Dr. Devalina Ray

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Current Affiliation:

Assistant Professor, Amity University, Noida, since October' 2017.

Research area of Interest:

The ultimate goal is to utilize the development and outcomes of research for the benefit of mankind. In this regard, research area for past 17 years combines organic synthesis, organometallic chemistry, bioorganic chemistry and green chemistry to devise environmentally benign catalytic processes in solving problems of fundamental importance. The application of newly developed methodologies has been established by designing probable active pharmacophores for screening against various diseases. In this context, I have worked towards the synthesis of small molecule inhibitors for protein-protein interaction against breast and myeloid cancer in various Universities of USA (University of Texas Medical Branch, Texas and University of Nebraska Medical Centre, Nebraska). Apart from it, the research experience in the Universities of South Korea (Myongji University, Yongin and Hanyang University, Seoul) as Research Professor consists of development of fine chemicals and biofuels from biomass components.

Keywords: Synthetic Organic Chemistry, **Heterocyclic Chemistry**, Bio-organic, Organometallic, Natural product chemistry and Peptide Synthesis as small molecule inhibitors related to cancer, Biofuels from Biomass, Green Chemistry.

Post Ph. D Teaching and Research Experience (10.5 years):

Oct' 2017- Present	Assistant Professor in Amity University
Nov' 2015- Oct' 2017:	Fast Track Young Scientist, IIT-Delhi
May' 2014- Oct' 2015:	Research Associate in IIT-Delhi, India
Oct' 2011-April 2012:	Post-Doctoral Fellow, Hanyang University, Seoul, South Korea.
Nov' 2010-Sep' 2011:	Research Professor in Myongji University, Yongin, South Korea.

March 2010 – June 2010:	Research Associate, Indian Institute of Technology (IIT), Kharagpur, India.
July' 2009 – Dec' 2009:	Post-Doctoral Fellow, University of Nebraska medical Centre, Omaha, Nebraska, USA.
Feb' 2008 – June 2009:	Post-Doctoral Fellow, University of Texas Medical Branch, Galveston, Texas, USA.

Educational Qualifications:

- **Ph. D.**, Indian Institute of Technology, Kharagpur, **2008**.
- **M.Sc.**, Organic Chemistry with 64.75 %, University of Kalyani, **2001**.
- **B.Sc.** (Hons. in Chemistry) with 60.22 %, University of Kalyani, **1999**.
- **Central Board of Secondary Education (12th Std.)** with 73.8 %, **1996**.
- **Central Board of Secondary Education (10th Std.)** with 66.66 %, **1994**.

Project Pursued:

Received **Fast Track Young Scientist Grant in Chemical Sciences' 2014** by SERB, Delhi, India (**As PI**, Grant Money: Rs. 33 Lakhs, Duration: 2015-2018)

Project Grant Awarded:

Received **"Core Research Grant, 2019"** in Organic Chemistry Section from SERB, New Delhi (**As sole PI**, Grant Money: Rs. 35 Lakhs, Duration: 2020-2023)

List of Publications:

1: In Vitro and In Silico Anti-plasmodial Evaluation of Newly Synthesized β-Carboline Derivatives
Vipin Kumar, Cheryl Sachdeva, Kamran Waidha, Sunil Sharma, **Devalina Ray***, Naveen Kumar Kaushik*, Biswajit Saha*
ChemistrySelect 2021,6, 5338-5342 (IF: 2.0)

2: Design and identification of novel annomontine analogues against SARS-CoV-2: An in-silico approach
Kamran Waidha, Anjali Saxena, Prashant Kumar, Sunil Sharma, **Devalina Ray**, Biswajit Saha*
Helion 2021,7, e06657 (IF: 2.9)

3: An atom-economical and regioselective metal-free C-5 chalcogenation of 8-aminoquinolines under mild conditions
*Vipin Kumar, Klaus Banert, **Devalina Ray*** and Biswajit Saha**
Org. Biomol. Chem. 2019, 17, 10245-10250 (IF: 3.56)

4: Palladium-catalyzed expedient Heck annulations in 1-bromo-1,5-dien-3-ols: Exceptional formation of fused bicycles

J. K. Ray, Raju Singha, ***Devalina Ray****, Paramita Ray, Davuluri Yogeswara Rao, Anakuthil Anoop*

Tetrahedron Letters 2019, 60, 931-935 *(IF: 2.347)*

5: Pd-Catalyzed Regioselective Intramolecular Dehydrogenative C-5 Cross Coupling in an N-substituted Pyrrole-Azole System

Krishna Nand Tripathy, ***Devalina Ray*** *and Ravi. P. Singh**

Org. Biomol. Chem. 2017, 15, 10082-10086 (IF: 3.564)

