ISCB AWARD FOR EXCELLENCE

Ashok K Prasad
Professor -Since 2007 at
Department of Chemistry
University of Delhi
Delhi- 110 007
Email: ashokenzyme@yahoo.com

Professor Prasad obtained his PhD from University of Delhi in 1990.

Has carried out Postdoctoral Studies at the University of Southern Denmark, Odense and University of Copenhagen, Denmark

Has beenVisiting researcher at i) Max-Planck-Institute for Molecular Physiology, Dortmund, Germany and at ii) UMASS, Lowell, USA

Has Major research interest lies in the areas of

i) Biocatalysis and Biotransformations

ii) Synthesis of Modified Nucleosides and Bioactive Heterocycles

iii) Natural Products Chemistry

He has been recipient of

i) Honorary Diploma for Scientific Achievements and International Scientific collaboration by Russian International Foundation "Scientific Partnership", Moscow- March 2013.

ii) Best Paper Award of the journal *Trends in Carbohydrate Research*- 2012

iii) CRSI Young Scientist Award 2007

iv) DANIDA Fellow (1992-96)

v) National Scholarship holder

Has been Editor / Guest editor of Journals like,*Biochemie*; *Indian J. Chemistry* and *Trends in Carbohydrate Research*

PUBLICATIONS: 178 Research Papers in the International Journal of Repute

PATENTS: 7 International and Indian Patents in his credit

Total Citations of his Publications: 2394

***h* Index** of his publications: **24**

ISCB YOUNG SCIENTIST AWARD FOR CHEMICAL SCIENCES-2014 JOINTLY

Dr.Akkattu T. Biju
Senior Scientist, Organic Chemistry Division
CSIR-National Chemical Laboratory
Dr. HomiBhabha Road, Pune - 411008, India.
Phone: +91-20-25902441
Fax: +91-20-25902629
E-mail:at.biju@ncl.res.in
Research group: http://academic.ncl.res.in/ncl_1/at.biju

Total Citation : 1327 (on 28-01-2014)
Average Citation : 31.60
H index : 21

Selected publications

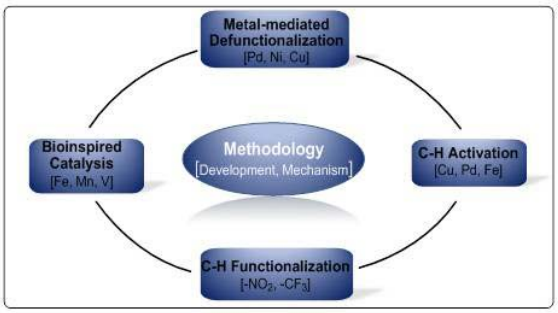
*Org. Lett.***2014**, *16*, DOI:10.1021/ol4033094; *Org. Lett.***2013**, *15*, 5452; *Org. Lett.***2013**, *15*, 5202; *Org. Lett.***2013**, *15*,4620; *Angew. Chem., Int. Ed.* **2013**, *52*, 10040; *Green Chem.* **2013**, *15,* 1608; *Org. Lett.* **2013**, *15*, 1756; *Adv. Synth.Catal.***2013**, *355*, 1089; *Org. Lett.***2012**, *14*, 6238; *Org. Lett.***2012**, *14*, 4098; *Org. Lett.***2012**, *14*, 2830; *Chem. Soc. Rev.* **2012**, *41*, 3140; *Angew.Chem., Int. Ed.***2012**, *51*, 1520.

Akkattu T. Biju received his B.Sc. and M. Sc. (both first rank) from Mahatma Gandhi University, Kerala, India and Ph.D. under the guidance of Dr. Vijay Nair at the CSIR-NIIST, Trivandrum, India. Subsequently, he has been a post-doctoral fellow with Prof. Tien-YauLuh at the National Taiwan University, Taipei and an Alexander von Humboldt fellow with Prof. Frank Glorius at the WestfälischeWilhelms-UniversitätMünster, Germany. In June 2011, he began his independent research career at the CSIR-National Chemical Laboratory, Pune, India. His research focuses on the development of transition-metal-free carbon-carbon and carbon-heteroatom bond-forming reactions using aryne chemistry and N-heterocyclic carbene (NHC) organocatalysis, and their application in organic synthesis. He has published 45 research papers in the peer-reviewed international journals and seven students are working with him for Ph.D degree. He is the recipient of Thieme Chemistry Journals Award (2014), OPPI Young Scientist Award (2012), Alexander von Humboldt Fellowship (2009), and is a member of the National Academy of Sciences, India (NASI), Allahabad (2012).

