

- Researcher with +10yrs of experience in the field of Immunology, Biochemistry, Molecular and Cell biology & Microbiology
- Track record in handling different model organism like mice, mammalian cell culture and extensive training in diverse area of research like Cardiovascular, Allergy and Immunology.
- Proven ability to initiate interdisciplinary collaboration as well as leadership and supervisory abilities developed through mentoring graduate students/technicians, leading institution-wide events, and journal clubs.
- Authored/delivered scientific presentations / journal publications (7 publications, 12 Conference poster and oral presentations)
- High analytical and project management skills with a passion for learning new technologies. Experience in varied research field shows versatility and adaptability.

## Senior Scientific Affairs Manager

*Biomerieux, Inc, USA Jan2020- Present*

- BioMérieux conceives, develops and markets diagnostics solutions intended for clinical and industrial applications, which determine the origin of a disease or a contamination to improve the health of patients and ensure consumer safety.
- Serve as technical expert on rapid and alternative microbiological methods and provide scientific support to the Global Pharma Quality Control Business.
- Building out and managing the Scientific Affairs Dept, in-charge of setting up microbiology feasibility studies, from both the scientific and operational perspective. This includes evaluating the resources needed for each project, proposing a specific timeline and cost for each project to our customers. Platforms that are integrated in the feasibility studies scope are around microbiological detection automation (such as RMMs, automated sterility testing, automated environmental monitoring).
- Lead scientific, technical and business development aspects within the laboratory.
- Key point of contact in the design and delivery of pre-sale feasibility and post-market application/method development and research to identify product performance and gaps in the product portfolio.
- Work in close collaboration with the Marketing and Commercial organizations, to ensure accurate communication of key scientific concepts in media or conferences.
- Guide Scientific Communications team in development and implementation of strategic evidence maps and communication plans with direct collaboration and alignment with Leadership Teams and cross-functional partners
- In collaboration with Global Scientific Affairs, help in establishing academic /institution KOL relationship.
- Serves as liaison with other businesses and senior management to establish policies, procedures/SOPs, and cross-functional interactions development.
- Ensure alignment between R&D teams developing new assays/panels and product, study design control, and quality processes teams and showcased a strong scientific leadership on the Mycoplasma, BACT/Alert, SCAN-RDI and Endotoxin detection technologies in BioMérieux's customer care approach.

## Post-doctoral Research

*University of Illinois at Chicago, USA Aug 2017-Jan2020*

- Conducted iPS (induced pluripotent stem cell) research and animal studies to model and better understand the genetic causes and treatment for familial atrial fibrillation.
- **Awarded 2018-2020 National Institute of Health (NIH) – T32 Postdoctoral Fellowship.** Given to top 10% of postdoctoral trainee applicants at UIC in personalized cardiovascular medicine.

- **First author of a manuscript published in JMCC (Journal of Molecular and Cellular Cardiology).** Electrophysiologic and molecular mechanisms of a frameshift NPPA mutation linked with familial atrial fibrillation (<https://www.ncbi.nlm.nih.gov/pubmed/31077706>).
- Used techniques like Echo/Electrocardiography, Trans-esophageal Rapid pacing, and tail-cuff blood pressure measurement to understand the underlying molecular mechanism involved in AF caused by this frameshift mutation.
- Worked on Ibrutinib-anticancer drug mediated atrial fibrillation in B-cell malignant patients in collaboration with **Northwestern Medicine** and **University of Chicago**.
- Managed project related to obesity mediated AF project wherein we used MRI to assess the Epicardial /pericardial fat in High fat diet induced obese mice as well other molecular and electrophysiological techniques.
- Editorial Board member of CPQ medicine journal and served as expert reviewer for many research manuscripts.
- Instructed and supervised one lab technician as well as 2 undergrad and 3 MD/PhD students in their project. Mentored and coordinated in 4 projects which resulted in 5 publications and a VA Merit Grant /RO1 NIH Grant as well as S10 Instrument Grant and Chicago Biomedical Consortium Proposal.
- Managed a team of clinical research coordinators involved in the recruitment of patients for various studies.
- Successfully moderated conversations with product specialist of instruments, cell culture and various biotechnology and vector building companies for discounted of different consumables, reagents, and equipment. Wrote protocols for Institutional Review Board (IRB) & Institutional Animal Care and Use Committee (IACUC) approval, process and managed renewals and amendments for active protocols.