6: Synthesis of Pyrrole-Annulated Heterocycles through Copper-Catalyzed Site-Selective Dehydrogenative Cross-Coupling

Krishna Nand Tripathy, ***Devalina Ray*** *and Ravi. P. Singh**

Eur. J. Org. Chem. 2017, 5809-5813 (IF: 3.065)

7: Copper-Catalyzed Direct Cross-Coupling of Compounds Containing Activated C–H/Heteroatom–H Bonds with *N*-Tosylhydrazones

Amol P. Yadav, ***Devalina Ray,*** *V. U. BhaskaraRao and Ravi P. Singh**

Eur. J. Org. Chem. 2016, 2369-2382 (IF: 3.065)

8: Ligand –promoted Intramolecular dehydrogenative cross-coupling using a Cu catalyst: direct access to polycyclic heteroarenes

Devalina Ray*, T. Manikandan, Arup Roy, Khrishna N. Tripathy and Ravi P. Singh**

Chemical Communications 2015, 51, 7065-7068 (IF: 6.567)

9: 1,3-Dipolar cycloaddition of 4-platinumisochromenyliums with an olefin and tandem insertion into benzylic C–H bonds.

Ji Hee Kim, ***Devalina Ray****, Chang Seop Hong, Jin Wook Han and Chang Ho Oh**

Chemical Communications 2013, 49, 5690-5692 (IF: 6.567)

10: Palladium-Catalyzed Intramolecular Oxidative Heck Cyclization and Its Application toward a Synthesis of (±)-β-Cuparenone Derivatives Supported by Computational Studies.

Devalina Ray, *Nasima Yasmin, Sajal Mal, Priyanka Ray, Sarmistha Urinda, Anakuthil Anoop* and Jayanta K. Ray**

Synthesis 2013, 45, 1261-1269 (IF: 2.652)

11: Cationic Gold-Catalyzed Regioselective Hydration of 1-Arylalkynes through Carbonyl Group Participation.

Jiseon Jeong, ***Devalina Ray*** *and Chang Ho Oh**

Synlett 2012, 23, 897-902 (IF: 2.323)

12: Phosphorous pentoxide mediated synthesis of 5-HMF in ionic liquid at low temperature.

Devalina Ray, *Neha Mittal and Wook-Jin Chung**

Carbohydrate Research 2011, 346, 2145-2148 (IF: 1.92)

13: Synthesis of unnatural amino acid derivatives via palladium-catalyzed 1,4-addition of boronic acids.

Devalina Ray, *Abhijah Nyong and Amarnath Natarajan**

Tetrahedron Letters 2010, 51, 2655-2656 *(IF: 2.347)*

14: Novel Synthetic Approach Toward (±)-*β*-Cuparenone via Palladium-Catalyzed Tandem Heck Cyclization of 1-Bromo-5-methyl-1-aryl-hexa-1,5-dien-3-ol Derivatives.

Devalina Ray and *Jayanta K. Ray**

Organic Letters 2007, *9*, 191-194 *(IF: 6.732)*

15: Palladium catalyzed intramolecular 5-endo-trig oxidative Heck cyclization: a facile pathway for the synthesis of some sesquiterpene precursors.

Devalina Ray*, Sunanda Paul, Sulagna Brahma and Jayanta. K. Ray**

Tetrahedron Letters 2007, *48*, 8005-8008 *(IF: 2.347)*

16: Base-catalyzed condensation of *β*-bromovinylaldehydes with *β*-ketoesters followed by water-mediated cyclization and aromatization: one pot access to substituted benzene derivatives.

Devalina Ray and *Jayanta K. Ray**

Tetrahedron Letters 2007, 48, 673-676 *(IF: 2.347)*

17: Palladium catalyzed novel cycloisomerization: an unprecedented domino oxidative cyclization towards substituted carbocycles.

Devalina Ray*, Sajal K. Mal* and *Jayanta K. Ray**

Synlett 2005, *14*, 2135-2140 *(IF: 2.323)*

18: Palladium-catalyzed tandem oxidative cyclization of 1-bromohexa-1,5-dien-3-ols: easy access to cyclopentenones.

