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Education

- 2006-2012 PhD, Biochemistry
Department of Chemistry
University of South Florida, Tampa, FL
- 2004-2006 M.Sc, Chemistry
Department of Chemistry
Indian Institute of Technology, Delhi, India
- 2001-2004 B.Sc, Chemistry
Department of Chemistry, St. Stephen's College
University of Delhi, India

Publications

- Conservation of the C-type lectin fold for accommodating massive sequence variation in archaeal diversity-generating retroelements, **Handa S**, Paul BG, Miller JF, Valentine DL, Ghosh P, *BMC Structure Biology* 2016, 16 (1), 13.
- Thiamine diphosphate activation in 1-deoxy-D-xylulose-5-phosphate synthase: insights into mechanism and underlying intermolecular Interactions, White JK*, **Handa S***, Vankaya SL*, Merkler DJ, Woodcock HL, *The Journal of Physical Chemistry* 2016, DOI: 10.1021/acs.jpcc.6b07248.
- Mechanistic binding insights for 1-deoxy-d-Xylulose-5-Phosphate synthase, the enzyme catalyzing the first reaction of isoprenoid biosynthesis in the malaria-causing protists, Plasmodium falciparum and Plasmodium vivax, Battistini MR, Shoji C, **Handa S**, Breydo L, Merkler DJ, *Protein Expression and Purification* 2016, 120, 16-27.
- Targeted diversity generation by intraterrestrial archaea and archaea viruses, Paul BG, Bagby SC, Czornyj E, Arambula D, **Handa S**, Sczyrba A, Ghosh P, Miller JF, Valentine DL 2015, *Nature Communication* 2015, 6, 6585.
- Mechanistic and structural analysis of a *Drosophila melanogaster* enzyme, Arylalkylamine N-acetyltransferase like 7, an enzyme that catalyses the formation of N-acetylarlylalkylamides and N-acetylhistamine, Dempsey DR, Jeffries KA, **Handa S**, Carpenter AM, RodriguezOspina S, Breydo L, Merkler DJ, *Biochemistry*, 2015, 54 (16), 2644-2658.
- Plasmodium vivax 1-deoxy-D-xylulose-5-phosphate synthase: homology modeling, domain swapping, and virtual screening, Ramamoorthy D, **Handa S**, Merkler DJ, Guida WC. *Journal of Data Mining Genomics & Proteomics* 2014, 5:S1-003.

- Expression of catalytic unit of *Plasmodium vivax* 1-deoxy-D-xylulose-5-phosphate (DXS) synthase in *E. coli*, **Handa S**, Ramamoorthy D, Spradling T, Adams JH, Guida WC, Merkler DJ. *FEBS OpenBio* 2013, 3, 124-129.
 - Expression of human Peptidylglycine α -hydroxylating Monooxygenase catalytic core (hPHMcc) in *E.coli.*, **Handa S**, Spradling T, Dempsey DR, Merkler DJ. *Protein Expression and Purification* 2012, 84, 9-3.
 - N-acylethanolamines as novel alcohol dehydrogenase 3 substrates, Ivkovic M, Dempsey DR, **Handa S**, Hilton JH, Lowe EW Jr, Merkler DJ. *Archive of Biochemistry and Biophysics* 2011, 506, 157-164.
- (*co-first author)

Manuscript under revision/preparation

- A new insight into the mechanism of 1-deoxy-D-xylulose-5-phosphate synthase (DXS), **Handa S**, Ramamoorthy D, Spradling T, Cook N, Guida WC, Merkler DJ.
- cDNA synthesis and adenine-specific mutagenesis mechanism in diversity generating-retroelements (DGR), **Handa S**, Singh SN, Guo H, Ghosh P.

Research experience

2012-present Postdoctoral research scholar in the lab of Dr. Partho Ghosh, UCSD

- Understanding the mechanism of reverse transcriptase from diversity-generating retroelements (DGR) involved in creating protein diversification through adenine specific mutagenesis.
- Studying the ligand-binding site of variable proteins from archaeal DGR using structural biology.

2006-2012 Graduate studies in the lab of Dr. David J. Merkler, USF

- Study of Non-Mevalonate Pathway for developing inhibitors against drug resistant bacteria and parasite. Steady-state and mutant base mechanistic study of DXS, the rate limiting enzyme in the pathway to predict the reaction mechanism.
- Explored Non-Mevalonate Pathway in *Plasmodium vivax* through expression of catalytic active unit of *P. vivax* DXS *E. coli.* and steady-state kinetic characterization of *P.vivax* DXS.

Meeting participation

- Poster entitled “Sequence variation in Archaea through diversity-generating retroelements” presented in 29th Protein Society Meeting, Barcelona, Spain.
- Poster entitled “1-deoxy-D-xylulose-5-phosphate synthase (DXS), substrate binding study and as a target for antimalarial drug” presented in 243rd National American Chemical Society Meeting, San Diego, CA.
- Poster entitled “Synthesis and Photophysical Studies of Photocaged N-Protected Glycines as Substrates for Peptidyl α -Hydroxylating Monooxygenase (PHM)” presented in 237th National American Chemical Society Meeting, Salt Lake City, UT.

Merit and awards

- CDDI travel award for attending ACS 243th National Meeting, San Diego, CA.
- ACS Division of Biological Chemistry travel award for attending ACS 243th National Meeting, San Diego, CA.
- Tharpe Fellowship, Department of Chemistry, USF, 2011.
- Tampa Bay ACS Student Travel Award for ACS 237th National Meeting, Salt Lake City, UT.
- Graduate Multidisciplinary Scholars (GMS) award through the University of South Florida Thrust Applied Life Sciences Program administered by the Florida Center of Excellence for Biomolecular Identification and Targeted Therapeutics (FCoE-BITT) 2009- 2010.