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SUMMARY

Passionate chemist with broad background in organic, analytical and biochemistry with experience in multistep synthesis, purification, and structural elucidation of small to complex organic and biomolecules.

EDUCATION and WORK

Dec. 2017 – present	Scientist <i>Omega Therapeutics, Cambridge, MA</i>
Sept. 2015 – Nov. 2017	Scientist <i>Alnylam Pharmaceuticals, Cambridge, MA</i>
Sept. 2013 – Sept. 2015	Postdoctoral Fellow in Chemistry <i>Boston College, Chestnut Hill, MA</i>
August 2013	Ph.D. in Chemistry <i>University of Connecticut, Storrs, CT</i>
July 2006	M.Sc. in Chemistry <i>Indian Institute of Technology Madras (IITM), Chennai, India</i>

SELECTED PUBLICATIONS (Full list available upon request)

- Huang, H.; **Das, R. S.**; Basu, A. K.; Stone, M. P., Structure of (5'S)-8,5'-cyclo-2'-deoxyguanosine in DNA. *J. Am. Chem. Soc.* **2011**, *133* (50), 20357-68.
- Jasti, V. P.; **Das, R. S.**; Hilton, B. A.; Weerasooriya, S.; Zou, Y.; Basu, A. K., (5'S)-8,5'-cyclo-2'-deoxyguanosine is a strong block to replication, a potent pol V-dependent mutagenic lesion, and is inefficiently repaired in *Escherichia coli*. *Biochemistry.* **2011**, *50* (19), 3862-5.
- Das, R. S.**; Samaraweera, M.; Morton, M.; Gascon, J. A.; Basu, A. K., Stability of N-glycosidic bond of (5'S)-8,5'-cyclo-2'-deoxyguanosine. *Chem. Res. Toxicol.* **2012**, *25* (11), 2451-61.
- Huang, H.; **Das, R. S.**; Basu, A. K.; Stone, M. P., Structures of (5'S)-8,5'-cyclo-2'-deoxyguanosine mismatched with dA or dT. *Chem. Res. Toxicol.* **2012**, *25* (2), 478-90.
- Pal, A.*; **Das, R.S.***; Zhang, W., Lang, M., McLaughlin, L.W., Szostak, J., Effect of terminal 3'-hydroxymethyl modification of an RNA primer on nonenzymatic primer extension. *Chem. Commun.* **2016**, *52*, 11905-11907 [* equal contributions]
- Hao, W.; Wojdyla, J. A.; Zhao, R.; Han, R.; **Das, R. S.**; Zlatev, I.; Manoharan, M.; Wang, M.; Cui, S., Crystal Structure of Middle East Respiratory Syndrome Coronavirus Helicase. *PLOS Pathogens.* **2017**, *13*, e1006474

PATENTS

- Tadin Strapps, M; Schmitke, J. L.; Fleming, K. E.; Karnik, R; Donaghey, J; **Das, R. S.**; Kennedy, J. M.; Farelli, J. D.; Gierut, J. J.; Modulating Genomic Complexes; **2018**, U.S. Patent No. 62/615,408
- Tadin Strapps, M; Schmitke, J. L.; Fleming, K. E.; Karnik, R; Donaghey, J; **Das, R. S.**; Kennedy, J. M.; Farelli, J. D.; Gierut, J. J.; Genomic Complexes Assembly; **2018**, U.S. Patent No. 62/640,008
- Tadin Strapps, M; Schmitke, J. L.; Fleming, K. E.; Karnik, R; Donaghey, J; **Das, R. S.**; Kennedy, J. M.; Farelli, J. D.; Khurana, J. S.; Allelic Modulation; **2018**, U.S. Patent No. 62/639,985
- Tadin Strapps, M; Schmitke, J. L.; Fleming, K. E.; Karnik, R; Donaghey, J; **Das, R. S.**; Kennedy, J. M.; Farelli, J. D.; Khurana, J. S.; Viral Control; **2018**, U.S. Patent No. 62/639,918

WORK EXPERIENCE

- Dec. 2018 – present* **Scientist** at Omega Therapeutics, Cambridge, MA
- Lead *in vitro* **mRNA synthesis** group accomplishing design and synthesis of novel effector expression.
 - Actively participated in **designing drugs** and **drafting patent** application.
 - Designed novel oligonucleotides and Peptide Nucleic acids (**PNA**) for targeting **ncRNA**.
 - Successfully designed new **sgRNA** molecules suitable for *in vivo* delivery through lipid nanoparticle formulation.
 - Improvised **plasmid amplification** (*E. Coli*) in giga-prep scale
- Sep. 2015-Nov. 2017* **Scientist** at Alnylam Pharmaceuticals, Cambridge, MA
- Accomplished conjugation of siRNA with human serum albumin binding ligands and demonstrated **improved PK/PD** property.
 - Successfully designed and synthesized novel siRNA with new ligand design for improved delivery and uptake.
 - Synthesized and evaluated **RNA triphosphate** for binding with Middle East Respiratory Syndrome Coronavirus Helicase
 - Achieved novel ligand attachment at C5 position of pyrimidines
- Sep. 2013-Sep. 2015* **Postdoctoral Fellow** at Boston College, Chestnut Hill, MA
- Successfully accomplished the **stereoselective synthesis** of 3'-C-branched-chain substituted 2'-deoxynucleosides and incorporated into DNA for structural analysis.
 - Accomplished structural analysis of duplex DNA containing 3'-C-branch-chain substitutions by T_m analysis, CD spectroscopy, X-Ray crystallography and polyacrylamide gel electrophoresis and investigated the chiral conformation of ribonucleoside residues.
- Aug. 2006-Aug. 2013* **Research Assistant** at *University of Connecticut*, Storrs, CT
- Designed and executed **multistep synthesis** of 8,5'-cyclo-2'-deoxyguano-sine (cyclo-dG) and chryseno adduct of deoxyguanosine (dG) at C-8 position for incorporation into oligonucleotide suitable for biological studies.
 - Investigated the stability of N-glycosidic bond of a genotoxic and mutagenic DNA lesion cyclo-dG in comparison to related DNA lesions.
 - Synthesized and Thoroughly characterized isotopically labeled cyclo-dG adducts suitable for identification in biological matrix through NMR (1H , ^{13}C , ^{15}N ; COSY, HSQC and HMBC) and **LC-MS**.
 - Successfully developed a new route for the synthesis of cyclo-dG **triphosphate**, an active compound designed for retroviral activity.
 - Accomplished stereospecific synthesis of 5'S and 5'R isomers of 8,5'-cyclo-2'-deoxyguanosine including stereochemical inversion of the chiral 5'-OH.
 - Analyzed and purified of short oligonucleotide using polyacrylamide gel electrophoresis
 - Trained various incoming graduate and undergraduate students.
- May 2005-Jun. 2006* **Research Assistant** at *Indian Institute of Technology Madras*, Chennai, India
- Initiated use of cobalt containing active site for use in DNA hydrolysis which is biomimic of the active site of DNA polymerase.
 - Synthesized zinc, cobalt and copper metalloenzyme analogues for the study of phosphodiesterase activity under Schlenk/inert/dry-box Conditions.