Sajal K. Mal, ***Devalina Ray*** and *Jayanta. K. Ray**

Tetrahedron Letters 2004, *45*, 277-279 *(IF: 2.347)*

19: Click chemistry tailored benzimidazole functionalized triazole block-co-polymer for emergence of exotic chimaeric nano-crystalsomes

Aarti Singh, Akansha Aggarwal, Soumyaditya Sutradhar, ***Devalina Ray**** *and Monalisa Mukherjee**

Material Horizon (Impact Factor: 13.26) (Submitted, Manuscript No. MH-COM-09-2021-001441)

20: Vitamin C-Catalyzed Hantzsch reaction under microwave condition: a greener access to 1,4-Dihydropyridines

*Devalina Ray, Ram Naresh Yadav, and Bimal Krishna Banik**

Results in Chemistry (Under Review, Manuscript No. RECHEM-D-21-00272)

21: Transition metal-free tert-butoxide mediated/catalyzed coupling reactions: An Overview

Vipin Kumar, Biswajit Saha and ***Devalina Ray**** *(Under Preparation)*

22: Microwave-Assisted Vitamin C-Induced Simple Synthesis of Enamines

Devalina Ray*, Ram Naresh Yadav, and Bimal Krishna Banik **(Under Preparation)*

23: One-Pot Strategies in Organic and Medicinal Chemistry

Devalina Ray*, Ram Naresh Yadav, and Bimal Krishna Banik **(Under Preparation)*

24: Ascorbic Acid-Mediated Facile Synthesis of Quinazolines

Devalina Ray*, Ram Naresh Yadav, and Bimal Krishna Banik **(Under Preparation)*

Patents:

Granted:

Preparation method of 5-hydroxymethylfurfural by dehydration of fructose using metal halide catalysts and the ionic liquid.

Korea 10-1307181

Issued September 5, 2013

Inventors: Wook-Jin Chung, Neha Mittal,* ***Devalina Ray****, Mi-Deok Han*

Filed (Indian patents):

1: An atom-economical, regioselective metal-free C-5 chalcogenation

Patent file no.: 201911024312

2: Anticancer compounds targeting human cell cycle regulating kinase

Patent file no. 201811039753

3: Synthesis and antimalarial evaluation of novel thiourea and guanidine

Patent file no. 202011011433

4: A composition having exotic chimeric single-crystalline nano-crystalsomes from 'click-tailored' benzimidazole functionalised triazole based copolymer and method thereof
Patent file no. 202111042433

Copyright: *DESIGN AND IDENTIFICATION OF NOVEL ANNOMONTINE DERIVATIVES AGAINST SARS-COV-2: AN IN-SILICO APPROACH (Published)*
Registration No.: L-94682/2020

Conference Papers:

1) Poster presentation in Virtual 3-days International Conference on "Recent Trends in Green Chemistry" organized by Akal University in collaboration with Indian Chemical Society, 28th Sep – 30th Sep 2021.
2) Invited Speaker in "9th Edition of International Conference on Catalysis, Chemical Engineering and Technology" (Virtual Event) to be held on October 21-23, 2021.
3) Keynote speaker in "6th Int'l conference on organic Chemistry" to be held in Kunming, China from 16-18th July 2021.
4) Attended RSC-IISER desktop seminar with Chem Comm organized by RSC publishing seminar on 6th Aug 2021.
5) Attended Two days Online Faculty Development Program on "Role of Health Care Professionals in Combating COVID-19 Pandemic" organized by the Amity Institute of Pharmacy, Amity University Uttar Pradesh, Lucknow Campus, India conducted on 13-14th May 2020.
6) Attended "1st Virtual International Symposium on C–H Activation" held from July 27th - 30th, 2020.
7) Attended Global Webinar on "TRANSFORMING FUTURE OF EDUCATION - The Role of Teachers, Students and Parents!" organized by organized by the Lead India Foundation (USA) on 5th Sep 2020.
8) Attended the conference of **The Korean Institute of Chemical Engineers** at Changwon, South Korea, 27-29th April' 2011.
9) Attended the 3rd **Chemical Research Society of India (Kolkata chapter)** symposium at Department of Chemistry, IIT-Kharagpur, India), 6th Aug' 2005.
10) Abstract presentation at **7th International Symposium on Carbanion Chemistry**, Alicante, Spain, 2004.
11) Oral presentation on "**A novel approach toward palladium-catalyzed cycloisomerization: an unprecedented oxidative Heck Reaction**" - at

'Organic and Biochemistry section' of Annual Convention of Chemists (Indian Chemical Society, India), University of Delhi, India, 23-26th December 2004.