DebabrataMaiti
Assistant Professor,
Department of Chemistry,Indian Institute of Technology-Bombay,
Powai, Mumbai-400076, India
Phone: 022-2576-7155 (Off.)
022-2576-8155(Res.)
09820907155 (cell)
Email:http://www.chem.iitb.ac.in/people/Faculty/prof/dmaiti.htm

Research:

Research in the Maiti group focuses the area of catalysis and seeks to discover novel synthetic transformation along with the mechanistic understanding.The research area of Maiti group encompasses(i)Metal catalyzed C-H activation(ii)C-H functionalization (iii)Metal mediated defunctionalization (iv)Bio-inspired catalysis.Our research interest in the field of catalysis involves the broad dimension, range from discovery of useful synthetic transformation to the understanding of the underlying mechanism. Mechanistic study includes the detection and trapping of the reaction intermediates, understanding their kinetics involving isotope labeling and other mechanistic tools.



Selected Publication:

1. Maji, A.; Rana, S.; Akanksha and **Maiti, D.*** Synthesis of Bis-heteroaryl Ketones *via* Removal of Benzylic –CHR– and –CO– Groups. *Angew. Chem. Int. Ed*. **2014**, DOI: 10.1002/anie.201308785.

2. Sharma, U.;Togati, N.; Maji, A.; Manna, S.; **Maiti, D***.Palladium-Catalyzed Synthesis of Benzofurans and Coumarins from Phenols and Olefins.*Angew. Chem. Int. Ed.* **2013**, 52, 12669 .

3. Deb, A.; Manna, S.; Modak, A.; Patra, T.; Maity, S.; **Maiti, D***. Oxidative Trifluoromethylation of Unactivated Olefins: An Efficient and Practical Synthesis of α-Trifluoromethyl Ketones. *Angew. Chem. Int. Ed.***2013**, 52, 9747.

4. Maity, S.; Manna, S.; Rana, S.; Togati, N.; Mallick, A; **Maiti, D***. Efficient and stereoselective nitration of mono- and disubstituted olefins with $AgNO_2$ and TEMPO.*J. Am. Chem. Soc.* **2013**, *135*, 3355.

5. Patra, T.,Manna, S. and **Maiti, D***. Metal mediated deformylation reactions: synthetic and biological avenues. *Angew. Chem. Int. Ed.***2011,***50*, 12140.

6.Deb, A.; Agasti, S.; Saboo, T.; **Maiti, D.***Generation of Arylated Quinones by Iron Catalyzed Oxidative Arylation of Phenols: Formal Synthesis of Phellodonin, Sarcodoninε, Leucomelone and Betulinan A. *Adv. Syn. Cat.* **2014**, DOI:10.1002/adsc.201301084.

7.Togati, N.; Maity, S.; Sharma U.; **Maiti, D***. A Predictably Selective Nitration of Olefin with $Fe(NO_3)_3$ and TEMPO.*J. Org. Chem.*,**2013**, *78*, 5949.

8. Deb, A.; Manna, S.; Maji, A.; Dutta, U.; **Maiti, D***. Iron-Catalyzed Direct C-H Arylation of Heterocycles and Quinones with ArylboronicAcids.*Eur.J. Org. Chem.* **2013**, *24*, 5251.

9. Maiti, D. and Buchwald, S. L. "Orthogonal Cu- and Pd-based catalyst systems for the O- and N-arylation of aminophenols" *J. Am. Chem. Soc.* 2009, *131*, 17423.

10. Rana. S; Haque, R.; Santosh, G.; **Maiti, D***. Decarbonylative halogenation by a vanadium complex *Inorg. Chem.* **2013***, 52,* 2927.

Sum of the Times cited:1278, Average Citation per item:19.69H-index:13

ISCB YOUNG SCIENTIST AWARD FOR BIOLOGICAL SCIENCES-2014

U.MABALIRAJAN
Molecular Pathobiology lab, Institute of Genomics and Integrative Biology,
Mall Road, Delhi
Email: mabsome@yahoo.co.in

