Suk Jin Hong, Ph.D.

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SUMMARY OF QUALIFICATIONS

6 years of postgraduate molecular and cellular biology research experience and 12 years of biotech and pharmaceutical R&D experience. Discovered and analyzed therapeutic novel genes and investigated unknown functions using biochemical, molecular and cellular methodologies. Developed gene screening, microarray, high-content assays and fluorescent imaging tools as well as imaging device and software. Managed various projects and have mentored associates.

▪ Broad and extensive experience in neuroscience, molecular biology, genomics, protein biology, imaging and high-content screening and cell biology.
▪ Skilled in all phases of genetics, biochemistry, and cell biology
▪ Highly inquisitive, creative and resourceful
▪ Excited from helping others and searching new challenges
▪ Strong publication record
▪ Enjoy working with colleagues and collaborators

RELEVANT EXPERIENCE:

* Molecular and cellular screening for neuronal biomarkers, global genetic response analysis and functional genomics
    - Screening and functional analysis of NMDA regulated genes and therapeutic targets for neurological disorders
* Drug development : Multiple Sclerosis (Ozanimod), protease inhibitors, anti-diabetic molecules, neuroprotective peptide
* Protein purification and characterization. Antibody-fluorophore conjugation
* High content cell-based assay and target development and high content siRNA library screening and stem cell screening
* Cell biology and signaling pathways : Confocal imaging (including live cell imaging)
* Discovery of novel inhibitors (purification, MALDI-MS, HPLC, peptide sequencing, enzymatic analyses, antibody neutralization, Western etc)
* Animal science : Preclinical research of drug candidate for diabetes, Transgenic animal construction and stereotaxic injection with mouse brain

SKILLS :

Molecular biology techniques/ new screening techniques / novel peptide drug development / primary neuronal culture / High-content cell-based assays / Confocal imaging (live cells, calcium, ROS) / Transgenic animals / Protein chemistry and biochemistry of new small peptide protease inhibitors / Hematological studies / anti-diabetic drug development and pre-clinical testing

EDUCATION:

Ph. D., *1999* *Korea Advanced Institute of Science and Technology (KAIST),* Biochemistry/Biomedical studies (*South Korea)*
M.S., *1993* *KAIST,* Cell Biology
B.S., *1991* *Biological Sciences (Cum Laude), KAIST, in* Atherosclerosis

PROFESSIONAL TRAINING:

(2011 – now) Senior Research Scientist, Proteomics – Life Science Research, Thermo Fisher Scientific, IL, USA
(2010 – 2011) Senior Research Scientist, Cellomics – Life Science Research, Thermo Fisher Scientific, IL, USA
(2006 – 2009) Research Scientist I and II, High Content Assay Development, Thermo Fisher Scientific, IL, USA
(2004 - 2006) Research Faculty, Dept. Neurology, Johns Hopkins University, MD USA
(2000 - 2004) Postdoctoral Fellow, Johns Hopkins University, Baltimore MD USA
(1999 - 2000) Research Associate, Dept. of Veterans Affairs Medical Center West LA
(1999 - 2000) Postdoctoral Researcher, School of Medicine, UCLA, CA USA
(1993 - 1995) Research Assistant, Dept. of Biological Sciences, KAIST, Taejon, Korea

RESEARCH AND PROFESSIONAL EXPERIENCE

1. Senior Scientist, NeuroTCoE (thematic center of excellence), Celgene/BMS 2019-present

- Working on neurodegenerative diseases including multiple sclerosis drug development

2. Senior Staff Scientist, Protein and Cellular Analysis/BID/LSG, Thermo Fisher Scientific 2006-2019

- Developed a CCD imaging system platform for Western blot, DNA and protein gel detection and trained Field Service Engineers, Technical Support, TSS and customers
- Developed high content cell-based assays for neuroscience, cytotoxicity, predictive hepatotoxicity and cytoskeleton rearrangement. Discovered dyes for high content assays and screened siRNA library with high content systems. Worked on chemotaxis and assays with differentiated stem cells.