#### **PhD Research Fellow**

*Karlsruhe Institute of technology, Germany 2010-2013*

- Conducted independent research for DFG (SPP1394) funded project to elucidate the role of PEP Phosphatase in signaling pathways critical for Mast cell allergic inflammation.
- LYP (Lymphoid tyrosine phosphatase) and its murine orthologs PEP (PEST-domain enriched tyrosine phosphatase) is exclusively expressed in immune cells and is an attractive target for potential pharmacological intervention in the treatment of a broad spectrum of autoimmune diseases. PEP is also expressed in mast cell, but its mode of action is not known. Bone marrow derived mast cells (BMMC) from mice with genetic ablation of PEP gene was used in the study.
- Gene expression profile, co-immunoprecipitation and anaphylactic studies in these mice demonstrated that PEP interacts with early signaling components and positively regulates Calcium signaling and cytokine pathway which leads to anaphylaxis in mice.
- Pharmacological inhibition of PEP activity together with glucocorticoid administration was shown to provide an effective rescue for Passive systemic anaphylaxis in mice which proved PEP positively regulates anaphylaxis through mast cell signaling.
- Developed PEP inhibitors in collaboration with labs of University of Utah & Indiana University.
- Designed and performed in vitro-in vivo assays for screening and determining the potency and efficacy of the phosphatase inhibitors in rescuing mice from Anaphylactic shock, which led to publication in Journal of Medicinal Chemistry and Allergy. The study proved to be a starting point for the development of clinically useful protein tyrosine phosphatase inhibitors.
- Coordinated all aspects of laboratory: inventory, maintenance of equipment, workflow planning, safety, and weekly research meetings. Developed and designed lab SOPs, Lab E Notebook.

#### **Research Intern**

*Virginia Commonwealth University, USA 2007-2008*

- Role of bioactive lipid in inflammatory diseases like trauma-induced coagulopathy, sepsis, and anaphylaxis and cancer via regulation of eicosanoid biosynthesis was the goal of this project. Products of arachidonic acid (AA), eicosanoids, are well-established mediators of inflammatory responses with major roles in the pathogenesis of the above disease states including sepsis. The production of AA by phospholipases is the initial rate-limiting step in eicosanoid biosynthesis, and the major phospholipase

that regulates eicosanoid synthesis in response to inflammatory agonists is group IVA cytosolic phospholipase A2 (cPLA2 $\alpha$ ). The study demonstrated that C-1-P binding site is crucial for the translocation of cPLA2 $\alpha$  to Golgi apparatus/perinuclear region upon agonist stimulation.

- Research focused on ceramide-1-phosphate (C1P)/cPLA2 $\alpha$  interaction as target for anti-inflammatory mediators. Constructed a Fluorescent tagged cPLA2 $\alpha$  recombinant adenovirus and identified inflammatory agonist that stimulates translocation of cPLA2 $\alpha$  to in carcinoma cells through Subcellular fractionation and Immunoblotting and confocal microscopy.
- In this study, wild-type GFP-tagged cPLA2 $\alpha$  and a C1P interaction site mutant of GFP- cPLA2 $\alpha$  was used. These enzymes were over-expressed in A549 lung Adeno carcinoma cells followed by treatment with Ca ionophores like A23187, and other agonists like FMLP, ATP.
- Biochemical assays and confocal microscopy showed FMLP is a good candidate to trigger the translocation of cPLA2 $\alpha$  and C1P binding site is crucial for the translocation.
- Developed a novel strategy employing Protein Synthesis Inhibitors (PSI) to reduce Neutrophil extravasations following Tissue-Injury which could form a basis for a therapy to prevent Acute respiratory distress syndrome (ARDS).
- Acute Respiratory Distress Syndrome (ARDS) is a condition characterized by fluid-filled alveoli and decreased lung compliance. This severe respiratory failure is due to exaggerated neutrophil activation and recruitment through E-selectin ligands expressed by neutrophils which help in the recruitment of these cells to such inflammatory sites.
- A trans-well insert seeded with HMEC-1 which mimicked the in-vivo system of endothelium of the blood vessel and the tissue milieu were prepared for the transmigration experiments. TNF $\alpha$ 's treatment for 4 hours significantly activated HMEC-1 to enhance polymorphonucleocytes PMNs transmigration.
- Protein Synthesis Inhibitors (PSI) –Puromycin and Anisomycin together inhibited the transmigration of PMNs along with the E-selectin expression in presence of inducer like TNF $\alpha$ . Hence Protein synthesis inhibitors (PSI) can be used to inhibit neutrophil transmigration and could form a basis for a therapy to prevent ARDS.