SCIENTIST FELLOW

BRIEF SUMMARY OF ACHIEVEMENTS

- First time demonstration of Mitochondrial dysfunction in asthma pathogenesis.
- First time demonstration of 12/15-lipoxygenase mediated airway epithelial injury in asthma.
- First time demonstration of linoleic acid metabolite mediated severe asthma and mitochondrial dysfunction.
- First time demonstration of antiasthma properties of anti-malarial drug, Mepacrine.
- First time demonstration of antiasthma and mitochondrial restoration activity of esculetin, baicalein and vitamin E.
- Demonstration of beneficial effects of high dose L-Arginine on asthma.
- Demonstration of TRPV1 inhibition as an antiasthma strategy.
- Demonstration of Th_2 immune response in dengue patients with during defervescence.
- Involved in a team work to discover genetic variants of Inositol polyphosphate 4 phosphatase in asthma for the first time.
- Involved in a team work to identify mitochondrial donation mediated rescue of bronchial epithelial injury.
- Involved in a team work to discover the therapeutic roles of Let-7 miRNA and anti-miR-106a in asthma.
- Involved in a team work to discover the ER stress and hypoxic stress in asthma.
- Involved in a team work to discover few effective antiasthma molecules.

Awards

- Selected as an Associate in Indian Academy of Sciences (Year 2013 to 2016)
- Young Scientist Medal (Medical sciences) by Indian National Academy of Sciences, Delhi, India (2011)
- Young Scientist Award (Biomedical sciences) by The National Academy of Sciences, Allahabad, India (2010)
- GP Talwar Young Scientist Award by Indian Immunology society (2008)
- Travel Grant by CSIR, DST, INSA to attend 6^{th} International congress on Autoimmunity, September 10-14, 2008, Porto, Portugal.
- Awarded Medical senior research fellowship by ICMR (2006-2009)
- Best student award in final year MBBS (2000)

Total Citation: 674
H index: 16 ***(***http://scholar.google.co.in/citations?user=NEqTPGUAAAAJ&hl=en***)***

Selected publications:

1. Ahmad T, Mukherjee S, Pattnaik B, Kumar M, Singh S, Kumar M, Rehman R, Tiwari BK, Jha KA, Barhanpurkar AP, Wani MR, Roy SS, **Mabalirajan U**, Ghosh B, Agrawal A. Miro1 regulates intercellular mitochondrial transport & enhances mesenchymal stem cell rescue efficacy. **EMBO J.** 2014 Jan 15. PMID: 24431222
2. **Mabalirajan U***, Rehman R, Ahmad T, Kumar S, Leishangthem GD, Singh S, et al. 12/15-lipoxygenase expressed in non-epithelial cells causes airway epithelial injury in asthma. **Sci. Rep. (NPG)** 2013; 3:1540.***Correspondence**
3. **Mabalirajan U***, Ahmad T, Rehman R,Leishangthem GD, Dinda AK, et al. Baicalein reduces airway injury in allergen and IL-13 induced airway inflammation**. PLOS ONE** 201**3** (In Press).
4. Rehman R, Bhat YA, Panda L**, Mabalirajan U***. TRPV1 inhibition attenuates IL-13 mediated asthma features in mice by reducing airway epithelial injury**. IntImmunopharmacol**. 2013; 15: 597-605. ***Correspondence**
5. Mabalirajan U*, Rehman R, Ahmad T, Kumar S, Singh S, Leishangthem GD, et al. Linoleic acid metabolite drives severe asthma by causing airway epithelial injury. **Sci. Rep. (NPG)** 2013; 3:1349. ***Correspondence**
6. Aich J,**Mabalirajan U**, Ahmad T, Agrawal A and Ghosh B. Loss of function of Inositol polyphosphate 4 phosphatase (INPP4A) reversibly increases the severity of allergic airway inflammation. **Nat Commun.** 2012; 3:877.
7. **Mabalirajan U***, Agrawal A, Ghosh B.**1**5-Lipoxygenase eicosanoids are the putative ligands for vanilloid receptors and peroxisome proliferator-activated receptors (PPARs).***ProcNatlAcadSci U S A.*** 2012;:109(1):E1.***Correspondence**
8. **Mabalirajan U**, Ahmad T, Leishangthem GD, Joseph DA, Dinda AK, Agrawal A, and Ghosh B. Beneficial effects of high dose of L-Arginine on airway hyperresponsiveness and airway inflammation in a murine model of asthma. ***J. Allergy. Clin. Immunol.*****2010**, 125:626-35.
9. **Mabalirajan U**, Agrawal A, and Ghosh B. Comment on "Ym1/2 promotes Th2 cytokine expression by inhibiting 12/15(*S*)-Lipoxygenase: Identification of a novel pathway for regulating allergic inflammation"***J. Immunol. 2009,*** 183:6039
10. **Mabalirajan U**, Dinda AK, Kumar S, Roshan R, Gupta P, Sharma SK,and Ghosh B. Mitochondrial structural changes and dysfunction are associated with experimental allergic asthma. ***J. Immunol.*****2008,** 181: 3540-3548.

