

Dr. SONAM VINODKUMAR JHA

Ph.D.
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Research Experiences

Research Fellow (March 2017 – February 2023). Prof. Seo Young Ho, Department of Pharmacy, Keimyung University, Daegu, South Korea.

Title of the master's Thesis: "Small molecule inhibitors targeting HDAC and HSP90".

Chapter 1. Synthesis and biological characterization of novel nitrogen mustard analogs as HDAC inhibitors.

Chapter 2. Synthesis and biological characterization of novel resorcinol-based HSP90 inhibitors.

Title of the Ph.D. Thesis: "Development of Novel Small Molecule Inhibitors and PROTAC Degradable Targeting HDAC6".

Chapter1: Development of the benzazole derivatives as selective HDAC6 inhibitors

Chapter2: Design, synthesis, and biochemical evaluation of tetrahydroquinoline-based HDAC6 inhibitors

Chapter3: Advancement of tetrahydroquinoline derivatives as HDAC6-targeting PROTAC

Postdoctoral Researcher (June 2023). Prof. An Songon, Department of Chemistry and Biochemistry, University of Maryland Baltimore County, Maryland, USA.

Responsibilities as Research fellow

- Synthesis of biologically active organic molecules, purification, and analysis
- Biological characterization of obtained final molecules
- Enzyme assays, cell-based assays, western blotting, FACs, sample preparation for in-vivo studies
- Manuscript writing
- Assist in Docking of Final molecules
- Teaching experimental skills to Juniors
- Teaching undergraduate interns
- Assist in Undergraduate experimental classes
- Proctoring in Undergraduate exams
- Taking care of the safety of the lab on regular basis and during inspections
- Lab management (Ordering chemicals, managing instruments, documentation)

Research Skills

1. Organic Synthesis: Expertise in the SAR, preparation, purification, and characterization of small molecules as well as large molecules like Protac from milligram to gram scale. Learned to set reactions on room temperature, reflux, and negative temperature in a microwave. Skilled in handling moisture-sensitive reactions. Assisted in ozonolysis reaction. Expertise in handling synthesis of pharmaceutical compounds like HDAC inhibitors, HSP90 inhibitors, dual inhibitors, HDAC6-protacs, etc. Skilled in purification by Column chromatography, MPLC, HPLC, Crystallization, and characterization by NMR and mass spectrometry. I also assisted in the docking of HDAC6 with a hydroxamic-based HDAC6 inhibitor.
2. NMR Technique: Safe hands-on JEOL JNM-ECZ, 500MHz NMR spectrometer. I have good experimental and analytical skills in ^1H and ^{13}C NMR. I have also assisted with 2D NMR experiments like COSY, HSQC, NOESY, ROESY, TOCSY, etc.
3. HDAC enzymatic assay using Microplate reader: Good experimental skills on a serial dilution of inhibitors, enzyme, and substrate on 96 well plates and data collection on Microplate Reader and extrapolation of IC₅₀ curve using GraphPad Prism 9.
4. Cell Culture Techniques: Experienced in the cultivation of H1975, HCT116, and MDA-MB-231 cells; monitoring, thawing, and expanding cells using standard aseptic techniques. Performing cell-based assays like MTS or MTT, colony formation, apoptosis, and western blotting.

Instrumental Techniques

- Microwave equipment (Biotage)
- Rotary Evaporator (Eyela)
- NMR spectrometer (JEOL JNM-ECZ, 500MHz)
- Freeze dryer (LABCONCO)
- MPLC (Biotage Isolera one)
- HPLC (Shimadzu, LC-6AD Liquid Chromatography)
- Ozonator
- 0 to -80°C Low constant bath with stirrer, PSL-1810 (Eyela)
- Microplate reader (TECAN – infinite M200PRO)
- FACs (BD FACSVerse)
- LAS (ImageQuant LAS 4000)