- Technical leader in high-content cell-based assay research projects in neuroscience, immunology, oncology and toxicology
- Technical leader in the protein detection projects
- Technical leader in instrumentation development projects

3. Research Associate (Junior Faculty) and Postdoctoral researcher, Department of Neurology, Johns Hopkins University 2000-2006

Global screening of NMDA receptor regulated biomarkers and neuroprotective genes during neuronal damage and survival on primary neurons and Investigated on functional role of the candidate genes in neuronal activity and survival applying novel screening strategies, gene discovery, functional analysis of the gene products, genomics, and *in vivo* animal experiment using adenovirus and lentivirus as well as transgenic mice. Opened a new field of research related to novel function of transcription factor NF-IA and the cell death signaling of poly (ADP-ribose) polymers and further developed peptide drug candidates for neurological disorders.

● Responsible for design, implementation and management of multiple research projects including neuroprotective gene screening and characterization

4. Postdoctoral Fellow, Department of Pediatrics, University of California, Los Angeles and Research Associate, Dept. of Veterans Affairs Medical Center West LA 1999-2000

Research on drug development for diabetes focused on pre-clinical testing the drug candidates using diabetic rodent models including type II diabetic obese mice and Goto-Kakizaki rats. Investigated the molecular mechanism of the anti-diabetic drug candidate.
● Developed a method to determine the effects of ZACH (Zinc, Arachidonic Acid, Cyclo His-Pro and His) on the glucose uptake by rodent muscle as well as insulin effect.
● Provided research advice and supervised one M.D. postdoc
● Developed an optimized pre-clinical testing system for the anti-diabetic drug candidates in diabetic rodents
Preclinical testing and *ex vivo* metabolism analysis. Developed a commercialized anti-diabetic compound

5. Doctoral Research, Department of Biological Sciences, Korea Advanced Institute of Science and Technology 1993-1999
Discovered and investigated the novel polypeptides inhibitors from natural product. Experience includes the areas of biochemistry, analytical protein chemistry, animal science and molecular biology.
● Discovered new direct-acting elastase and chymotrypsin inhibitor and anti-coagulant thrombin inhibitor
● Patents on Bioacive Peptides
● Developed Biological Information and Research Database
● Lab manager for 6 years

6. Master Research, Department of Biological Sciences, Korea Advanced Institute of Science and Technology 1991-1993
Purified DNA Polymerase alpha from rodents for the first time and investigated the cell cycle dependent regulatory mechanism of gene expression and enzymatic function in cancer cell.
● Discovered UV-induced chromosome damage modulate DNA polymerase activity
● PKC activator and modulator of cell division and differentiation induce DNA polymerase alpha activity in nucleus as well as in cytoplasm

EXPERTISE AND ACHIEVEMENTS:

Co-Founded ARIRA, a venture company in South Korea (1999)

Expertise
Cell Biology, Biochemistry, Neuroscience, Molecular Cellular Biology

Drug development
Iduna peptide – a therapeutic candidate for neurological disorders
Cyclo (His-Pro) - Dietary Supplement for Diabetes Mellitus, Type 2

Patents
- Method and System for Projecting Image with Differing Exposure Times (2018) US 10,115,034 B2
- Improved Analysis of Electrohoretic Bands in a Substrate (2016) No. US 9230185 B1
- Phosphine Derivatives of Fluorescent Compounds (2014) No. US 8889884 B1
- Predicting Toxicity of a Compound Over a Range of Concentrations (2014) US8818070
- Elastase inhibitor and process for preparing the same (1999) No.2300190, UK/ No.2678152, Japan/ 06008320, USA
- Guamerin: New elastase inhibitor from korean blood-sucking leech (1995) No. 137519

- Guamerin derived synthetic protease inhibitor (1996) #96-38844, Korea
- Artificial feeding of blood-sucking leeches (1994) No.112778, Korea

Honors, Awards and Professional Activities:

(2006) NIH R01 Grant : Co-Principal Investigator (R01 NINDS NIH)
(2002 – now) Member, Society for Neuroscience
(2008 –) Member, American Society for Cell Biology
(2007 – 2010) Member, Society of Biomolecular Sciences
(2002 – 2006) Member, American Heart Association

