

## CAREER OBJECTIVE

- To utilize my technical knowledge, skills and research experience to develop tools for application in the field of Mass-spectrometry and allied sciences.
- To work in a dynamic work environment that provides opportunities for continuous learning and growth for my self-development and that of the organization

## EDUCATION

### **Doctor of Philosophy (Ph.D.) in Genome Science and Technology (Mass-spectrometry based proteomics)**

*University of Tennessee/ Oak Ridge National Laboratory*

August 2017

### **Master of Science in Biotechnology**

*Hislop College, RTM, Nagpur University*

June 2008

### **Bachelor of Science in Biotechnology**

*Hislop College, RTM, Nagpur University*

June 2006

## EXPERIENCE

### **Technical Lab Director, EnMed Microanalytics Inc.**

*September 2018 – Present*

- Development of a minimally-invasive blood collection method for determining exposures to toxic metals
- Quantification of exposure to toxic heavy metals in dried blood spots (DBS) using Inductively coupled plasma mass spectrometry (ICP-MS)

### **Postdoctoral Research Fellow, Northwestern University - Fienberg School of Medicine** *October 2017 to August 2018*

- Development and validation of biomarkers for estimating environmental risk factors associated with adverse health outcomes.
- Development and validation of targeted mass spectrometry approaches for quantifying panels of protein adducts in plasma and dried blood spot (DBS) samples.
- Protein extraction and peptide digestion from plasma and DBS samples.
- Investigating the effects of exposure to toxic heavy metals in DBS samples using Inductively coupled plasma mass spectrometry

### **Graduate Research Assistant, Genome Science & Technology**

*August 2012 – August 2017*

#### ***UT/ORNL Graduate School of Genome Science & Technology***

- Use of high-throughput mass spectrometers and two-dimensional chromatographic techniques for obtaining deeper proteome coverage of complex microbial ecosystems.
- Data analysis using High performance computing clusters to match tandem mass spectra with sequenced databases and post-processing of resulting high-throughput data.
- Experience in handling protein identification, quantitation, *de-novo* sequencing algorithms.
- Protein extraction from community samples and subsequent peptide digestion and standard biochemical assays.

## Senior Research Associate

August 2009 - June 2012

### ***EUGENIKS, Cytogenetic and DNA laboratory, Nagpur, India***

- Prenatal Diagnosis from Amniotic Fluid and Chorionic Villus Biopsy for detailed investigations of Genetic Disorders like Sickle Cell Disease,  $\beta$ -Thalassemia and Trisomies (Down's syndrome, Edward's Syndrome etc.)
- Chromosomal Analysis from Blood samples for investigations of Chromosomal Aberrations resulting in Spontaneous Miscarriage.
- Triple Marker Screening (AFP,  $\beta$ -hCG, E-3) from maternal serum for identification of potential risks of chromosomal abnormality in the Fetus.

## Technical Sales officer

August 2008- January 2009

### ***Lilac Medicare Pvt. Ltd., Mumbai, India (Diagnostic Company)***

- Marketing and sales of ELISA kits and electrophoretic instruments used in hospital settings.
- Instrumentation and customer troubleshooting

## **AWARDS**

- American Society of Mass spectrometry (ASMS) travel award, 2016
- Recognized by graduate student Senate for outstanding achievements in research contribution to the University of Tennessee, Knoxville (2017).

## **PUBLICATIONS**

- Kantor R, Huddy R, **Iyer R.M**, Thomas B, Brown C, Anantharaman K, Tringe S, Hettich R.L, Harrison S, Banfield J. (2017) Genome-resolved meta-omics ties microbial dynamics to process performance in biotechnology for thiocyanate degradation. (*Environmental Science & Technology, ACS Publications*).
- Skennerton C, Chourey K, **Iyer R.M**, Hettich R.L, Tyson G, Orphan V. (2017) Methane-fuelled syntrophy through extracellular electron transfer. Uncovering the genomic traits conserved within diverse bacterial partners of ANME archaea. (*mBio, American society for Microbiology*).
- Isabelle Raymond-Bouchard, Karuna Chourey, Ianina Altshuler, **Iyer R.M**, Robert L. Hettich, Lyle G. Whyte. (2017) Mechanisms of subzero growth in the cryophile *Planococcus halocryophilus* determined through proteomic analysis. (*Environmental Microbiology and Environmental Microbiology Reports*).
- Yu H, Sushanti D, McGlynn S, Skennerton C, Chourey K, **Iyer R.M**, Scheller S, Tavormina P, Hettich R.L, Mukhopadhyay B, Orphan V. (2018) Comparative genomics and Proteomic analysis of assimilatory sulfate reduction pathways in Anaerobic Methanotrophic ANME archaea. (*Frontiers in Microbiology*)
- Yang Y, Higgins S, Yan J, Simsir B, Chourey K, **Iyer R.M**, Hettich R.L, Baldwin B, Ogles D, Loeffler F. (2017) Grape Pomace Compost Harbors Strictly Organohalide-Respiring Dehalogenimonas Species with Novel Reductive Dehalogenase Genes. (*International Society of Microbial Ecology*).
- Orenella L.H, Hatt J.K, **Iyer R.M**, Chourey K, Hettich R.L, Spain J.C, Yang W.H, Joanne C, Sanford C, Sanford R, Loeffler F. E, Konstantinos K.T (2018) Comparing DNA, RNA and protein levels for measuring microbial activity in nitrogen-amended soils. (*Under Review, Applied and Environmental Microbiology*)
- Kleindienst S, Chourey K, Chen G, Higgins S, **Iyer R.M**, Hettich R.L, Campagna S.L, Mack E, Seger E.S, Loeffler F. E (2018) Proteogenomics reveals novel reductive dehalogenases and methyltransferases putatively involved in anaerobic dichloromethane metabolism. (*Under Review, Applied and Environmental Microbiology*)