Patents Filed:

1. Sharma, G. V. M., Yadav, J. S., Palakodety, R.K., Bandyopadhyay, A., Roy, S., Bandyopadhyay, S., Johri, R.K., Chander, S.C., Ghosh, B., **Mabalirajan, U**., Balwani, S., Paul, B., Saxena A.K. . "Triazine-aryl-bis-indoles and process for preparation thereof." Date filing: 31 December 2012, Published: February 15 2012: **EP2417129 A1**.
2. Sharma GVM, Singh YK, Radhakrishna P, Bandyopadhyay A, Roy S, Bandyopadhyay S, Kamal JR, Sharma SC, Ghosh B, **Mabalirajan U**, Balwani S, Paul B, Saxena AK. Triazine-

aryl-bis-indoles and process for preparation thereof. Filed internationally (Appl No PCT/IB2010/003375)on 31-12-2010.

3. S. Mukhopadhyay, M. Chakraborty, T. Mukherjee,A. Bandyopadhyay, D. Kar, T. Banerjee, A. Konar, D. Jana, S. Roy, S. Bandyopadhyay, B. Ghosh, **U. Mabalirajan**, R.K. Johri, S. C. Sharma, G. Singh, B.Paul, G.V.M. Sharma, J.S. Yadav, R.K. Palakodety. "Method for treatment of bronchial asthma"August 9, 2012. **USPTO Applicaton #:** 20120202868.
4. S. Bandyopadhyay, B. Ghosh, P Jaisankar, B. C. Pal, S. Roy, B. Paul, A. Ram, **U. Mabalirajan,** N. Ali, A.Bandyopadhyay, A. Konar, J. B. Chakraborty, I.C. Mukherjee, J. Chaudhuri, S. K. Mahato, A. Manna, R. Sinha, P. Bhattacharya. "Substituted catechols as inhibitors of il-4 and il-5 for the treatment bronchial asthma."**GENEVA, Oct. 24 -- Publication No. WO/2012/140574** was published on Oct. 18.

ISCB Award of Appreciation-2014 in Chemical Sciences

Dr. M. Jeganmohan
Indian Institute of Science Education and Research
Dr. HomiBhabha Road
Pashan
Pune 4110 008
Email:mJeganmohan@iiserpune.ac.in

A brief summary of achievements
Ruthenium-Catalyzed Chelation-Assisted C-H Bond Functionalization of Aromatics, Alkenes and Heteroaromatics

The development of mild, convenient and efficient method for the functionalization of aromatics, heteroaromatics and alkenes is of great importance in fundamental organic chemistry. Recently, considerable research activity has been directed toward the metal-catalyzed chelation-assisted C-H bond activation and subsequent carbon-carbon and carbon-hetero bond formation reactions in organic synthesis. This type of reaction is highly atom economical and environmentally friendly when compared with the other conventional methods such as carbon-halide or carbon-metal functionalization. Various metal complexes such as palladium, rhodium and ruthenium have been widely used as catalysts for this type of reaction. Among them, a less expensive ruthenium complex has gained tremendous attention recently, due to their remarkable reactivity, compatibility and selectivity.

Our group has been working in the ruthenium-catalyzed C-H bond functionalization reactions for the past three years. In 2011, we have demonstrated a ruthenium-catalyzed coupling reaction of aromatic and heteroaromatic ketones with olefins in the presence of catalytic amount of $[\{RuCl_2(p\text{-cymene})\}_2]$, $AgSbF_6$ and $Cu(OAc)_2.H_2O$, giving *ortho*-alkenylated aromatic and heteroaromatic ketones through C-H bond activation reaction in a highly regio- and stereoselective fashion. Further, by employing aldehyde, ester, and carbamate chelating groups, we have done *ortho*-alkenylation of aromatics and heteroaromaticsin the presence of ruthenium catalyst in a highly regio- and stereoselective fashion. In addition, very recently we have shown a ruthenium-catalyzed*ortho*-alkenylation of aromatic carbamates and anilides with alkynes. The regioselectivealkenylation of aromatics and heteroaromatics by C-H bond activation catalyzed by a less expensive ruthenium complex under an air atmosphere could be applied for synthesizing various polymers and materials. It is important to note that the C-H bond activation of aromatics in the presence of weak-coordinating groups such as aldehydes, esters, ketones, carbamate and cyano is very difficult and challenging task.