#### **MSc Research Fellow**

*The Maharaja Sayajirao University, India 2004-2006*

- Conducted independent research to improve *Aspergillus niger* Aj2k (Lab isolate) strain for increased Pectinase production. Developed methods to optimize fermentation medium using statistical designs which increased Pectolytic enzymes production with higher enzyme activity.
- The most important group of enzymes used in the fruit and vegetable processing industry is “Pectinases” which increases the juice yields and clarify juices. Commercial preparations of pectic enzymes are from fungal sources especially *Aspergillus* spp, of which *Aspergillus niger* is the most indispensable since considered GRAS by USFDA.
- Developed methods to optimize fermentation medium using statistical designs like 2k factorial design, response surface methodology that resulted in increased Endopectinase Production with higher enzyme activity.
- Physical mutagenesis using U.V rays resulted in the generation of two putative mutants with a higher enzyme activity in the optimized media. The enzyme was characterized based on activity and molecular weight using different activity staining techniques and SDS-PAGE renaturing gel, further pH, and the temperature optima; Km of these enzymes were determined, both the mutants showed enhanced Pectolytic activity.
- Interpreted complex statistical data and compiled data in collaboration with senior scientists. Demonstrated ability to present complex data in a clear concise manner for a range of audience.

#### **Teaching Assistant**

*Karlsruhe Institute of technology, Germany 2010-2012*

- Led the process of training and managing postgraduate students in laboratory techniques like cell culture, biochemical, molecular and immunological assays.
- Lectured undergraduate class on Immunology and cell biology.

## Education

- Karlsruhe Institute of technology, Germany  
PhD Biological science & Chemistry 2010-2013 (GPA 4.0) *summa cum laude*
- The Maharaja Sayajirao University, India  
MSc Microbiology 2004-2006 (GPA 4.0)
- The Maharaja Sayajirao University, India  
BSc Zoology, Botany, Chemistry 2001-2004 (GPA 4.0)

## Professional Membership

- 2010-2013 EMBRN-COST member
- 2010-2013 SPP-Mastzell member
- 2011-Present The Mastocytosis Society member
- 2017-Present American Heart Association member
- 2021-Present PDA micro

## Research Techniques

- **Molecular Biology:** Isolation and Characterization of RNA, c-DNA synthesis, plasmid and genomic DNA isolation, Agarose-Gel Electrophoresis, Real Time PCR (qPCR), Preparation of RNA for Microarray, Luciferase Reporter Assay, Site-directed mutagenesis, Viral vector designing, Fluorescent Labelling.
- **Biochemistry:** Spectrophotometry, Confocal microscopy, Western Blot Analysis, Protein Purification, Expression and Isolation of tagged proteins from bacterial cells, ELISA, Calcium flux measurement with Flow Cytometry (using BDFACS Aria and FlowJo Software), Cell Cycle Assay, Native-PAGE, Cytosol/Nuclear extraction Assay, Sucrose Gradient Lipid Raft Fractionation, In-Vitro Kinase Assay, Co-immunoprecipitation, Myeloperoxidase ELISA Assay, MTT Assay, PGE<sub>2</sub> Assay, Pharmacology-kinetics & dynamics.
- **Histology:** Immunohistochemistry, Histochemical staining, Immunofluorescence
- **Cell Culture:** Generation & stimulation of Bone Marrow Mast cells from mice, Primary Human Mast Cell Culture from Patient Blood following CD34+ Magnetic Bead Separation, Isolation of PMNs, Cell lines (CHO, HEK, HL-1, INC-1 and  $\beta$ TC cells) Cryo-preservation and Recovery of Cell Lines, Transfections using Fugene and Amaxa Nucleofector Systems, Degranulation & Adhesion Assay for mast cells.
- **Animal Handling:** Experience in Handling Mice, blood sampling techniques (tail vein, cardiac puncture), Injection techniques (intravenous, intraperitoneal, subcutaneous), Narcotization of mice (inhalation anesthesia), Euthanasia (cervical dislocation, CO<sub>2</sub>), Passive-systemic Anaphylaxis study.
- **Microbiology:** Aseptic and sterile techniques, Optical microscopy, Bacterial culture, plating methods (streak, spread, pour, replica), Enumeration and identification of bacteria, Staining, Transformation, Antibiotic assay (MIC), Plaque assay, Spore inoculum preparation.
- **Statistics Analysis software:** Graph Pad Prism, Response Surface Methodology and Sigma Plot.
- **Software Application:** MS Word, MS Excel, MS PowerPoint, Adobe Photoshop, Flow Jo, MeV (multi experiment viewer), Image J, Cell Quest

## Oral & Poster Presentations

- **2005:** Strain Improvement of *Aspergillus niger* Aj2k for increased endopectinase production (Poster presentation, Indian Science. Academy sponsored seminar on Modern Biology: Facets and Prospects, India)
- **2010:** PEP positively regulates anaphylaxis (Oral presentation EMBRN-COST International Mast cell & Basophil Meeting, Berlin, Germany)

