Curriculum-Vitae

Niti Kumar

Molecular Microbiology and Immunology
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Research Interests

- Investigating the genome and proteome maintenance pathways in human malaria parasite. We recently also started exploring the fission-fusion machinery which helps in organellar division in the parasite
- Exploring the medicinal chemistry landscape for novel antimalarial compounds and investigating their mode of action. Participation in open source drug discovery initiatives such as Medicines for Malaria Venture (MMV), Malaria Drug accelerator (MalDA, coordinated by MMV and Gates foundation)
- Capacity building for synthesis of indigenous fluorophores and quenchers as TaqMan-like probes for RT-PCR based diagnosis of emerging viral infections and co-infections.

Professional Experience

INSITITUION	POSITION	EXPERIENCE
CSIR-Central Drug Research Institute, Lucknow	Principal Scientist (Sep 2022-till date)	-Investigating the fission and fusion processes in the malaria parasite - Understanding critical genome and proteome quality control pathways in human malaria parasite. - Investigating new antimalarial compounds and exploring their mode of action.
CSIR-Central Drug Research Institute, Lucknow	Senior Scientist (Sep 2017-till date)	
CSIR-Central Drug Research Institute, Lucknow	Scientist (Sep 2013-Sep 2017)	
Max Planck Institute of Biochemistry, Munich, Germany	EMBO Post-doctoral fellow (Feb 2009-Aug 2013)	Probing ribosome-nascent complexes through FRET.
CSIR-Institute of Genomics and Integrative Biology, New Delhi	PhD (Sep 2004- Jan 2009)	Understanding the thermodynamics of quadruplex-duplex transition.

Southern Denmark University, Odense, Denmark	Marie Curie Early Stage Researcher (May 2005-Jan 2006)	Investigating the role of modified nucleotides on non-canonical secondary structures (i-motif and triplexes).

Technology transfer:

1) Technology for "Fluorescent Dye and Quenchers for the development of Indigenous qRT-PCR testing kit" was transferred to M/s Biotech Desk Pvt. Ltd. (BDPL), Hyderabad. (Technology team comprised of research group of Drs. Atul Goel, Ashish Arora, Niti Kumar and Damodar Reddy)

Patent details:

NFO	Title	Inventors	Prov. Filing Date	Application no.
0176NF2021/IN	SUBSTITUTEDDIAZENYLANILINES AS FLUORESCENCE QUENCHER ANDUSE THEREOF	Atul Goel, Kundan Singh Rawat, Priyanka Pandey, Ashish Arora, **Niti Kumar**, Damodara Reddy Nandarapu	23/Nov/2021	202111054081

2) Technology for multiplexed detection of Arboviruses (Dengue, Chikungunya and Zika) transferred to MyLab Diagnostics (Pune) (Technology team comprised of research group of Drs. Atul Goel, Ashish Arora and Niti Kumar)

Fellowships and other Recognitions

1. **Swarnajayanti Fellowship (2021)** by Department of Science and Technology (DST, Government of India). This fellowship is given to young scientist to support innovative basic/fundamental research.
2. **SERB Women Excellence Award 2020** by Department of Science and Technology (Government of India).
3. **Indian National Young Academy of Science (INYAS)** member (2020-2024).
4. **Innovative Young Biotechnologist Award (IYBA-2015)** by Department of Biotechnology (Government of India).
5. **Ramalingaswami Fellowship (2013-2018)** by Department of Biotechnology (Government of India). This is relocation fellowship given to Indian nationals to start research groups in India as independent group leader.
6. **INSA Medal for Young Scientist (2010)** by Indian National Science Academy (INSA).

7. **EMBO** Post Doctoral Fellowship **(2010-2012)** by European Union**.**
8. **Alexander von Humboldt** Fellow **(2010).**
9. **Marie Curie Early Stage Research Fellowship (May 2005-Jan 2006)** by European Union under 6th Framework Programme.

Research publications from work done at CSIR-CDRI

(* publications as Corresponding author)

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1) **Understanding the role of RING-between-RING E3 ligase of the human malaria parasite**

   Kumari V, Vidyarthi S, Tripathi A, Chaurasia N, Rai N, Shukla R, Noorie SN, Bhati G, Anjum S, Anas M, Ahmed S, **Kumar N***
   Proteins: Structure, Function, Bioinformatics (**2025**, Just accepted)

2) **Rationally Designed G-Quadruplex Selective "Turn-On" NIR Fluorescent Probe with Large Stokes Shift for Nucleic Acid Research-Based Applications.**
   Parveen S, Chaurasia N, Gupta S, Vidyarthi S, Gupta N, Pandey P, Pant B, Srivastava KR, **Kumar N***, Goel A***. ACS Appl Bio Mater. 2024 Nov 18;7(11):7233-7243.**

3) **Distinct dynamical features of plasmodial and human HSP70-HSP110 highlight the divergence in their chaperone-assisted protein folding**
   Tripathi A, Galdo SD, Chandramouli B*, **Kumar N***
   BBA-Proteins and Proteomics 1871(2023)140942.