#### Other Manuscripts under preparation:

- Montgomery N, **Iyer R.M**, Funk W.E. Targeted Multiplexed Adduct assay for quantifying HSA-Cys<sup>34</sup> adducts in epidemiological research (*Target Journal: Environmental Science & Technology, ACS Publications*).
- Lador D.T, **Iyer R.M**, Pleil J.D, Funk W.E. A Systematic Review of Exposure Biomarkers in Dried Blood Spots. (*Target Journal: Analytica Chimica Acta*).
- Buckley J, Woodruff T, Barret E, Beamer P, Bennett D, Bloom M, Fennel T, Fry Rebecca, Funk W, Hamra G, Hecht S, **Iyer R.M**, Karagas M, Lyall, K, Pellizzari E, Signes-Pastor A, Starling A, Wang A, Watkins D Opportunities for evaluating chemical exposures and child health: The Environmental Influences on Child Health Outcomes (ECHO) Program. (*Target Journal: Journal of Exposure Science and Environmental Epidemiology*)

#### **SELECTED PRESENTATIONS AT PROFESSIONAL MEETINGS**

- **Ramsunder Iyer**, Nathan T. Montgomery, Gregory E. Miller, William E. Funk. Applying Protein Adductomics to Identify Biomarkers of Socioeconomic Status. Research Day, Northwestern University - 2018
- **Ramsunder Iyer**, David Burstein, Jillian Banfield, Robert Hettich. Evaluating the impact of multiple search engines and *de novo* sequencing algorithms for obtaining deeper proteome coverage of complex environmental samples. ASMS Indianapolis - 2017
- **Ramsunder Iyer**, Richard Giannone, Rose Kantor, Susan Harrison, Robert Huddy, Jillian Banfield, Robert Hettich. Evaluating the effects of Metagenome database quality and an optimized LC-MS/MS approach for obtaining deeper proteome coverage of complex microbial communities. ASMS San-Antonio - 2016
- **Ramsunder Iyer**, Richard Giannone & Robert Hettich. Optimization of 2D-Chromatographic conditions for High Throughput and Enhanced Duty Cycle in MudPIT Proteome experiments. American Society of Mass spectrometry, ASMS St. Louis - 2015
- **Ramsunder Iyer**, Richard Giannone & Robert Hettich. Design and Evaluation of a Modified Salt pulse scheme for increased throughput in a MudPIT proteome experiment. American Society of Mass spectrometry, ASMS Baltimore – 2014

#### **CERTIFICATIONS/WORKSHOPS**

- Workshop on *Cytogenetics* at the Division of Human Genetics, Department of Anatomy, St. John's Medical college, Bangalore (2011).
- Workshop on Immunology, *Hormonal assays, Southern and Western Blotting* organized by Vidarbha Association of Medical Microbiologists, Nagpur (2010).

#### **SKILLS**

##### **Technical skills:**

- LC/MS-MS and ICP-MS instrument operations, sample loading and data acquisition.
- Molecular methods including protein extraction and PCR.

**Computer skills:** Bioanalytical software (Xcaliber), Statistical analysis software's (Perseus), Proteomic analysis software (ID picker, Myrimatch, SearchGUI, PeptideShaker), *de novo* sequencing algorithms (Novor, ScanRanker, PepNovo+), Data searching using high performance computing clusters, MS Office

**Language skills:** Fluent in English, Tamil and Hindi

#### **EXTRACURRICULAR ACTIVITIES**

- Vice President at Indian Student Association, Manthan, UT- Knoxville, 2015-16
- Executive member of the Biotech society of Hislop College (2004-2005)
- Executive Member of the Zoological Society of Hislop College (2003-2004)