- **2011:** PEP is a positive regulator of anaphylaxis in mice (Oral presentation EMBRNCOST International Mast cell & Basophil Meeting, Southampton, UK)
- **2012:** PEP-Modulator of Mast cell signaling (Oral presentation EMBRNCOST International Mast cell & Basophil Meeting, Berlin, Germany)
- **2012:** PEP-Role in mast cell signaling (Oral presentation Summer School on Mast Cell Biology, Dresden, Germany)
- **2018:** Molecular and Electrophysiologic Characterization of Obesity Mediated Atrial Fibrillation in Mc4r-KO Mice. (Selected for oral presentation at BCVS July 2018, San Antonio Texas, poster presentation at AHA, Chicago meet)
- **2018:** The Role of Mitochondrial Stress and the Late Sodium Current in Ibrutinib-Mediated Atrial Fibrillation (Poster presentation, AHA, Chicago Meet)
- **2018:** Electrophysiologic and molecular mechanisms of a frameshift NPPA mutation linked with familial atrial fibrillation. (Awarded Best Oral presentation as well as Young Investigator award at UIC-Center for Cardiovascular Research Day, Chicago)
- **2019:** The Role of Mitochondrial Stress and the Late Sodium Current in Ibrutinib-Mediated Atrial Fibrillation (Poster presentation, BCVS, Aug, Boston)
- **2019:** Downregulation of the Cardiac Sodium Channel Nav1.5 Mediates Obesity Induced Atrial Fibrillation (Poster presentation, Paul Dudley White International Scholar Award recipient, BCVS, Aug, Boston).

### Publication

- Mark D. McCauley, Liang Hong, Arvind Sridhar, **Ambili Menon**, Srikanth Perike, Meihong Zhang, Ivson Bezerra da Silva, JiaJie Yan, Marcelo G. Bonini, Xun Ai, Jalees Rehman, Dawood Darbar. Ion Channel and Structural Remodeling in Obesity: Mediated Atrial Fibrillation *Circ Arrhythm Electrophysiol.*2020
- Ornelas-Loredo A, Kanya S, Alzahrana Z, **Menon A**, Konda S, Darbar D. Reduced Therapeutic Efficacy of Sodium Channel Blocker Antiarrhythmic Drugs in Obesity-Mediated Atrial Fibrillation. *JAMA Cardiology* 2019:
- **Menon A**, Hong L, Savio-Galimberti E, Sridhar A, Youn SW, Zhang M, Kor K, Blair M, Kupersmidt S, Darbar D. Electrophysiologic and molecular mechanisms of a frameshift NPPA mutation linked with familial atrial fibrillation. *J Mol Cell Cardiol.* 2019 Jul; 132:24-35.
- Argenziano M, Lambers E, Hong L, Sridhar A, Zhang M, Chalazan B, **Menon A**, Savio-Galimberti E, Wu JC, Rehman J, Darbar D. Electrophysiologic Characterization of Calcium Handling in Human Induced Pluripotent Stem Cell-Derived Atrial Cardiomyocytes. *Stem Cell Reports.* 2018 Jun 5;10(6):1867-1878.
- He Y, Liu S, **Menon A**, Stanford S, Oppong E, Gunawan AM, Wu L, Wu DJ, Barrios AM, Bottini N, Cato AC, Zhang ZY. A potent and selective small-molecule inhibitor for the lymphoid-specific tyrosine phosphatase (LYP), a target associated with autoimmune diseases. *J Med Chem.* 2013 Jun 27;56(12):4990-5008.
- Obiri DD, Flink N, Maier JV, Neeb A, Maddalo D, Thiele W, **Menon A**, Stassen M, Kulkarni RA, Garabedian MJ, Barrios AM, Cato AC. PEST-domain-enriched tyrosine phosphatase and glucocorticoids as regulators of anaphylaxis in mice. *Allergy.* 2012 Feb;67(2):175-82.

Technical Skills	Microsoft Office, EndNote, Image J, Prism, Statistics
Certifications	Project Management Skills, AALAS and CITI (IACUC , Research training),FDA GLP and clinical GMP, Grant Writing skills, Clinical and Translational Research Methods course
Languages	English (Proficient), German (Intermediate), Hindi/Malayalam (Native)

Honors & Awards	2018 - Young Investigator Award UIC-CCVR 2018 - Best Oral presentation UIC-CCVR 2018 - T32 Postdoctoral Training Program in Personalized Cardiovascular Medicine, NIH 2013 - Doctoral Degree <i>Summa cum laude</i> 2010 - Doctoral Scholarship Bio-Interfaces International Graduate School Karlsruhe Institute of Technology 2005 - 1 <sup>st</sup> prize in debate competitions, Dept. of Microbiology, The Maharaja Sayajirao University 2002 - 1 <sup>st</sup> prize in debate competitions, Dept. of Zoology, The Maharaja Sayajirao University
Interest	Trained Indian classical dancer, practicing Yoga, Vipassana meditation and travelling

**Bibliography** <https://www.ncbi.nlm.nih.gov/myncbi/1zum2rloQly59o/bibliography/public/>

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