

**BIOGRAPHICAL SKETCH**

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NAME: Devulapally, Rammohan

eRA COMMONS USER NAME (credential, e.g., agency login): devulap.ram

POSITION TITLE: Research Scientist, Molecular Imaging, Radiology

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Kakatiya University, India	B.S.	04/2000	Chemistry and Biology
Kakatiya University, India	M.S.	04/2002	Organic and Medicinal Chemistry
National Chung Cheng University, Taiwan	Ph.D.	06/2009	Synthetic Organic Chemistry

**A. Personal Statement**

I am a Research Scientist in the Molecular Imaging Program at Stanford (MIPS), in the Department of Radiology at Stanford University. I have obtained my Master's degree (with specialization in the area of organic and medicinal chemistry) from Kakatiya University, India and Doctor of Philosophy (with specialization in the area of synthetic organic chemistry) from National Chung Cheng University, Taiwan. I have more than 10 years of research experience in the field of synthetic organic chemistry and more than 4 years of research experience in molecular imaging. My current research interests are application of synthetic organic chemistry to bioorganic, medicinal chemistry, chemical biology, nanomedicine, molecular imaging and biomedical research. My current research focuses on developing multifunctional polymer nanocarriers for the delivery of therapeutic nucleic acids (microRNAs, pDNAs) and drugs for hepatocellular carcinoma and breast cancer treatment in pre-clinical small animal model and its evaluation via molecular imaging. I am specifically working on developing nanomedicine based microRNA therapeutics for breast cancer and hepatocellular carcinoma. I am also working on targeted peptides as highly sensitive molecular sensors for simultaneous quantitation of chromodomains recruitment to two-histone lysine methylation marks (H3K9me3 and H3K4me3). In addition, I am also actively working in collaboration with Dr. Willmann's lab and developing Nanomedicine for Ultrasound-Microbubble (US-MB) mediated drug and microRNA delivery for cancer therapy.

**B. Positions and Honors****Positions and Employment**

2003 – 2004      Research Chemist, Dr. Reddy's Laboratories Ltd, Hyderabad, India  
 2004 – 2004      Research Assistant, Chemical Genomics Laboratory, Sejong University, Seoul, Korea  
 2004 – 2009      Graduate Research Assistant, National Chung Cheng University, Taiwan  
 2009 – 2010      Postdoctoral fellow, Chung Yuan Christian University, Taiwan  
 2011 – 2012      Postdoctoral research associate, Texas A&M University at Qatar  
 2012 – 2015      Postdoctoral research fellow, Molecular Imaging Program at Stanford (MIPS), Bio-X Program, Department of Radiology, School of Medicine, Stanford University

2015 – present    Research Scientist, Molecular Imaging Program at Stanford (MIPS), Bio-X Program, Department of Radiology, School of Medicine, Stanford University

### **Professional Memberships**

2010                Member, American Chemical Society (ACS)  
2013                Member, World Molecular Imaging Society (WMIS)  
2015                Consulting Editor, Journal of Drug Design, Development and Therapy

### **Awards and Fellowships**

6/2012             Postdoctoral fellowship, Stanford University School of Medicine, CA, USA  
9/2010             Qatar Foundation, Qatar National Research Fund (QNRF) postdoctoral fellowship, Texas A&M Univ. at Qatar  
2009                National Science Council (NSC) Taiwan, Postdoctoral fellowship  
2004                National Science Council (NSC) Taiwan, Ph.D research fellowship

### **C. Contribution to Science**

1. My early publications focused on the development of new synthetic methods and its application to the synthesis of biologically natural products. I have developed a novel methodology for the synthesis of 2-tetralones and synthesized antimicrobial natural product Zenkequinone B.
  - a. A concise methodology for the synthesis of 2-tetralone by  $\text{TiCl}_4$  promoted cyclization of 4-aryl-2-hydroxybutanal diethyl acetal. Hon Y-S.\*; Devulapally, R. ***Tetrahedron Lett.* 2009, 50, 5713–5715.**
  - b.  $\text{TiCl}_4$ -promoted intramolecular cyclization of 4-methoxy-5-arylethyl-1,3-dioxolan-2-ones: an expedient method to prepare 2-tetralones. Hon Y-S.\*; Devulapally, R. ***Tetrahedron Lett.* 2009, 50, 2831–2834.**
  - c. The first total synthesis of zenkequinone B. Devulapally, R.; Hon, Y-S.\* ***Tetrahedron Lett.* 2011, 52, 3183-3185**
2. In addition to the contributions described above, I have developed azulene chemistry and Suzuki-Miyaura Cross coupling reaction of organotrifluoroborates, These methods are useful for the efficient development of novel drugs candidates.
  - a. Efficient syntheses of 3H-azuleno[8,1-cd]pyridazines and their thermal and photochemical reactions. Chi-Phi Wu,\* Devulapally, R.; Li, T-C.; Ku, C-K.\*; Chung, H-C. ***Tetrahedron Lett.* 2010, 51, 4819–4822.**
  - b. Synthesis and cross-coupling reactions of potassium imidomethyltrifluoroborates with aryl chlorides. Devulapally, R.; Nicolas, N.; Molander G. A.\*; Seapy, D. G.\* ***Tetrahedron Lett.* 2012, 53, 1051-1055.**
  - c. Suzuki-Miyaura Cross-Coupling of Potassium Trifluoro(N-Methylheteroaryl)borates with Aryl and Heteroaryl Halides. Molander, G. A.\*; Ryu, D. W.; Hosseini-Sarvari, M.; Devulapally, R.; Seapy, D. G.\* ***The Journal of Organic Chemistry*, 2013, 78, 6648-6656.**
3. My current research publications at Stanford focuses on developing multifunctional polymer nanocarriers for the co-delivery of therapeutic nucleic acids (microRNAs, pDNAs) and drugs for hepatocellular carcinoma and breast cancer treatment in pre-clinical small animal model and targeted peptides as molecular sensors for imaging histone methylations in living animals. I have developed a nanoparticles mediated microRNA therapy for triple negative breast cancer treatment. My other

publication, we are developing degron protease blockade sensor to image epigenetic histone protein methylation in cells and living Animals.

