



**MANAV RACHNA INTERNATIONAL INSTITUTE OF RESEARCH AND STUDIES, FARIDABAD**

Sector 43, Aravalli Hills, Manav Rachna Campus Rd, Faridabad, Haryana 121004

**DR. KANCHAN BHARDWAJ**

**Designation:** Associate Professor

**Qualifications:** B.Sc. (Delhi University), M.Sc. Biotechnology (Madurai Kamaraj University), PhD., Biochemistry (Indian Institute of Science).

**Email ID:** kanchan.fet@mriu.edu.in

**Experience:** 16 Years



[Google Scholar Profile:](https://scholar.google.com/citations?user=4eynB3cAAAAJ&hl=en)

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**Research Interests:** Viral genes and genomics for fundamental understanding and biotechnological applications.

**+ Journal Publication Details:**

1. Bhardwaj K\* (2013). How prepared are we to control severe acute respiratory syndrome in future. American Journal of Virology. 2: 8-19. (An invited review article). (\* corresponding author).
2. Bhardwaj K\*, Liu P, Leibowitz JL, Kao CC (2012). The Coronavirus endoribonuclease Nsp15 interacts with Retinoblastoma tumor suppressor protein. Journal of Virology 86(8):4294. (\* corresponding author).
3. Lai Y, Adhikarakunnathu S, Bhardwaj K, Ranjith-Kumar CT, Wen Y, Jordan J, Wu L, Dragnea B, San Mateo L and Kao CC (2011). LL37 and cationic peptides enhance TLR3 signaling by viral double-stranded RNAs. PLoS ONE 6(10):e26632.
4. Lai Y, Yi G, Chen A, Bhardwaj K, Valverde RA, Zlotnick A, Mukhopadhyay S, Ranjith-Kumar CT, and Kao CC (2011). Viral double-strand RNA-binding proteins can enhance innate immune signaling by toll-like receptor 3. PLoS ONE 6(10):e25837.
5. Ranjith-Kumar CT, Wen Y, Baxter N, Bhardwaj K and Kao CC (2011). A cell- based assay for RNA synthesis by the HCV polymerase reveals new insights on mechanism of polymerase inhibitors and modulation by NS5A. PLoS ONE 6(7): e22575.
6. Ortiz-Alcantara J, Bhardwaj K, Palaninathan S, Frieman M, Baric RS, Kao CC (2010). Small molecule inhibitors of SARS-CoV Nsp15 endoribonuclease, mechanism of action and insight into coronavirus infection. Virus Adaptation and Treatment 2: 125-133.
7. Mao C\*, Bhardwaj K\*, Sharkady SM, Fish RI, Driscoll T, Wower J, Zwieb C, Sobral BW, Williams KP (2009). Variations on the tmRNA gene. RNA Biology 6(4) 355-361 Cover illustration. (\* equal contributors).

8. Ranjith-Kumar CT, Murali A, Dong W, Srisathiyarayanan D, Vaughan R, Alcantara JMO, Bhardwaj K, Li X, Li P, Kao CC (2009). Agonist and antagonist recognition by RIG-I, a cytoplasmic innate immunity receptor. *Journal of Biological Chemistry* 284(2):1155-1165.

**+ Administrative Responsibilities:**

- Placement Coordinator of Department since July 2021
- Student's club since July 2021

**+ Professional Affiliation:**

2017-2021: Regional Centre for Biotechnology, Faridabad, Haryana, INDIA

2012-2013: Department of Pediatrics, All India Institute of Medical Sciences, New Delhi, INDIA.

2008-2012: Department of Molecular & Cellular Biochemistry, Indiana University, Bloomington, IN-USA.

2003-2008: Department of Biochemistry and Biophysics, Texas A&M University, TX-USA.

2001-2003: Department of Biology, Indiana University, Bloomington, IN-USA.

**+ Talks Delivered:**

1. **Understanding the Human Gut Virome.** (2014) Center for Human Microbial Ecology, Translational Health Science and Technology Institute, Gurgaon.
2. **Neonatal Sepsis: Translational Research Ideas.** (2013) Translational Health Science and Technology Institute, Gurgaon.
3. **Pushing research frontier of neonatal infections.** (2012) Newborn Health and Knowledge Center, All India Institute of Medical Sciences, New Delhi.
4. **Downregulation of retinoblastoma tumor suppressor by SARS viral Nsp15.** (2010) Indiana University, Bloomington, Indiana, USA.
5. **Multifunctional SARS viral Nsp15.** (2008) American Society for Virology conference at Cornell University, Ithaca, New York, USA.
6. **Structural and functional characterization of the SARS Coronavirus endoribonuclease Nsp15.** (2007) American Society for Virology conference at Oregon State University, Corvallis, Oregon, USA.
7. **Substrate Recognition by the SARS Virus Endoribonuclease.** (2005) Texas A & M University College station, Texas, USA.
8. **RNA recognition and cleavage by the endoribonuclease of the SARS virus.** (2005) XIIIth International Congress of Virology at San Francisco, California, USA.
9. **Endonuclease Activity in Coronaviruses.** (2004) Texas A & M University College station, Texas, USA.
10. **mRNA Surveillance in Bacteria.** (2002) Indiana University, Bloomington, Indiana, USA.
11. **mRNA Surveillance in Bacteria.** (2002) RustBelt RNA meeting, Deer Creek, Ohio USA.