4) **Synthesis and in vitro SAR evaluation of natural vanillin-based chalcones tethered quinolines as antiplasmodial agents**
   Andhare NH., Anas M, Rastogi SK, Manhas A, Thopate Y, Srivastava K, **Kumar N**, and Sinha AK
   Medicinal Chemistry Research. 2022 Oct 10:1-3. https://doi.org/10.1007/s00044-022-02975-y

5) **Synthesis, biological evaluation, Structure - Activity relationship studies of quinoline-imidazole derivatives as potent antimalarial agents**
   Roy D, Anas M, Manhas A, Saha S, **Kumar N***, Panda G*
   Bioorg Chem. 2022 Apr; 121:105671. doi: 10.1016/j.bioorg.2022.105671.

6) **Adenine Modification at C7 as a Viable Strategy to Potentiate the Antimalarial Activity of Quinolones.**

Kurian J, Kumari V, Chaluvalappil SV, Anas M, Manhas A, Kalluruttimmal R, **Kumar N***, Manheri MK*
ChemMedChem. 2022 Jan 19;17(2):e202100472. doi: 10.1002/cmdc.202100472.

7) **Synthesis and Antimalarial Activity of 4-Methylaminoquinoline Compounds against Drug-Resistant Parasite.**
Tiwari VS, Joshi P, Yadav K, Sharma A, Chowdhury S, Manhas A, **Kumar N**, Tripathi R, Haq W
ACS Omega. 2021 May 11;6(20):12984-12994.

8) **Evaluation of ethnopharmacologically selected Vitex negundo L. for In vitro antimalarial activity and secondary metabolite profiling.**
Dwivedi MK, Shukla R, Sharma NK, Manhas A, Srivastava K, **Kumar N**, Singh PK.
J Ethnopharmacol. 2021 Jul 15;275:114076.

9) **Identification of natural products as potential pharmacological chaperones for protein misfolding diseases.**
Sharma R, Srivastava T, Pandey AR, Mishra T, Gupta B, Reddy SS, Singh SP, Narender T, Tripathi A, Chandramouli B, Sashidhara KV, Priya S* and **Kumar N***
ChemMedChem, 2021, 16 (13): 2146-2156.

10) **Structural-functional diversity of malaria parasite's PfHSP70-1 and PfHSP40 chaperone pair gives an edge over human orthologs in chaperone-assisted protein folding.**
Anas M., Shukla A, Tripathi A, Kumari V, Prakash C, Nag P, Kumar SL, Sharma SK, Ramachandran R and **Kumar N***
Biochemical Journal, 2020, 477 (18): 3625-3643

11) **Extra-ribosomal functions of *Mtb* RpsB in imparting stress resilience and drug tolerance to mycobacteria.**
Prakash C, Pandey M, Talwar S, Singh Y, Kanojiya S, Pandey AK, **Kumar N***
Biochimie, 2020, 177: 87-97

12) **Protein quality control machinery in intracellular protozoan parasites: hopes and challenges for therapeutic targeting**.
Anas M, Kumari V, Gupta N, Dube A, **Kumar N***
Cell Stress Chaperones, 2019, 24 (5): 891-904
13) **Understanding organellar protein folding capacities and assessing their pharmacological modulation by small molecules**.

Sharma R, Pramanik MMD, Chandramouli B, Rastogi N, **Kumar N***
European Journal of Cell Biology, 2018, 97 (2):114-125.

14) **Investigating Pharmacological Targeting of G-Quadruplexes in the human malaria parasite**.
Anas M, Sharma R, Dhamodharan V, Pradeepkumar PI, Manhas A, Srivastava K, Ahmed S, **Kumar N***
Biochemistry, 2017, 56 (51):6691-6699.

15) **Genome-wide regulatory dynamics of G-quadruplexes in human malaria parasite *Plasmodium falciparum*.**
Bhartiya D, Chawla V, Ghosh S, Shankar R, **Kumar N***
Genomics, 2016, 108 (5-6):224-231.

16) **Co-evolutionary analysis implies auxiliary functions of HSP110 in *Plasmodium falciparum*.**
Bhartiya D, Chandramouli B, **Kumar N***
Proteins, 2015, 83 (8):1513-25.

Book Chapter:

New Drug Discovery and Development in India to Counter Malaria
Niti Kumar and Saman Habib
Book chapter "Drug Discovery and Drug Development: The Indian Narrative"
Coordinated by Indian National Science Academy (INSA)
Publishers: SPRINGER

Other contributions:

- **The journey of the world's first non-steroidal contraceptive from Academic venture to National family programme.**

  Kumar N, Pant G, Kulkarni SR
  Current Science, 2018, 115 (9): 1638-40.

- **"I am not a wicked creature"**
  Vigyan Prasar's DREAM 2047 newsletter (Sep 2020, page 12-13) (Department of Science and Technology, Government of India)
  (Describing fascinating aspects of biology, ecology and immunity of bats and busting the myths)