- a. Hepatocellular Carcinoma Treatment by Ultrasound-Guided Delivery of Two Complementary microRNAs: miRNA-122 and anti-miR-21. Chowdhury, S. M.; Wang, T.-Y.; Bachawal, S.; **Devulapally, R.**; Choe, J. W.; Elkacem, A. L.; Yakub, B. K.; Wang, D.; Paulmurugan, R.; Willmann, J. K. . **Journal of Controlled Release** **2016**, doi: 10.1016/j.jconrel.2016.08.005 (In Press).
- b. Orlistat and Antisense-microRNA loaded PLGA-PEG nanoparticles for Enhanced Triple Negative Breast Cancer Therapy. Bhargava-Shah, A.; Foygel, K.; Devulapally, R.; Paulmurugan, R. **Nanomedicine (Lond)** **2016**, 11, 235-247.
- c. Folate receptor targeted polymeric micellar nanocarriers for delivery of orlistat as a repurposed drug against triple negative breast cancer. Paulmurugan, R.; Bhethanabotla, R.; Mishra, K.; Devulapally, R.; Foygel, K.; Sekar, T. V.; Ananta, J. S.; Massoud, T. F.; Joy, A. **Molecular cancer therapeutics**, **2016**, 15, 221-231.
- d. Polymer Nanoparticles Mediated Codelivery of AntimiR-10b and AntimiR-21 for Achieving Triple Negative Breast Cancer Therapy. Devulapally, R.; Narayana M Sekar, N. M.; Sekar, T. V.; Foyel, K.; and Massoud, T. F.; Willmann, J. K.; Paulmurugan, R. **ACS Nano**, **2015**, 9, 2290-2302.
- e. Formulation of anti-miR-21 and 4-hydroxytamoxifen co-loaded biodegradable polymer nanoparticles and its anti-proliferative effect on breast cancer cells. Devulapally, R.; Sekar, T. V.; Paulmurugan, R. **Molecular Pharmaceutics**, **2015**, 12, 2080-2092
- f. Ultrasound-guided Delivery of microRNA Containing Nanoparticles into Cancer T. Y. Wang, J. W. Choe, Pu, R. Devulapally, Bachawal, S.; Machtaler, S.; Chowdhury, S.M.; Luong, R.; Tian, L.; Khuri-Yakub, P. T.; Rao, J.-H.; Paulmurugan, R.; Willmann, J. K. **Journal of Controlled Release**, **2015**, 203, 99-108.
- g. Degron Protease Blockade Sensor to Image Epigenetic Histone Protein Methylation in Cells and Living Animals. Sekar, T. V.; Foyel, K.; Devulapally, R.; Paulmurugan, R. **ACS Chem. Biol.**, **2015**, 10, 165–174.
- h. Polymer nanoparticles for drug and small silencing RNA delivery to treat cancers of different phenotypes. Devulapally, R.; Paulmurugan, R. **WIREs Nanomed Nanobiotechnol** **2014**, 6:40–60.

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<https://www.ncbi.nlm.nih.gov/myncbi/ramdevula/cv/>

## D. Research Support

### Ongoing Research Support

NIH R01 CA161091 Paulmurugan (PI) 06/01/12 –

Molecular Sensors for Imaging Histone Methylations in Living Animals

The goal of this project is to develop in vivo imaging methods to study histone methylation specifically in N-tail lysine and arginine.

Role: Researcher

## Completed Research Support

CCNE-Pilot Project Paulmurugan (PI) 08/01/14 – 07/31/15

To develop high-sensitive nanoplasmonic sensor for simultaneous quantitation of chromodomains recruitment to two-histone lysine methylation marks (H3K9me3 and H3K4me3)

The goal of this project is to develop high sensitive localized nanoplasmonic sensor for measuring the recruitment of chromodomains from royal family structural fold to methylated histone marks in H3 and H4 proteins

Role: Researcher

Qatar National Research Fund (QNRF), National Priorities Research Program (NPRP)

Seapy (PI) and Molander (PI) 09/2010 – 05/2012

Acyltrifluoroborates: Stable Acyl Anion Equivalents

The goal of this project was to develop Suzuki-Miyaura cross-coupling reactions of organotrifluoroborates.

Role: Researcher

National Science Council (NSC) Taiwan 08/2009-08/2010

Grant No.: NSC 98-2811-M-033-016, 99-2811-M-033-009

PI: Chun-Chen Liao:

Project: I. Masked ortho-benzoquinones chemistry (MOBs) in organic synthesis; II. Efficient synthesis of 3*H*-azuleno[8,1-*cd*]pyridazines and their thermal and photo chemical reactions.

Role: Researcher