Ad hoc reviewer - ***Journal of Biological Chemistry***

Reviewed the manuscripts for ***Cell, Nature, Science, J. Clin. Invest., J. of Neurosci., Neurochem. Int., Neurosci. Lett., Exp. Neurol.*** (with Drs. Valina and Ted Dawson)

Teaching and Supervisory Experience:
(1993 – 1995) Biochemistry, Research Teaching Assistant
(1993 – 1999) Managed 10 postdoctoral, Ph.D. and M.S. students as a Lab head
(1999) Mentored one M.D. postdoc at UCLA
(2000 – 2006) Mentored 8 Ph.D. and M.D., Ph.D. Students and 1 postdoc at JHMI
(2007 – now) Supervising and mentoring Ph.D. Research Scientists

PUBLICATIONS:

Papers:

1. S. Zheng, S.M. Eacker, **S.J. Hong**, R.M. Gronostajski, T.M. Dawson, V.L. Dawson. "NMDA-Induced Neuronal Survival is mediated through Nuclear Factor I-A" *J.Clin. Invest.* 120 (7): 2446-2456 (2010)

2. **S.J. Hong** and R.N. Ghosh. "Effective Cell Identification and Segmentation in Fluorescence Microscopy with New Fluorescent Whole Cell Stains" *Microscopy Today*, 16(1): 12-15 (2008)

3. **S.J. Hong**, S. Keefer & R.N. Ghosh. "Simultaneous quantitative monitoring of cytoskeletal rearrangement and changes in cell morphology" *Nature Methods, Application Notes*, an15-17 (2007)

4. J. Lee, S. Shin, C.-H. Teng, **S.J. Hong** and K.S. Kim. "FimH adhesin of Escherichia coli K1 type 1 fimbriae activates BV-2 microglia" *Biochem. Biophys. Res. Comm.*, 334(3):917-923 (2005)

5. S.Y. Seo, Y.B. Chen, I. Ivanovska, A.M. Ranger, **S.J. Hong**, V.L. Dawson, S.J. Korsmeyer, D.S. Bellows, Y. Fannjiang, J.M. Hardwick. "BAD is a pro-survival factor prior to activation of its pro-apoptotic function", *J. Biol. Chem.* 279(40):42240-42249 (2004)

6. **S.J. Hong**, T.M. Dawson, V.L. Dawson. "Nuclear and Mitochondrial Conversations in Cell Death : PARP and AIF signaling", *Trends in Pharmacological Science* 25(5):259-264 (2004)

7. **S.J. Hong**, H. Li, K.G. Becker, V.L. Dawson, T.M. Dawson. “Identification of Plasticity-Induced Late Response Genes (PLINGS)”, *Proc Natl Acad Sci U S A 101*(7): 2145-2150 (2004)

8. J.W. Chung, **S.J. Hong**, K.J. Kim, D. Goti, M.F. Stins, S. Shin, V.L. Dawson, T.M. Dawson, K.S. Kim. “37 kDa Laminin Receptor Precursor Modulates Cytotoxic Necrotizing Factor 1 mediated RhoA Activation and Bacterial Uptake”, *J. Biol. Chem*. 278(19):16857-62 (2003)

9. M.K. Song, M.J. Rosenthal, **S. Hong**, D.M. Harris, I. Hwang, I. Yip, M.S. Golub, M.E. Ament and V.L. Go. “Synergistic Anti-diabetic Activities of Zinc, Cyclo (His-Pro) and Arachidonic Acid”, *Metabolism* 50(1):53-59 (2001)

10. **S.J. Hong**, R.T. Sawyer, K.W. Kang. “Prolonged Bleeding from the Bite of the Asian Medicinal Leech, Hirudo nipponia”, *Comparative Haematology International* 9(3):125-131 (1999)

11. **S.J. Hong**, K.W. Kang. “Purification of Granulin-like Polypeptide from the Blood-sucking Leech, Hirudo nipponia”, *Protein Exp. and Puri.* 16:340-346 (1999)

12. Y.H. Kim, **S.J. Hong**, D.R. Kim, S.I. Kim, K.S. Ha, K.W. Kang. “A New Trypsin Inhibitor from Hirudo nipponia”, *Mol. Cells* 6(5): 571-576 (1996)