In addition to alkenylation, we have also done the ruthenium-catalyzed oxidative cyclization of chelating groups such as ketone, carboxylic acid, oxime, imidoyl halide and nitrile substituted aromatics, alkenes and heteroaromatics with alkynes. In these reactions, we have synthesized biologically active heterocyclic and carbocyclic molecules such as indenols, indenes, isocoumarins, fluorenones, azoles, isoquinolones and isoquinolines. We hope this methodology would be highly useful for synthesizing various this core containing natural

products. Further, we have described an unprecedented ruthenium-catalyzedintramolecular halogenation at the *meta* and *ortho* carbon position of *O*-methylbenzohydroximoyl halidesunder the base and oxidant free conditions. Subsequently, we have shown *ortho*-arylation of substituted *N*-alkylbenzamides and anilides with substituted aromatic and heteroaromaticboronic acids in the presence of ruthenium catalyst, $AgSbF_6$ and Ag_2O. Very recently, we have demonstrated *ortho*-benzoxylation of *N*-alkylbenzamides and anilides with substituted aromatic acids in the presence of ruthenium catalyst.

Total Citaion: 1224
Average Citation: 27.2 per paper
H index: 22

ISCB BEST THESIS AWARD -2014 IN BIOLOGICAL SCIENCES

Dr.Teena Mohan, Ph.D.
HIV Prevention Division
Center for Disease Prevention and Control
(C.D.C.),Atlanta, GA 30328
Georgia, USA
Mobiles: +1-404-632-5559, +1-678-682-9130, +1-404-630-8733
Email: mohan.teena@gmail.com, tina_biotech@yahoo.co.in

Supervisor

Prof. D. N. Rao
Department of Biochemistry
All India Institute of Medical Sciences
New Delhi

SUMMARY OF THE THESIS

Title of the Thesis: "α- and β-defensins as a mucosal adjuvant/ microbicide with the peptide antigens of HIV-1."

The mechanisms of resistance to HIV infection in the human oral cavity are incompletely understood while salivary components have been implicated in protection. There are growing evidences that human defensin peptides originating in the oral epithelial cells may be playing an important role in the prevention of HIV infection.

We have synthesized HIV and Defensin peptides and their corresponding analogues by making some modifications in the natural sequence. We have done Anti HIV, Anti-microbial and other characteristic study of defensins to prove them active. Then, immunized theses formulations in outbred and two different inbred mice (H^{2b}, H^{2d}) through intranasal route using nanosphere as delivery vehicle. We have studied humoral response of HIV peptides with and without defensins by estimating antibody levels (IgG/IgA) in the serum as well as in lung, intestinal, vaginal and rectal washes till day 120. For cell mediated immune response, peptide specific T-cell proliferation and cytokine/chemokine levels were studied in the T-cells isolated from the three different mucosal sites *i.e.* spleen, lamina propria and peyer's patches of the primed mice. Simultaneously, we have done cytolytic activity analysis, by estimating IFN-γ/Perforin secretion by $CD8^+$ and $CD4^+$ T-cells using FACS.

The HIV peptides alone in microsphere showed low peptide specific response of peak titre in sera and in different washes while the presence of defensins increased significantly this titre both in sera (1,02,400-4,09,600) as well as in washes (800-12,800) ($p<0.05$) Very interestingly, we have found that the cellular immunogenicity of all the HIV peptides with defensin peptides in different formulations showed a significantly higher (upto 2 fold ranging from 10-50 stimulation index) ($p<0.001$) proliferation response as compared to HIV peptide alone. The cytokine measurement profile showed mixed Th1 and Th2 type of

immune response. The FACS analysis data revealed that $CD8^+/CD4^+$ T-cells showed significantly higher cytolytic activity in the HIV with defensin peptide formulations. Surprisingly, $CD4^+$ T-cells were also showing cytolytic property.
We have shown from the study that defensin peptides and their analogues are markedly enhanced the antigen specific immune response even at very low concentration. Thus, the results reported in my thesis demonstrate the effectiveness of synthetic defensin peptide analogues to induce strong and long lasting humoral and cellular immune response through intranasal route using PLG- nanosphere as a delivery vehicle. Our findings may have implications in the development of new antiviral agent for AIDS therapy.

Research papers: 14
Review: one

ISCB Young Scientist AWARD in the area of Drug Research

No candidates were found suitable for the award in the area of Drug Research.

ISCB Distinguished women scientist award

No candidates were found suitable for ISCB Distinguished women scientist award

---

Dr.VinodBhakuni Memorial ISCB Award

No candidates were found suitable for Dr.VinodBhakuni Memorial ISCB Award

---

ISCB AWARD OF APPRECIATION FOR INDUSTRIAL SCIENTIST -2013

No candidates were found suitable