**+ Patents:**

- Rajasekharan, R. and Bhardwaj, K. (2002). Process of isolation and utilization of rice bran lipase-PCT International Publication No. WO 02/101033.

**+ Awards:**

1. Research Fellowship and Lecturership eligibility in Life Sciences by the University Grants

Commission, India.

2. Merit scholarship awarded by the Department of Biotechnology, India.

**+ Projects:**

1. Metagenome analysis of human gut virome (as PI). Funded by DBT, India (2017-2021).
2. Identification of vaccine candidates against chikungunya virus infection (as a co-PI with Prof. Sudhanshu Vratil) (2017-present).
3. Development of small molecule antivirals against chikungunya and Japanese encephalitis viruses (as a contributor with Prof. Sudhanshu Vratil).
4. Neonatal sepsis: Biomarkers and characterization of pathogens. Glue Grant Scheme-DBT, India (as a contributor with Dr. Vinod Paul).
5. Functional characterization of the SARS-Coronavirus Nsp15 (as the lead researcher with Prof. Cheng Kao and Prof. Julian Leibowitz).
6. Biochemical characterization of the SARS-Coronavirus Nsp15 (as the lead researcher with Prof. Cheng Kao and Prof. James Sacchettini).
7. Biochemical characterization of the innate immune receptors, TLR3, RIG- I and LPG2 (as a contributor with Prof. Cheng Kao).
8. Biochemical and bioinformatics analysis of the bacterial tmRNA and its accessory protein, SmpB (as the lead researcher with Dr. Kelly Williams).

9. Murali A, Li X, Ranjith-Kumar CT, Bhardwaj K, Holzenburg A, Li P, Kao CC (2008). Structure and function of LGP2, a DExD/H helicase that regulates the innate immunity response. *Journal of Biological Chemistry* 283(23):15825-15833.

10. Bhardwaj K, Palaninathan S, Alcantara JMO, Yi L, Guarino L, Sacchettini, JC, Kao CC (2008). Structural and Functional Analyses of the SARS Coronavirus Endoribonuclease Nsp15. *Journal of Biological Chemistry* 283(6):3655-3664.

11. Kang H\*, Bhardwaj K\*, Yi L, Palaninathan S, Sacchettini J, Guarino L, Kao C, Leibowitz, JL (2007). Biochemical and Genetic Analyses of the Mouse Hepatitis Virus Nsp15 Endoribonuclease. *Journal of Virology* 81(24):13587-13597 (\* equal contributors). 4.368

12. Ranjith-Kumar CT, Miller W, Xiong J, Russell WK, Lamb R, Santos J, Duffy KE, Cleveland L, Park M, Bhardwaj K, Wu Z, Russell DH, Sarisky RT, Mbow ML, Kao CC (2007). Biochemical and functional analyses of the human Toll-like receptor 3 ectodomain. *Journal of Biological Chemistry* 282(10):7668-7678.

13. Bhardwaj K, Sun J, Holzenburg A, Guarino LA, Kao CC (2006). RNA recognition and cleavage by the SARS Coronavirus endoribonuclease. *Journal of Molecular Biology* 361(2):243-256.

14. Guarino LA, Bhardwaj K, Dong W, Sun J, Holzenburg A, and Kao C (2005). Mutational analysis of the SARS Virus Nsp15 endoribonuclease: Identification of residues affecting hexamer formation. *Journal of Molecular Biology* 353(5):1106-1117.

15. Jacob Y, Sharkady SM, Bhardwaj K, Sanda A and Williams KP (2004). Function of the SmpB tail in tmRNA translation revealed by a Nucleus-encoded form. *Journal of Biological Chemistry* 280(7): 5503-5509.

16. Bhardwaj K, Guarino LA, and Kao CC (2004). The SARS coronavirus Nsp15 protein is an endoribonuclease that prefers manganese as cofactor. *Journal of Virology* 78(22): 12218-12224.

17. Lata S, Bhardwaj K, and Rajasekharan R (2003). A single-step procedure for the synthesis of photoreactive and radioactive glycerolipids. *Analytical Biochemistry* 313(1):155-9.

18. Bhardwaj K, Raju A, and Rajasekharan R (2001). Identification, purification and characterization of a thermally stable lipase from rice bran. A new member of the (phospho) lipase family. *Plant Physiology* 127(4):1728-38.