13. D.R. Kim,**S.J. Hong**, J.S. Kim, M.K. Song, K.W. Kang. “Guamerin-derived synthetic inhibitors against elastase and subtilisin”, *Prot. and Pept. Lett.* 3(5):301-308 (1996)

14. D.R. Kim, **S.J. Hong**, K.S. Ha, C.O. Joe, K.W. Kang. “A Cysteine-Rich Serine Protease Inhibitor (Guamerin II) From The Non-Blood Sucking Leech Whitmania Edentula : Biochemical Characterization and Amino Acid Sequence Analysis”, *J. Enz. Inhib.* 10: 81-91 (1996)

15. **S.J. Hong**, D.R. Kim, K.W. Kang. “Fatty Acid Analysis from Leech Skin”, *J. Biochem. Mol. Biol.* 28(3):261-264 (1995)

16. **S.J. Hong**, D.R. Kim, H. Jung, S.K. Rhee, C.O. Joe, K.W. Kang. “The leech as a laboratory animal for the biomedical research”, *Kor. J. Zool.* 36:588-595 (1993)

17. K.W. Kang, C.O. Joe, **S.J. Hong,** K.S. Park. “Multiple Births in Korean Population”, 7th International Congress on Twin Studies in Tokyo Japan, June22-25, (1992)

18. I.C. Shin, Y.S. Yoon, **S.J. Hong**, K.W. Kang, A.S. Chung, C.O. Joe. “Intracellular Transport of Benzo(a)pyrene by chemically Modified Low density lipoproteins into Hep2 cells”, *Envir. Mut. Carcino.* 11(2):99-106 (1991)

Books and Book Chapters:

1. K.W. Kang, **S.J. Hong**, D.R. Kim,H. Jung, J.K. Ko, Y.H. Kim, K.H. Choi, [Leech]-Animal being forgotten, Academy Press, Korea (1995)

2. **S.J. Hong**, "Loving living things and learning" In Designing the Science, Kyungsook Chang (Ed.) Gana, Korea (1996)

3. **S.J. Hong**, T.M. Dawson and V.L. Dawson, "PARP and the Release of Apoptosis-Inducing Factor from Mitochondria." In Poly(ADP-Ribosyl)ation, Bürkle A (Ed.) Landes Bioscience, Georgetown, TX, USA. ISBN: 1-58706-292-5, (2004)

4. **S.J. Hong**, V.L. Dawson and T.M. Dawson, "Identification and evaluation of NO regulated genes by Differebtial Analysis of primary cDNA Library Expression" In: Nitric Oxide, Part E, A Volume of Methods in Enzymology, Eds. L. Packer, E. Cadenas J.N. Abelson and M.I. Simon, Academic Press, Orlando, FL Methods in Enzymology Chapter 30; 396:359-368 (2005)

Other Publications:

1. **Suk J. Hong,** "New fluorescent whole cell stains effectively identify and segment cells." Pierce Previews 11(2):8-9 (2007)
2. **Suk J. Hong**, "Detect cellular stress responses to drugs in cell-based, high-content assays." Pierce Previews 12(1):7-8 (2007)
3. **Suk J. Hong,** "Detection of Cellular Stress Responses to Drugs: Heat Shock Proteins are Powerful Cell Stress Indicators in Cell-Based, High-Content Assays." Pierce Previews (2008)
4. Michael Anhalt, Douglas E. Hughes, **Suk J. Hong, "**Analysis of Neuronal Differentiation from Stem Cells." Pierce Previews 12(3):13 (2008)
5. **Suk J. Hong**, "A Synaptogenesis Assay in Primary Neurons" Pierce Previews 13(2):10-12 (2009)
6. **Suk J. Hong**, "Simultaneously quantify mitosis and apoptosis in the same cell" Pierce Previews 13(2):13-15 (2009)

Invited Lectureships:

2003/12/2 "Identification of NMDA-dependent neuroprotective genes through Differential Analysis of primary Library Expression (DAzLE)" Dept. of Neuroscience, Johns Hopkins University