Curriculum Vitae Dr. Subrata Dutta

Personal Data

Dr. Subrata Dutta
Assistant Professor
Department of Chemistry,
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Education:

2012 — **Ph.D. in Chemistry, Heidelberg University, Heidelberg, Germany**
Supervisor: **Prof. Andriy Mokhir**
Thesis: Chemical methods for detection of nucleic acids in vitro.
Grade: S***umma cum laude (Excellent)***

2008 — **M.Sc. (Chemistry), Indian Institute of Technology, Kanpur, India.**
Thesis: Functionalization of calix [4] pyrrole and its application for metal ion binding
Supervisor: **Prof. Sabyasachi Sarkar.**

Work Experience:

2021 – present — **Assistant Professor**, Department of Chemistry, **SVNIT Surat**. **Gujrat, India.**

2020 – 2021 — **Assistant Professor,** Department of Chemistry, School of Advance Sciences, **Vellore Institute of Technology Vellore, India**.

2018 - 2020 — **Habilitation,** Institute of organic chemistry**, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany.**

- Synthesis and characterization of Aminoferrocence based cancer-specific, cytostatic drugs conjugated and their biological evaluation of anticancer activity on human cell lines.

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2015 – 2018	**Postdoctoral Research, University of California Santa Cruz, USA**. ▪ Synthesis and development of new purification methods for Alzheimer's disease-causing Amyloid beta peptide. ▪ Synthesis and purification of fluorescence labeled Amyloid beta peptide. ▪ Biological evaluation of their toxicity and mechanism of cellular uptake study in rat and human cell line. Supervisor: **Prof. Jevgenij Raskatov**
2013 – 2015	**Postdoctoral Research, University of Geneva, Switzerland.** ▪ Synthesis of large Peptide Nucleic Acids (PNA) encoded library of small molecule by using split and mix technique on solid phase chemistry. ▪ Develop new screening methods against a representative target by using DNA templated combinatorial display of PNA encoded small molecule which can be amplified after selection. Supervisor: **Prof. Nicolas Winssinger**
2008 – 2012	**Teaching assistant,** Heidelberg University, Heidelberg, Germany.
May 2007 – July 2007	**Summer research,** Saha Institute of Nuclear Physics, Kolkata, India. Studied lipid - protein interaction on model cell surface. Supervisor: **Prof. Abhijit Chakrabarti**

Research interests:

- Point - of - care detection of viral RNA, antibody, and antigen.
- DNA and peptide-based catalysis.
- Design and synthesis of small molecule drugs for Alzheimer's and Parkinson's diseases.

Peer review journal papers:

- M. Pal, D. Musib, M. Pal, G. Rana, G. Bag, **S. Dutta**, M. Roy, Noncovalent hybrid of $Pd(phen)(OAc)_2$ and st-DNA for enantioselective hydroamination of β-nitrostyrene with methoxyamine. ***Organic and Biomolecular Chemistry***, 2021, Accepted manuscript. (Impact factor = 3.4)

- **S. Dutta**, J. Rühler, M. Schikora, N. Deussner-Helfmann, M. Heilemann, T. Zatsepin, P. Duchstein, D. Zahn, G. Knör, A. Mokhir, Red light-triggered photoreduction of a nucleic acid template. ***Chemical Communications***, 2020, 56, 10026-10029. (Impact factor = 5.99).

- **S. Dutta**[#], A. R. Foley[#], A. J. Kuhn[#], B. Abram, H-W. Lee, J. A. Raskatov, New insights into differences between enantiomer and racemic aggregating Aβ40, ***Peptide Science*** (2019), 111, 6, e24139 10.1002/pep2.24139. ((# = authors who contributed equally to the paper).

- **S. Dutta**, T.S. Finn, A. J. Kuhn, B. Abram, J. A. Raskatov, Chirality dependence of Amyloid beta cellular uptake and a new mechanistic perspective, ***ChemBioChem***, (2019*)*,20, 1023-1026. (Impact factor = **2.77**).

- **S. Dutta**, A. R. Foley, C. J. A. Warner, X. Zhang, M. Rolandi, B. Abrams, J. A. Raskatov, Suppression of oligomer formation and formation of Non-toxic fibrils upon addition of mirror image Aβ42 to the natural L- Enantiomer, ***Angewandte Chemie International Edition*** (2017), 56(38), 11506-11510
  Selected as a VIP paper. (Impact factor = **12.95**).

- C. J. A. Warner, **S. Dutta**, A. R. Foley, J. A. Raskatov, A tailored HPLC purification protocol that yields high-purity amyloid beta 42 and amyloid beta 40 peptides, capable of oligomer formation, ***Journal of visualized Experiments*** 2017, 121, e55482. (Impact factor = **1.32**).

- C. J. A. Warner, **S. Dutta**, A. R. Foley, E. Chen, D. S. Kliger J.A.Raskatov, Using Chiral Peptide Substitutions to Probe the Structure Function Relationship of a Key Residue of Abeta42**,** ***Chirality*** *(2017)* 29, 5-9. (Impact factor = **1.88**).

- C. J. A. Warner, **S. Dutta**, A. R. Foley, J. A. Raskatov, Introduction of D-glutamate at a critical residue of Abeta42 stabilizes a pre-fibrillary aggregate with enhanced toxicity. ***Chemistry-A European Journal****, (2016),* 22, 11967-11970. (Impact factor = **5.16**).

- M. Schikora, **S. Dutta,** A. Mokhir, Nucleic acid-specific photoactivation of oligodeoxyribonucleotides labelled with deuterated dihydro-N, N, N', N'-tetramethylrhodamine using green light. ***Histochem. Cell Biol.***, (2014), 142(1), 103-111. (Impact factor = **2.78**).

