Karatatiwant Singh **Sidhu**

SCIENTIST - ANALYTICAL CHEMISTRY/ METABOLOMICS

Chandigarh, India

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Professional & Research Experience_____

Lab Research Technician, University of Vermont — *July 2017 - January 2022*
Analytical Chemistry, Proteomics and Mass Spec Facility, Department of Chemistry — *Burlington, Vermont, USA*

- Analysis and development of assays for stable isotopes of metabolites using a high-resolution Waters Xevo-G2-XS-QTof with an Acquity M-Class UPLC.
- Formulation of proteomics methods and quantification strategies for stable isotope labeled (SIL) & tryptic peptides for human and mouse proteins, resulting in departmental funding from a NIH R01 grant.
- Creation of workflows to characterize, profile and measure metabolomics pathways using LC techniques such as hydrophilic interaction liquid chromatography (HILIC) and reverse phase LC.
- Development of high throughput MRM assays for quantification of amino acids in biological cell culture media using an ABSciex 4000 QTRAP with a Shimadzu SIL-20A HPLC.
- Execution and generation of complex fluxomics & metabolomics methods for biological pathway analysis including glycolytic, TCA and PPP pathways.
- Maintenance and troubleshooting of high-resolution mass spectrometer and UPLC equipment, lab inventory, safety, and standard operating protocols.

Graduate Assistant, Texas A&M University — *Feb 2016 - May 2017*
CTRAL, Texas A&M - Analytical Chemistry - BSL-2 Facility — *College Station, Texas, USA*

- Optimization, development, and analysis of assays for amino acid stable isotopes to successfully measure low isotopic levels in human biological samples on an Ekisgent microLC200 and ABSciex 5500 QTRAP MS.
- Establishment and streamlining of workflow and sample preparation protocols by ~1hr per study by carrying out buffer testing and by conducting thorough stability analysis for human serum samples.
- Design and development of efficient gradients for LC analysis of bis-Fmoc amino acids and formulation of working gradients by pressure maintenance and column conditioning/troubleshooting.

Isotope Analysis - Intern, Texas A&M University — *May 2016 - August 2017*
CTRAL, Texas A&M - Analytical Chemistry - BSL-2 Facility — *College Station, Texas, USA*

- Development and analysis of enrichment and isotope dilution assays for human and pig plasma samples to quantify analytes including Urea (13C), Urea(15N2), Alanine(D4), Phenylalanine(ring-13C6)
- Establishing MS/MS parameters and validation assays for analytes including Spermine, Spermidine, Putrescine & Methionine Sulfoxide using syringe pump infusions and integrated LC chromatograms to develop methods for clinical testing measuring robustness, linearity and inter-day stability.

Graduate Research Assistant, Texas A&M University — *January 2016 - May 2016*
Office of Tech Commercialization — *College Station, Texas, USA*

HPLC/ R&D - Intern, Ind-Swift Industries — *June 2014 - July 2014*
Research and Development Internship — *Mohali, Punjab, India*

Vaccine Development - Intern, C.R.I. — *June 2013 - July 2013*
Central Research Institute , Govt. Of India — *Kasauli , Himachal Pradesh, India*

Education_____

Master of Science (Biotechnology) - Texas A&M University — *2015 - 2017*
GPA: 3.88 — *College Station, Texas, USA*

Bachelor of Engineering (Biotechnology) - Panjab University — *2011 - 2015*
GPA: 7.58/10, Rank 7/78 — *Chandigarh, India*

Publications_____

- Abreu, S. C. **Sidhu KS** , *et al.* Differential effects of the cystic fibrosis lung inflammatory environment on mesenchymal stromal cells. ***American Journal of Physiology-Lung Cellular and Molecular Physiology*** 319, L908–L925 (2020) https://doi.org/10.1152/ajplung.00218.2020

- Giddings, E.L., Champagne, D.P., Wu, MH., **Sidhu KS** *et al.* Mitochondrial ATP fuels ABC transporter-mediated drug efflux in cancer chemoresistance. ***Nat Commun*** 12, 2804 (2021). https://doi.org/10.1038/s41467-021-23071-6

- **Sidhu KS**, Amiel E, Budd RC, Matthews DE. Determination of cell volume as part of metabolomics experiments. ***American Journal of physiology. Cell Physiology.*** 2021 Dec;321(6):C947-C953 https://doi.org/10.1152/ajpcell.00613.2020

Skills_____

LC/MS AB SCIEX 5500, 4000, 2000 Waters Xevo-G2-XS QTOF, Acquity M Class UPLC, Eksigent microLC200, Eksigent HT-Ultra, CTC-PAL

Software Analyst, Multi-Quant, PLGS, Progenesis QI, XCMS, TargetLynx, El-Maven, Microsoft Project, MS Excel

Techniques Cell & Tissue Culture, Analytical Chemistry, HPLC/ UPLC, MS/MS, PCR, Electrophoresis, Sample Prep, Method Development

Coding R , Python

Languages English (fluent), Hindi(native), Punjabi (native), French (intermediate)