

Anthony Addlagatta

Principal Scientist

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Bibliography

About

Dr. Anthony Addlagatta has obtained his bachelor's degree with specialization in industrial chemistry from Osmania University, masters and the PhD degrees in Chemistry from the School of Chemistry, University of Hyderabad. He has worked as a senior scientist at the Department of Energy, Pacific Northwest National Laboratory, USA before joining Indian Institute of Chemical Technology (IICT), Hyderabad.

He was awarded with Mianowski International Fellowship from the Polish Academy of Sciences, Poland and Ramanujan Fellowship by the Department of Science and Technology, New Delhi. He has published over 55 research articles and a book chapter. His research interest is to understand the chemical principles in biological functions and, apply it to human health and biotechnology.

His technical expertise includes chemistry, biochemistry, protein engineering, molecular, structural, cellular and computational biology, bioinformatics, structure based drug discovery and biotechnology.

He also serves as an inspector on behalf of the Government of India for companies that adopt Good Laboratory Practice.

Education

B.Sc. (Mathematics, Chemistry and Industrial Chemistry) A.V. College, Osmania University, Hyderabad; M.Sc. & Ph.D. Chemistry, School of Chemistry, University of Hyderabad, Hyderabad.

Employment

Senior Scientist:

Pacific Northwest National Laboratories, DoE, USA;

Ramanujan Fellow, CSIR-IICT, Hyderabad.

Postdoc:

Polish Academy of Sciences, Poznan, Poland;

Hauptman Woodward Institute, Buffalo, USA;

Howard Hughes Medical Institute, University of Oregon, Eugene, USA.

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Research Interests

Present Research

His research interest is to understand the chemical principles in biological functions and, apply it to human health and biotechnology. Specific interests are to understand the substrate binding binding pockets of enzymes and use this knowledge in design of specific inhibitors. Molecular are synthesized and retested on the recombinant enzymes, cell lines and animal models. Current projects include methionine aminopeptidase, aminopeptidases N, His technical expertise includes chemistry, biochemistry, protein engineering, molecular, structural, cellular and computational biology, bioinformatics, structure based drug discovery and biotechnology.

Past Research

As part of the PhD, Dr. Addlagatta has carried out design, synthesis, crystal structure analysis and molecular modeling of androgen derivatives as aromatase inhibitors. Later the in the postdoctoral stints, he has expanded the scope of his research into molecular and structural biology. Determined structures of some steroid binding proteins, aminopeptidases and established their biochemical and physiological mechanisms of these enzymes.

Projects Involved

1. Biochemical and Structural Studies of Proteases Involved in Cancer and Microbia Pathogenesis -Toward Drug Discovery

Ramanujan Fellowship, Rs. 60,00,000/-,

Department of Science and Technology, India, 2008-2013

2. Mycobacterium tuberculosis Methionine Aminopeptidase: Biochemistry, Protein X-ray Crystallography, Structure Based Drug Design and, Inhibitor Synthesis and Evaluation.

Department of Science and Technology, India. Rs. 35 Lakhs, Three years.

Duration: 2011-2013

3. Puromycin Sensitive Aminopeptidase Mediated Neuroprotection

Amount: Rs. 81,95,000/-

Source: Department of Biotechnology, India

Duration: 2014-2017

4. Unraveling Molecular Interactions During the Removal of Initiator Methionine at the Human Ribosome Peptide Exit-Tunnel

Amount: Rs. 45,00,000/-

Source: DBT

Duration: 2014-2016

5. Structural Genomics of Methionine Aminopeptidase from Pathogenic Microbes: Interdisciplinary approach to identify specific inhibitors

Amount: 38 Lakhs

Source: DST

Duration: 2016-2019

5. Co-PI CSIR XI and XII five year plans projects with total budget of 50 Crores to establish and maintain the Center for Chemical Biology at CSIR-IICT

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Research Group Members

- Anil Kumar Marapaka
- Vijay Kumar Pillalamarri
- Sandeepchowdary Bala
- Rajnandani Kashyap
- Reddi Bharati

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Publications

- R. Reddi, V. Saddanapu, D.K. Chintapalli, P. Sankuju, P. Sripadi, A. Addlagatta*, 2016 Human Naa50 displays broad substrate specificity for N-terminal acetylation: Detailed Structural and Biochemical Analysis Using Peptide Library. *J. Biol. Chem.* In Press
- Reddi R, Singarapu KK, Pal D, Addlagatta A.* 2016 The unique functional role of the C-H...S hydrogen bond in the substrate specificity and enzyme catalysis of type 1 methionine aminopeptidase. *Mol. Biosys.* 12, 2408-2416.
- T. Arya, R. Reddi, C. Kishor, R.J. Ganji, S. Bhukya, R. Gumpena, S. McGowan, M. Drag, A. Addlagatta* 2015 Identification of the molecular basis of inhibitor selectivity between the human and Streptococcal Type I methionine aminopeptidases. *J. Med. Chem.*, 12, 2350-7.
- Reddi R, Arya T, Kishor C, Gumpena R, Ganji RJ, Bhukya S, Addlagatta A.* 2014, Selective targeting of the conserved active site cysteine of Mycobacterium tuberculosis methionine aminopeptidase with electrophilic reagents. *FEBS J.* 281, 4240-8
- COVER ARTICLE: C. Kishor, T. Arya, R. Reddi, X. Chen, V. Saddanapu, Anil Kumar Marapaka, R. Gumpena, D. Ma, J. O. Liu, and A Addlagatta* 2013 Identification, biochemical and structural evaluation of species-specific inhibitors against Type I methionine aminopeptidases. *J. Med. Chem.* 56, 5295-5305.

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Patents

- S. Gogoi, R.C. Barua, P. Saikia, V. Saddanapu and A. Addlagatta, 2015 Synthesis of 16 α -(1H-Benzimidazole-1-yl)-pregnenolone Acetate as Cytotoxic agent. CT/IN2015//000188_L&S Ref. No.: PD015875PCT

Lectures

- Teaches Medicinal Chemistry and structural Biology courses at CSIR-IICT, CSIR-CCMB, NIPER-Hyderabad and NIPER-Hajipur (Bihar), Osmania University, Kakatiya University, JNTU-Hyderabad and other places.
- Development of Chemical Probes to Understand the Biochemical Mechanism of PSA in Neuroprotection. First Annual Conference of Chemical Biology Society of India 2014, 6-8, February, CSIR-IICT
- Design, Biochemical and Structural Evaluation of Species-Specific Inhibitors Against Type I Methionine Aminopeptidases 2nd UK-India MedChem Congress 2013, 22-23 March, CSIR-IICT
- Protein Crystallography: implications in drug discovery and modern biology Bioinformatics workshop@Bioasia - 2012, NIPER, Hyderabad, April 15-17.
- Crystal Engineering and Noncovalent Interactions: Contemporary Themes and Futuristic Developments, Orange County, Coorg (22-25 February, 2009).

Awards

- Ramanujan Fellowship (2008): Department of Science and Technology (DST), New Delhi
- Mianowski fund (1999):(Foundation for Polish Academy of Sciences, Warsaw, Poland) Selected for the postdoctoral research in Poland in protein crystallography.
- 2016 - CDRI Award for Excellence in Drug Research (Chemistry)
- 2016 - Senior Scientist Award from Association of Biotechnology and Pharmacy

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