- **S. Dutta**, A. Fülöp, A. Mokhir. Fluorogenic, catalytic, photochemical reaction for amplified detection of nucleic acids**.** ***Bioconjugate Chemistry***, (2013), 24(9), 1533-1542. (Impact factor = **4.48**).

- **S. Dutta**, B. Flottmann, M. Heilemann, A. Mokhir. Hybridization and reaction-based, fluorogenic nucleic acid probes. ***Chemical Communications*** (2012), 47, 9664-9666. (Impact factor = **5.99**).

- **S. Dutta**, A. Mokhir. An autocatalytic, chromogenic and fluorogenic photochemical reaction controlled by Nucleic acids. ***Chemical Communications*** (2011), 47(4), 1243-1245. (Impact factor = **5.99**).

- A.Rotaru[#], **S.Dutta**[#], E.Jentzsch, K.Gothelf, A.Mokhir. Selective dsDNA-templated formation of copper nanoparticles in solution. ***Angewandte Chemie International Edition*** (2010) 49(33), 5665-5667. (# = authors who contributed equally to the paper). (Impact factor = **12.95**).

Additional Skills and Knowledge:

- **Organic chemistry**: Experience in biological and medicinal chemistry. Extensive experience in the design and development of synthetic routes for complex organic molecules.

- **Analytical chemistry**: Deep understanding and practical experience of modern analytical methods like NMR spectroscopy, ESI, MALDI mass spectrometry, HPLC and LC-MS analysis, RT - PCR, Trans Electron Microscope (TEM), AFM, Confocal microscopy.

- **Nucleic acids and peptide chemistry**: Advance knowledge and hands on experience on solid phase synthesis of DNA, RNA, Peptide nucleic acids (PNA) and highly aggregation prone large peptide (e.g., amyloid beta peptide), as well as solid phase and solution phase fluorescence molecule labeling technique.

- **Protein chemistry**: Good knowledge and basic hands-on experience in protein expression, purification, and analysis of proteins (e.g., SDS-PAGE, size-exclusion chromatography and HPLC).

- **Cell and bacterial culture**: Excellent understanding and hands-on experience with the cultivation of various human cell lines and bacteria (e.g., Staphylococcus aureus) in biosafety level 2(BSL2) lab, as well as cell analysis using flow cytometry, confocal microscopy, and other biochemical methods.

- **Language**: Bengali, English, Hindi, German (basic).

Achievements:

- Visiting summer research fellowship at Saha Institute of Nuclear Physics 2007.
- CSIR-UGC Junior Research Fellowship (JRF) of University Grants Commission India, 2008.
- Graduate Aptitude Test in Engineering (GATE) qualified, 2008.
- Awarded PhD fellowship at University of Heidelberg, Germany.
- Awarded ***Summa Cum Laude*** (Excellent) in Ph.D. thesis.
- Awarded postdoctoral fellowship at University of Geneva, Switzerland.
- Awarded postdoctoral fellowship at University of California, Santa Cruz, USA.

Conferences, Scientific visits, Lectures, and Certified training course:

- **Visited Prof. Varghese John's research lab**, University of California Los Angeles, USA, 5th September 2016 – 10th September 2016.

- **Visited Dr. Gregory L. Hura's research lab**, Lawrence Berkeley National Laboratory, Berkeley, California, USA. 2016 - 2017.

- **Visited Prof. Valery Pavlov's research lab**, CIC Bioma GUNE, Spain, 30th November 2010 – 6th December 2010.

- **MALDI (autoflex speed)** Basic Operation Training Course by **Bruker GmbH, Bremen, Germany**, 2013

- **LCQ Fleet** (LC / MS) Operation training course by **European Training Institute**, 2013.

- **Attended Webinar**. Gaussian, ChemDraw and Mnova Software, Department of Chemistry, **Vellore Institute of Technology, Vellore,** India, 21st – 22nd July 2020.

- **Attended Virtual symposium**, COVID-19 Disease Control - Opportunities and Challenges for Vaccines, Bio-therapeutics, and Diagnostics. **Vellore Institute of Technology, Vellore,** India, 9th – 10th July 2020.

- **Oral presentation**. UCSC annual chemistry retreat 2017, University of California Santa Cruz, USA 19th September 2017

- **Oral presentation.** Advanced Light Source User Meeting, 3-5 October 2016, Lawrence Berkeley National Laboratory, Berkeley, California, USA.

- **Poster presentation**. UCSC annual chemistry retreat 2016, University of California Santa Cruz 13th September 2016

- **Oral presentation**. Neuroclub, University of California Santa Cruz, 1st January 2016.

- **Conference Attended.** 4th International Symposium on DNA-encoded Chemical Libraries 1st September 2014, Zurich University, Zurich, Switzerland.

- **Conference Attended.** Physics of biology 2013 international meeting, 1st October 2013, Geneva, Switzerland.

- **Oral presentation**. DNG-Doktorandenseminar (1-2nd October 2012), Bad Herrenalb, Germany.

- **Poster presentation.** Heidelberg Forum of Molecular Catalysis (22nd July 2011), University of Heidelberg, Germany

- **Poster presentation**. Nucleinsäurechemie-Treffen. (29- 30th September 2011). Goethe University, Frankfurt am Main, Germany.

- **Poster presentation**. XI International Symposium on Inorganic Biochemistry, (4-8th September 2010), University of Wroclaw, Poland

- **Poster presentation**. Vielberth-symposium on functional nucleic acids, (10-11th September 2009), University of Regensburg, Germany.