

TANIYA ADAK

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SUMMARY

Early career scientist with 9 years of research experience in organic synthesis of small molecules, natural products, analogs thereof and enzyme inhibitors for therapeutic applications, and enzymology. Expertise in mechanism-based drug design, synthesis, characterization and functional assay of proteins or enzymes. Experienced in leading a team for effective synthetic chemistry laboratory and analytical techniques instruction in the capacity of a lab director at UBC. I have an insatiable thirst for staying current with latest developments in the research and development of the pharmaceutical industry. I aspire to work for an organization which is relentless and ethical at their pursuit of delivering cures to improve patient's lives.

KEY COMPETENCIES

- Maintaining active diligence of science fields spanning medicinal organic chemistry, chemical biology and therapeutics.
- Innovative and rational mechanism-based enzyme inhibitor and substrate analog design.
- Design and execute complex, challenging chemistry experiments.
- Ionizable lipids, building blocks, glycoconjugates and small molecule synthesis.
- Process development for multi-gram synthesis of organic compounds.
- Enzyme kinetics and novel enzyme characterization using biophysical and biochemical techniques.
- Extensive experience in analytical techniques such as various mass spectrometry, NMR, UV-vis, and IR spectroscopy.
- Expertise in purification chromatography including size exclusion chromatography (SEC), ion-affinity and ion-exchange.
- Molecular biology techniques to clone DNA, over-express and purify proteins of interest.
- Collaboration, communication and team work to deliver results by the deadline.
- Strong written and verbal communication, scientific presentation and interpersonal skills.

EDUCATION

PhD in Chemistry *University of British Columbia, Vancouver, Canada* **2015 - 2022**

- Dissertation title: "Identification of the deformylase ArnD involved in lipid A modification and the syntheses of isoprenoid biosynthetic pathway inhibitors" under the supervision of Prof. Martin E. Tanner.

Integrated B.Sc. + M.Sc. in Chemistry *Pondicherry University, Puducherry, India* **2010 - 2015**

- M.Sc. Thesis title: "Towards developing beta cyclodextrin based sensors for blood-based biomarkers of Alzheimer's disease" under the supervision of Prof. K. Tharanikkarasu.

CAREER HIGHLIGHTS

MITACS Elevate Postdoctoral Research Fellow **Jan 2023 – present**

NanoVation Therapeutics and University of British Columbia, Vancouver, Canada

- Synthesis towards ionizable lipids and helper lipids for Lipid Nanoparticle delivery systems (LNPs).
- Developed a methodology to reduce costs by 20% towards bulk synthesis of a key building block for ionizable lipids.
- Presenting research and output at company-wide weekly scientific meetings.
- Project and time management between academic and industry research.
- Synthesis of sulfur-fluorine based reagents for fast transformation to produce amino-oxetanes as bioisosteres.
- Liaising between research collaborators across companies and research universities.

Laboratory Director, Sessional Lecturer (Part-time)

Sep 2022 – Dec 2022

University of British Columbia, Vancouver, Canada

- Directing a third-year integrated chemistry lab for combined major in sciences students and maintaining lab safety.
- Administering online learning management system and online engagement.
- Delivering lectures and conducting exams on analytical techniques such as mass spectrometry and IR spectroscopy.

Research Assistant and Teaching Assistant

Sep 2015 – Aug 2022

University of British Columbia, Vancouver, Canada

- Spearheaded a new project that led to discovery of ArnD, a deformylase responsible for polymyxin resistance in Gram-negative bacteria colonizing in the lungs of patients of cystic fibrosis.
- Published the most impactful research in last 10 years in the Tanner research group.
- Multistep organic synthesis, purification using chromatographic, ion-exchange and size-exclusion methods.
- Characterized novel membrane-associated protein using *in vitro* assays and bioinformatics such as AlphaFold.
- Designed and synthesized mechanism-based inhibitors and evaluated them with prenyltransferase enzymes.

SUMMER RESEARCH FELLOWSHIP EXPERIENCE:

- JNCASR, Bangalore, India - *Summer Research Fellow* **2014**
Synthesized and characterized small molecules for targeting nucleic acids as a potential anticancer therapy
- IISER, Kolkata, India - *Summer and Winter Research Fellow* **2013**
Synthesized and characterized of Benzimidazole based metal complexes that show anti-proliferative activity by the mitochondria-mediated intrinsic apoptotic pathway
- IISc, Bangalore, India - *Summer Research Fellow* **2012**
Synthesized and characterized metal-based anti-cancer agents that intercalates into DNA and carries oxidative cleavage potential via photodynamic therapy

SKILLS

• Organic chemistry	• NMR Spectroscopy	• SAR assisted drug design	• Mass Spectrometry	• Multi-tasking
• Process Development	• Enzymology	• Protein characterization	• Problem solving	• Chromatography
• Medicinal Chemistry	• Scientific Writing	• Carbohydrate Chemistry	• Literature scouring	• Bioinformatics
• Assay Development	• Project Management	• Biochemistry	• Lipid synthesis	• Communication

PUBLICATIONS

1. **Adak, T.**; Morales, D. L.; Cook, A.; Grigg, J.; Murphy M. E. P.; Tanner, M. E. ArnD is a deformylase involved in polymyxin resistance, *Chem. Commun.*, 2020, *56*, 6830–6833.
2. Abdelmagid, W. M.; **Adak, T.**; Freeman, J. O.; Tanner, M. E. Studies with Guanidinium- and Amidinium-Based Inhibitors Suggest Minimal Stabilization of Allylic Carbocation Intermediates by Dehydrosqualene and Squalene Synthases, *Biochemistry* 2018, *57*, 5591–5601.
3. **Adak, T.** (2022). *Identification of the deformylase ArnD involved in lipid A modification and the synthesis of isoprenoid biosynthetic pathway inhibitors* (T). University of British Columbia. Retrieved from <https://open.library.ubc.ca/collections/ubctheses/24/items/1.0422380>

CONFERENCE PRESENTATIONS

- Served as a discussion leader on the topic "Emerging Technologies for Probing Biology" at the bio-organic chemistry Gordon Research Conference (GRC) and the corresponding symposium GRS 2022, NH, USA.
- Delivered a talk at volcano conference in chemical biology 2019, Washington, USA.

- Presented a poster at Canadian Society of Chemistry (CSC), 2018, Edmonton, Canada.
 - Delivered a talk at chemical biology discussion group in 2021 at the University of British Columbia, Vancouver.
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AWARDS and PROFESSIONAL MEMBERSHIPS

- **Awarded MITACS elevate (thematic) post-doctoral fellowship (2023)** to carry out research in the pharmaceutical industry along with research in academia with a focus on biomanufacturing sector and professional development.
 - **Awarded DST-DFG award by Govt. of India and German Research Foundation (DFG)** to participate in 65th Lindau Nobel Laureate interdisciplinary meeting (2015), Germany.
 - **Awarded 'Creative concept prize' in Code for Science - India** national competition 2012 conducted by Elsevier, NVIDIA and Thermo Scientific for an idea on developing Application Program Interface.
 - **Awarded Dr. Arnold By Travel fellowship** 2022 by the department of Chemistry, UBC, Vancouver.
 - **Won three national fellowships** (INSA–IASc–NASI SRFP and IISER fellowship) to carry out summer research fellowships at premier research institutions in India. (2012, 2013 and 2014)
 - **Member** of the Canadian Society for Chemistry, Canada.
 - **Member** of the Lindau Alumni Network, Germany.
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