

Sonam Vinodkumar Jha, Ph.D.

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RESEARCH INTERESTS

Development, design, and synthesis of small molecule inhibitors and Protac degraders targeting proteins like ID01, HDAC, Hsp90, and PFKL with applications in Cancer and neurodegenerative diseases.

ACADEMIC APPOINTMENTS

Postdoctoral Researcher

Feb 2024 - Present

Scheidt Research Group
Department of Chemistry
Northwestern University, Evanston, IL
Mentor: Prof. Gary Schiltz and Prof. Karl A. Scheidt

Postdoctoral Researcher

June 2023 - Jan 2024

Songon An Laboratory
Department of Chemistry and Biochemistry
University of Maryland, Baltimore County, Baltimore, MD
Mentor: Prof. Songon An and Prof. Minjoung Kyoung

EDUCATION

Keimyung University, Daegu, South Korea

Feb 2023

Ph.D. in Pharmaceutical Chemistry

Dissertation: *Development of novel small molecule inhibitors and protac degraders targeting HDAC6.*

Advisor: Prof. Prof. Young Ho Seo

Keimyung University, Daegu, South Korea

Sep 2019

M.S. in Pharmaceutical Chemistry

Dissertation: *Small molecule inhibitors targeting HDAC and Hsp90.*

Advisor: Prof. Young Ho Seo

R.G. Shah Science College, Gujarat University, Gujarat, India

June 2016

B.Sc. in Chemistry

PUBLICATIONS

1. *Design, synthesis, and biological evaluation of HDAC6 inhibitors targeting L1 loop and serine 531 residue*
Sonam Jha, Ji Hyun Kim, Mikyung Kim, Ai-Han Nguyen, Khan Hashim Ali, Sunil K. Gupta, Sun You Park, Eunyoung Ha, Young Ho Seo
European Journal of Medicinal Chemistry, 2024
2. *Rational Design and Optimization of a Potent IDO1 Proteolysis Targeting Chimera (PROTAC)*
Paige Monsen, Prashant Bommi, Arabela Grigorescu, Kristen Lauing, Yingyu Mao, Payton Berardi, Lijie Zhai, Oluwatomilayo Ojo, Manon Penco-Campillo, Taylor Koch, Michael Egozi, **Sonam Jha**, Hong Jiang, Guiqin Song, Fang Zhang, Pilar Sánchez-Gómez, Jacob Allen, Bakhtiar Yamini, Rimas Lukas, Derek Wainwright, Gary Schiltz
Journal of Medicinal Chemistry, 2024

3. *Design, synthesis, and biological evaluation of bifunctional inhibitors against Hsp90-HDAC6 interplay*
Hye Yun Chae, Sun You Park, **Sonam Jha**, Sunil K. Gupta, Mikyung Kim, Eunyoung Ha, and Young Ho Seo
European journal of medicinal chemistry, 2022

4. *MeBib suppressed methamphetamine self-administration response via inhibition of BDNF/ERK/CREB signal pathway in the Hippocampus*
Sonam Jha, Buyun Kim, Ji Hae Seo, Chul-Ho Jeong, Sooyeon Lee, Sangkil Lee, Young Ho Seo, and Byoungduck Park
Biomolecules & Therapeutics, 2020

5. *Synthesis and biological evaluation of aromatic heterocyclic small molecule inhibitors targeting Histone Deacetylase* (Manuscript under preparation)
Sonam Jha, Oh Yong Jin, Young Ho Seo

6. *Novel 1,2,3,4-Tetrahydroquinoline-derived potent and selective HDAC6 inhibitors: Design, Synthesis, and biological investigation* (Manuscript under preparation)
Sunil K. Gupta, **Sonam Jha**, Young Ho Seo

7. *Design synthesis, and biological characterization of Indole and Indazole-based HDAC6-protacs degraders.* (Manuscript under preparation)
Khan Hashim Ali1, Sunil K. Gupta, **Sonam Jha**, Young Ho Seo

8. *Design synthesis, and biological characterization of 1,2,3,4-Tetrahydroquinoline-based HDAC6-protac degraders.* (Manuscript under preparation)
Sonam Jha, Sunil K. Gupta, Young Ho Seo

AWARDS AND SCHOLARSHIPS

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

SKILLS

Research

- **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.
- **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.
- **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 IC_{50} curve using GraphPad Prism 9.
- **Biology:** 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.

Technical

- **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

Instrumental

- 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)

Management

- Ensuring the lab's safety standards are consistently maintained and adhered to during regular operations and inspections.

