 38th annual conference of the Indian Society of Human Genetics: Genomics and Community Health at Centre for Genetic Disorders, Banaras Hindu University, 9th – 11th December, 2012. (Poster)
- International conference on Genes, Genetics & genomics: Today & Tomorrow-Human Concerns and 37th Annual conference of the Indian Society of Human Genetics at Punjab University, Chandigarh, 3rd – 5th March 2012. (Poster)
- 35th Annual Conference of the Indian Society of Human Genetics: Role of genomics in clinical practice, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow, 6th – 8th March 2010. (Poster)

TRAINING/ WORKSHOP

- **Hands-on training on methodologies in Epigenetic Chromatin modifications (Bisulphite sequencing, ChIP and 3C)** by Cytogenetics Laboratory, Department of Zoology and Centre for Genetic Disorders, Banaras Hindu University, from December 11th - 17th, 2013.
- **Hands-on training in Next-generation sequencing- Illumina**, at Interdisciplinary School of Life Sciences and Centre for Genetic Disorders, from 17th – 25th December 2012.
- **Hands-on training on “Research and Data Analysis using SPSS** by DST-Centre for interdisciplinary mathematical sciences”, BHU during 27th – 28th January 2011.
- **Two-month Summer Internship on “Role of *Phyllanthus Amarus* in down regulating HPV in cervical cancer cell lines”** at Institute of Cytology and Preventive Oncology (ICPO), Noida under Dr. B.C. Das, PhD., during May- July 2005

AREA OF INTERESTS

Clinical and Molecular Genetics, Cytogenetics, Cancer Biology, Development Biology