Awards and Scholarships

- **Excellent poster presentation award** (June 27th, 2018), granted by the 14th workshop hosted by the pharmaceutical chemistry division of the Korean pharmaceutical association, Pharmaceutical Society of Korea (PSK).
- **Excellent poster presentation award** (July 12th, 2018), granted by the 2018 summer workshop held by the Pharmaceutical Chemistry subcommittee of the Korean Chemical Society (KCS).
- **Certificate of completion** (February 14th, 2019), granted by “4th organic synthesis practical course” hosted by the Korea Organic Synthesis Society (KSOS).
- **Sponsored Scholarship for master’s studies** (2017-2019) at Keimyung University, Korea.
- **Sponsored Scholarship for Doctoral studies** (2019-2023) at Keimyung University, Korea.

Technical Skills

Softwares: ChemBioDraw 14, Autodock, Pymol, Microsoft office (word, PowerPoint, Excel, OneNote), Hangeul office word, Photoshop, Illustrator, GraphPad Prism 9, ImageJ, Jeol Delta NMR software, Flowjo, Endnote.

Operating system: WINDOWS

EDUCATION

2019 – 2023 Ph.D. - Pharmaceutical Chemistry, Department of Pharmacy, Keimyung University, Daegu, South Korea

2017 – 2019 M.Sc. - Pharmaceutical Chemistry, Department of Pharmacy, Keimyung University, Daegu, South Korea

2013 – 2016 B. Sc. - R.G. Shah Science College, Gujarat University, Gujarat, India

Publications

1. Kim, B¹., **Jha, S.**¹, Seo, J. H., Jeong, C. H., Lee, S., Lee, S., Seo, Y. H., & Park, B. (2020). MeBib Suppressed Methamphetamine Self-Administration Response via Inhibition of BDNF/ERK/CREB Signal Pathway in the Hippocampus. **Biomolecules & therapeutics**, 28(6), 519–526. <https://doi.org/10.4062/biomolther.2020.041>
2. Chae, H. Y., Park, S. Y., **Jha, S.**, Gupta, S. K., Kim, M., Ha, E., & Seo, Y. H. (2022). Design, synthesis, and biological evaluation of bifunctional inhibitors against Hsp90-HDAC6 interplay. **European journal of medicinal chemistry**, 240, 114582. <https://doi.org/10.1016/j.ejmech.2022.114582>
3. Design, synthesis, and biological characterization of benzamide derivatives as selective HDAC6 inhibitors. **Sonam Jha**^{a, 1}, Ji Hyun Kim^{a, 1}, Mikyung Kim^b, Eunyoung Ha^{b, *}, and Young Ho Seo^{a, *}, *Manuscript under preparation*.
4. Synthesis and biological evaluation of aromatic heterocyclic small molecule inhibitors targeting Histone Deacetylase. **Sonam Jha**^{a, 1}, Oh Yong Jin^{a, 1}, Young Ho Seo^{a, *}, *Manuscript under preparation*.
5. Novel 1,2,3,4-Tetrahydroquinoline-derived potent and selective HDAC6 inhibitors: Design, Synthesis, and biological investigation. Sunil K. Gupta¹, **Sonam Jha**¹, Young Ho Seo^{a, *}, *Manuscript under preparation*.
6. Design synthesis, and biological characterization of Indole and Indazole-based HDAC6-protacs degraders. Khan Hashim Ali¹, Sunil K. Gupta¹, **Sonam Jha**², Young Ho Seo^{a, *}, *Manuscript under preparation*.
7. Design synthesis, and biological characterization of 1,2,3,4-Tetrahydroquinoline-based HDAC6-protac degraders. **Sonam Jha**¹, Sunil K. Gupta¹, Young Ho Seo^{a, *}, *Manuscript under preparation*.

