

## Rahul Jain, Ph. D.

Professor and Dean

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### Education

Doctor of Philosophy (Organic Chemistry), Central Drug Research Institute, Lucknow, India (1991)  
Master of Science (Organic Chemistry), University of Lucknow, Lucknow, India (1984)

### Professional Experience

#### 2018 – present

Dean, National Institute of Pharmaceutical Education and Research, S. A. S. Nagar, Punjab 160 062, India

#### 2007 – present

Professor, Department of Medicinal Chemistry, National Institute of Pharmaceutical Education and Research, S. A. S. Nagar, Punjab 160 062, India

#### 2016 – present

Chairman, Student Placement, National Institute of Pharmaceutical Education and Research, S. A. S. Nagar, Punjab 160 062, India

#### 2011 – present

Chairman and In-charge, Central Instrumentation Laboratory (CIL), National Institute of Pharmaceutical Education and Research, S. A. S. Nagar, Punjab 160 062, India

#### June 2016 – June 2017

Associate Dean of Academics Affairs, National Institute of Pharmaceutical Education and Research, S. A. S. Nagar, Punjab 160 062, India

#### March 2018 – April 2018

Acting Dean, National Institute of Pharmaceutical Education and Research, S. A. S. Nagar, Punjab 160 062, India

#### 2002 – 2007

Associate Professor, Department of Medicinal Chemistry, National Institute of Pharmaceutical Education and Research, S. A. S. Nagar, Punjab 160 062, India

#### 1997 – 2002

Assistant Professor, Department of Medicinal Chemistry, National Institute of Pharmaceutical Education and Research, S. A. S. Nagar, Punjab 160 062, India

#### 1996 – 1997

Assistant Professor, Peptide Research Laboratories, Department of Medicine, Tulane University Medical Center, New Orleans, LA 70112, USA

#### 1990 – 1996

Fogarty International Visiting Fellow, Laboratory of Bioorganic Chemistry, NIDDK, National Institutes of Health, Bethesda, MD 20892, USA

#### 1989 – 1990

Robert A. Welch Post-doctoral Research Fellow, Department of Molecular Genetics, University of Texas, Southwestern Medical School, Dallas, TX 75235, USA

#### 1984 – 1989

Research Fellow, Division of Medicinal Chemistry, Central Drug Research Institute, Lucknow, 226 001, India

### Research Expertise

*Areas of interest: Medicinal chemistry, Peptide chemistry*

- Synthesis and mechanistic studies of ultra short neuropeptides, antimicrobial peptides, and antiplasmodial peptides
- C-H and C-N functionalization of natural and unnatural amino acids
- Backbone modification of peptides by C-H and C-N functionalization
- Sustainable peptide synthesis
- Synthesis and mechanistic studies of unnatural amino acids
- Synthesis of new structural classes of antiplasmodial and anti-tuberculosis agents.

## Research Achievements

• Short antimicrobial peptides (2-6 amino acids) that exhibit potent inhibition of Gram (+) and Gram (-) bacteria (pre-clinical) • Short peptides (4-6 amino acids) that protect against A $\beta$  induced toxicity as anti-Alzheimer's agents (pre-clinical) • Orally active short peptides (3 amino acids) with applications in the treatment of epilepsy and Parkinson's disease (pre-clinical) • Discovery of ring-modified quinolines as anti-tuberculosis agents • Metabolically stable 8-quinolinamines effective against drug-sensitive and drug-resistant parasites (pre-clinical).

## Research Publications – 130

### List of Representative Publications:

(i) New structural classes of anti-tuberculosis agents. *Med. Res. Rev.* **2018**, *38*, 684; (ii) Bioengineered PLGA-chitosan nanoparticles for brain targeted intranasal delivery of antiepileptic TRH analogues. *Chem. Eng. J.* **2018**, *346*, 630; (iii) Discovery of a membrane-active, ring-modified histidines containing ultra short amphiphilic peptide that exhibits potent inhibition of *Cryptococcus neoformans*. *J. Med. Chem.* **2017**, *60*, 6607; (iv) Regioselective access to 1,2-diarylhistidines through the copper-catalyzed N1-arylation of 2-arylhistidines. *Eur. J. Org. Chem.* **2017**, 984; (v) C-Terminal fragment, A $\beta$ <sub>32-37</sub> analogues protect against A $\beta$  aggregation-induced toxicity. *ACS Chem. Neurosci.* **2016**, *7*, 615; (vi) Regioselective copper-catalyzed N(1)-(hetero)arylation of protected histidine. *Org. Biomol. Chem.* **2016**, *14*, 8937; (vii) Metal-free synthesis of *N*-fused heterocyclic iodides via C-H functionalization mediated by *tert*-butylhydroperoxide. *Chem. Commun.* **2015**, *51*, 15129; (viii) Discovery of short peptides exhibiting high potency against *Cryptococcus neoformans*. *ACS Med. Chem. Lett.* **2014**, *5*, 315; (ix) Palladium-catalyzed regioselective C-5 arylation of protected L-histidine: Microwave-assisted C-H activation adjacent to donor arm. *J. Org. Chem.* **2013**, *78*, 10954; (x) Molecular mechanistic insights into the PepT1-mediated intestinal transport of a novel antiepileptic, NP-647. *Mol. Pharmaceutics* **2012**, *9*, 2458; (xi) Discovery of Trp-His and His-Arg analogues as new structural classes of short antimicrobial peptides. *J. Med. Chem.* **2009**, *52*, 7421; (xii) Recent advances in antimalarial drug development. *Med. Res. Rev.* **2007**, *27*, 65. (xiii) Low affinity analogs of thyrotropin-releasing hormone are super-agonists. *J. Biol. Chem.* **2006**, *281*, 13103; (xiv) Thyrotropin-releasing hormone (TRH) analogues that exhibit selectivity to TRH receptor subtype 2. *J. Med. Chem.* **2005**, *48*, 6162; (xv) Discovery of a bulky *tert*-butyl group containing primaquine analogue that exhibits potent blood-schizontocidal antimalarial activities and complete elimination of methemoglobin toxicity. *J. Med. Chem.* **2004**, *47*, 285; (xvi) Highly potent cyclic disulfide antagonists of somatostatin. *J. Med. Chem.* **1999**, *42*, 1863; (xvii) Potent antagonists of somatostatin: Synthesis and biology. *J. Med. Chem.* **1998**, *41*, 1146; (xviii) Synthesis of ring-halogenated histidines and histamines. *Tetrahedron* **1998**, *54*, 3235; (xix) Synthesis of novel ring-substituted histidines and histamines. *Tetrahedron* **1997**, *53*, 4539; (xx) Regiospecific alkylation of histidines and histamines at C-2. *Tetrahedron* **1997**, *53*, 2365; (xxi) Regiospecific alkylation of histidines and histamines at N-1( $\tau$ ). *Tetrahedron* **1996**, *52*, 5363.

Patents – 20 (IN, EU, US)

Invited Talks and Research Presentations – 101

Mentoring – Masters (106); Ph. D. (20)

Research Collaborations – 20 (India, US, Germany)

Grants – Rupees ~90 millions