- Overseeing lab management, including ordering chemicals, maintaining equipment, and handling necessary documentation.

TEACHING EXPERIENCE

Teaching Assistant

April 2017 - April 2022

44386: Organic Medicinal Chemistry

Department of Pharmacy, Keimyung University

- Supervised undergraduate students, interns, and junior colleagues.
- Held office hours and graded homework, tests, and quizzes.

INVITED TALKS

Design, synthesis, and biological characterization of bifunctional inhibitors targeting Hsp90-HDAC6 interplay

Oct 2022

Fall International Convention of The Pharmaceutical Society of Korea, Jeju Shinhwa World, South Korea

Design, synthesis, and biological evaluation of thiazolidinedione-based HDAC6 inhibitors to overcome methamphetamine addiction

Apr 2022

129th General Meeting of the Korean Chemical Society, ICC Jeju, South Korea

Development of novel small molecule inhibitors and protac degraders targeting HDAC6

Apr 2022

11th Pharmaceutical Research Institute Research Festival, College of Pharmacy, Keimyung University, Daegu, South Korea

Design, synthesis, and biological characterization of a series of CNS penetrant HDAC inhibitors structurally derived from amyloid- β probes

Aug 2021

11th KWSE/APNN international young woman scientist camp & smart sister workshop via Zoom

MeBib Suppressed Methamphetamine Self-Administration Response via inhibition of BDNF/CREB Signal Pathway in the Hippocampus

Apr 2021

The 127th Korean Chemical Society Conference, Suwon, South Korea

POSTER PRESENTATIONS

Design, synthesis, and biological characterization of a series of CNS penetrant HDAC inhibitors structurally derived from amyloid- β probes

Jun 2019

15th PSK Medicinal Chemistry Workshop, Daemyung Resort Byeongsan, Buan-gun, South Korea

Synthesis and characterization of hydroxamic acid-based histone deacetylase (HDAC) inhibitor

Apr 2018

Spring International Convention of The Pharmaceutical Society of Korea, COEX, Seoul, South Korea

MeBib Suppressed Methamphetamine Self-Administration Response via inhibition of BDNF/CREB Signal Pathway in the Hippocampus

Jun 2018

14th PSK Medicinal Chemistry Workshop, Gangwon-do, South Korea

Design, synthesis and biological characterisation of novel promising HDAC Inhibitors for anticancer therapeutics

July 2018

Korean Chemical Society Division of Medicinal Chemistry, Korea Institute of Science and Technology (KIST), Gangneung, South Korea

Design, synthesis, and biological evaluation of dual-inhibitors targeting Hsp90 and HDAC6

Oct 2018

Fall International Convention of The Pharmaceutical Society of Korea, ICC Jeju, South Korea

Synthesis and biological characterization of novel Nitrogen-mustard analogues of HDAC Inhibitor

Oct 2017

120th General Meeting of the Korean Chemical Society, Gwangju, South Korea

CONFERENCE PARTICIPATION AND WORKSHOPS

18th PSK Medicinal Chemistry Workshop, Buyeo, South Korea *Jun 2022*

The 25th Korean Society of Organic Synthesis Conference (workshop) and the 7th Organic Synthesis Tutorial via Zoom *Feb 2022*

Forensics Forum, Animal Testing and Imaging Techniques for Pharmaceutical Scientists via Zoom, *Jan 2021*

KWSE/APNN International Young Woman Scientist Camp (YWS Camp), Ewha Woman's University, Seoul, South Korea *Aug 2019*

19th Workshop of Korean Society of Organic Synthesis, Samsung Library Auditorium, Sungkyunkwan University, Seoul, South Korea *Feb 2019*

Korean Society of Organic Synthesis September, Sungkyunkwan University, Seoul, South Korea *Sep 2017*

13th PSK Medicinal Chemistry Workshop, Gangwon-do, South Korea *Jun 2017*

5th APSAAR-TSAS 2017, Asia-Pacific Society for Alcohol and Addiction Research, Taipei, Taiwan *May 2017*

REFERENCES

Prof. Gary Schiltz, Department of Chemistry, Northwestern University, Evanston, IL, Mobile no.: +18474672287, E-mail: gary-schiltz@northwestern.edu

Prof. Songon An, Department of Chemistry and Biochemistry, University of Maryland, Baltimore County, Baltimore, MD, Mobile no.: +14104552514, E-mail: san@umbc.edu

Prof. Young Ho Seo, Medicinal Chemistry College of Pharmacy, Keimyung University, Daegu, South Korea, Mobile no.: +821077660594, E-mail: seoyho@kmu.ac.kr