SEMINARS/CONFERENCES

Oral Presentations

1. **Sonam Jha, Young Ho Seo***, Design, synthesis, and biological characterization of bifunctional inhibitors targeting Hsp90-HDAC6 interplay, October 19-21, 2022, Fall International Convention of The Pharmaceutical Society of Korea, Jeju Shinhwa World, **South Korea**
2. **Sonam Jha, Young Ho Seo***, Design, synthesis, and biological evaluation of thiazolidinedione-based HDAC6 inhibitors to overcome methamphetamine addiction, 129th General Meeting of the Korean Chemical Society April 13-15, 2022, ICC Jeju, **South Korea**
3. **Sonam Jha, Young Ho Seo***, Development of novel small molecule inhibitors and protac degraders targeting HDAC6, April 4, 2022, 11th Pharmaceutical Research Institute Research Festival, College of Pharmacy, Keimyung University, Daegu, **South Korea**
4. **Sonam Jha, Young Ho Seo***, Design, synthesis, and biological characterization of a series of CNS penetrant HDAC inhibitors structurally derived from amyloid- β probes August 18, 2021, 2021 KWSE/APNN international young woman scientist camp & smart sister workshop, Zoom Meeting
5. **Sonam Jha, Young Ho Seo***, MeBib Suppressed Methamphetamine Self-Administration Response via inhibition of BDNF/CREB Signal Pathway in the Hippocampus April 21-23, 2021, The 127th Korean Chemical Society Conference, Suwon, **South Korea**

Poster Presentations

1. **Sonam Jha, Young Ho Seo***, 15th PSK Medicinal Chemistry Workshop June 26-27, 2019, Daemyung Resort Byeongsan, Buan-gun, **South Korea**
2. **Sonam Jha, Young Ho Seo***, 2018 Fall International Convention of The Pharmaceutical Society of Korea October 17-19, 2018, ICC Jeju, **South Korea**
3. **Sonam Jha, Young Ho Seo***, 2018 Korean Chemical Society Division of Medicinal Chemistry July 12-13, 2018, Korea Institute of Science and Technology (KIST), Gangneung, **South Korea**
4. **Sonam Jha, Young Ho Seo***, 14th PSK Medicinal Chemistry Workshop June 27-28, 2018, Gangwon-do, **South Korea**
5. **Sonam Jha, Young Ho Seo***, 2018 Spring International Convention of The Pharmaceutical Society of Korea April 20, 2018, COEX, Seoul, **South Korea**
6. **Sonam Jha, Young Ho Seo***, 120th General Meeting of the Korean Chemical Society October 18-20, 2017, Gwangju, **South Korea**

Participation

1. 18th PSK Medicinal Chemistry Workshop June 22-23, 2022, Buyeo, **South Korea**
2. The 25th Korean Society of Organic Synthesis Conference (workshop) and the 7th Organic Synthesis Tutorial February 24, 2022, Zoom Meeting

3. Forensics Forum, Animal Testing and Imaging Techniques for Pharmaceutical Scientists, January 1, 2021, Online Meeting
4. 2019 KWSE/APNN International Young Woman Scientist Camp (YWS Camp) August 7-8, 2019, Ewha Woman's University, Seoul, **South Korea**
5. 19th Workshop of Korean Society of Organic Synthesis February 14-15, 2019, Samsung Library Auditorium, Sungkyunkwan University, Seoul, **South Korea**
6. 2017 Korean Society of Organic Synthesis September 21-22, 2017, Sungkyunkwan University, Seoul, **South Korea**
7. 13th PSK Medicinal Chemistry Workshop June 22-23, 2017, Gangwon-do, **South Korea**
8. 5th APSAAR-TSAS 2017, Asia-Pacific Society for Alcohol and Addiction Research May 31st-June 3rd, 2017, Taipei, **Taiwan**

References

Principal Investigator

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I certify this document is accurate and true.

Date: 23 August 2023

A handwritten signature in black ink, appearing to be 'Sonam Vinodkumar Jha', written in a cursive style.

Sonam Vinodkumar Jha