12) Poster presentation on "Palladium-catalyzed unusual intramolecular oxidative cycloisomerization of 1-Bromo-1,5-dien-3-ols: easy access to cyclopentenones" at **National Symposium on Organic Chemistry-II**, Department of Chemistry, Jadavpur University, Kolkata, 17th Dec' 2003.
13) Poster presentation on "Palladium-catalyzed novel cycloisomerization of 1-Bromo-1-ene-5-yn-3-ols toward substituted carbocycles" at **2nd one day National Symposium on Chemistry-Academy**, Department of Chemistry, IIT- Kharagpur, India, 1st Feb' 2003.
14) Paper Presentation in Indian Chemical Society Annual Meet Conference.
15) Poster Presentation in American Chemical Society, Spring Session to be held on

Research Collaborations:

National:

1. Dr. Subhas C Ghosh, Senior Scientist, CSIR-CSMCRI Bhavnagar
2. Dr. Asit Patra, Principal Scientist, NPL, Delhi, India
3. Dr. Sanjeev Kumar, Associate Professor, Dept of Life Science & Bioinformatics, Assam University, Silchar, Assam, India
4. Dr. Asif Mohammad, Group Leader, ICGEB, New Delhi, India

International:

1. Prof. Bimal K. Banik, Professor, Prince Mohammad bin Fahd University, Kingdom of Saudi Arabia
2. Prof. Klaus Banert, Chemnitz University of Technology, Organic Chemistry, Strasse der Nationen 6209111 Chemnitz, Germany

Teaching and Mentoring:

Teaching: Weekly teaching hours of 16-18h per semester (overall 300 students).

Courses taught:

UG Programs:

1) **Essential Chemistry:** B.Sc(H), B.Sc(H)+B.Ed, B.Sc+M.Sc Biotechnology
2) **General Chemistry:** B.Tech Biotechnology, B.Tech+M.Tech Biotechnology, B.Tech Bioinformatics
3) **Applied Chemistry:** B.Tech Biotechnology

4) **Comprehensive Chemistry:** B.Sc(H) Biotechnology, B.Sc(H) Medical Biotechnology
5) **Chemistry I:** B.Sc(H) & B.Sc(H)+ B. Ed Zoology
6) **Fundamentals of Chemistry and Quantitative Analysis**: B.Sc(H) Biotechnology, B.Sc(H) Bioinformatics, B. Sc(H) Medical Biotechnology, B.Sc(H) & B.Sc(H) + B.Ed Zoology
7) **Good Lab Practices and Instrumentation**: B.Sc(H) Biotechnology, B.Sc(H) Bioinformatics, B. Sc(H) Medical Biotechnology, B.Sc(H) & B.Sc(H) + B.Ed Zoology
8) **Biostatistics:** B. Tech Biotechnology, B.Tech Bioinformatics, B.Tech+M.Tech, Biotechnology, B. Sc (H) Medical Biotechnology, B. Sc(H) Marine Sciences.
9) **Basic Biostatistics:** B.Sc(H) Biotechnology**,** B.Tech+M.Tech Biotechnology, B.Sc Public Health, B.Sc(H) Neurosciences.
10) **Clinical Pathology and Molecular Diagnostics:** B.Sc(H) & B.Sc+M.Sc Biotechnology

PG Programs:

1) **Applied Biostatistics**: B.Tech+M.Tech Biotechnology
2) **Applied Biostatistics for Biotechnologists**: M. Sc Biotechnology.

Chief Course Coordinator & developed master session plan for Biostatistics.

Supervision:

One Ph.D student as Guide and another as Co-guide.

Research Mentor for Students:

1) 5 M.Tech Biotechnology students as internal guide in summer internship with industry and institutes of India.
2) 40 B.Tech Biotechnology students as internal guide in summer internship.
3) Overall, 50 students were mentored regarding career development & personal matters.

Professional Service:

Academic Committee participation:

a) Internal Quality Assurance Committe (IQAC)
b) Anti-ragging committee
c) Repair Committee

Examiner: External and internal examiner for the theory & viva conducted in both teaching & Non-teaching credit courses for B. Sc, B.Tech, B. Sc+ M. Sc (8th Sem), M. Tech programs.

Reviewer of the research paper in "Journal of Organic Chemistry"
Judge in Institutional debate and singing competition.

Honors:

- Qualified **GATE** (Graduate Aptitude Test in Engineering- 95.17 percentile in chemistry) in **2002**, organized by **IIT**
- Qualified **NET** (National Eligibility Test) in **2002**, organized by **CSIR** (Council of Scientific and Industrial Research) and **UGC** (University Grants Commission, India)
- **Senior Research Fellowship** from CSIR-HRD in **2004**.
- ***"Dr. B. N. Mankad award"*** *for best oral presentation in Organic and Biochemistry section* of *41st Annual Convention of Chemists (Indian Chemical Society, India)'* ***2004*** *held at Delhi University.*
- **DST Fast Track Young Scientist grant in Chemical Sciences' 2014** by SERB, Delhi, India.
- Editorial Board member in **American Journal of Heterocyclic Chemistry**.
- Membership in Chemical Research Society of India (**CRSI**), Membership No.: LM 2841.
- Affiliate Membership in Royal Chemical Society, Membership ID: 708865.
- **Best flash presentation award** from **ACS publications** (ACS Omega) in RTCS-OBC 2021 International conference.

REFERENCES: Available upon request