

Curriculum Vitae

So Hee Kwon, Ph.D

College of Pharmacy, Yonsei University

85 Songdogwahak-ro, Yeonsu-gu, Incheon, 21983, South Korea

E-mail: soheekwon@yonsei.ac.kr

Tel: + 82 32 749 4513

RESEARCH INTERESTS

1. Epigenetic regulation of protein complexes that modify chromatin and regulate gene transcription (HDAC1/6/8, KMT1, KDM3/4/5, PRMTs, HP1, p53, DUBs)
2. Identification and validation of novel epigenetic therapeutic target and new small-molecule inhibitors for epigenetic regulators
3. Identifying the novel non-histone protein modifications that instruct chromatin organization and gene regulation (PTMs)
4. Elucidation of the chromatin code in tumorigenesis and cancer metabolism through chromatin dynamics and development of disease control technique (Cancer epigenetics).

PROFESSIONAL CAREER

May. 2007 – Jan. 2011: Stower's Institute for Medical Research, Post Doc.

(Advisor: Jerry L. Workman)

Mar. 2011 – Feb. 2015: College of Pharmacy, Yonsei University, Assistant Professor

Mar. 2015 – Feb. 2021: College of Pharmacy, Yonsei University, Associate Professor

Mar. 2021 – Present: College of Pharmacy, Yonsei University, Professor

Mar. 2017 – Present: Toxicological Research (TR), Associate Editor

Apr. 2020 – Present: Experimental and Therapeutic Medicine, Reviewer Board Member

May 2020 – Present: Cancers, Reviewer Board Member

July 2020 – Mar. 2022: International Journal of Molecular Sciences (IJMS), Editorial board:
Topic editor (special issue guest editor)

EDUCATION

Mar. 1995 – Feb. 1999: Sungkyunkwan University (School of Pharmacy), B.S.

Mar. 1999 – Feb. 2001: Sungkyunkwan University (School of Pharmacy), M.S.

Aug. 2002 – Apr. 2007: University of Basel & Friedrich Miescher Institute for Biomedical Research (FMI), Switzerland (Department of Biochemistry), Ph.D.

DISSERTATION TITLES

M.S.: Apoptosis induction and its mechanism by apicidin and its derivative

Ph.D.: The deacetylase HDAC6 interacts with G3BP (RasGAP associated endoribonuclease) and regulates the assembly of stress granules in response to stress.

(Dissertation committee: Dr. Matthias, Dr. Meins, Dr. Filipowicz, and Dr. Khochbin)

HONORS

1. 신진발암원학자상, Korea Society of Toxicology (Nov. 2020)
2. 차세대선도약학자상, Pharmaceutical society of Korea (Oct. 2020)
3. 여성과학약진상 WBF-Cosmax award, Women's Bioscience Forum (Sep. 2020)
4. KIT Toxicologist award, Korea Society of Toxicology (Nov. 2017)
5. Poster presentation award in Korean Society for Molecular and Cellular Biology (May. 2015)
6. Poster & oral presentation award in Pharmaceutical Society of Korea meeting, Seoul, Korea (2014, 2018, 2019, 2020, 2021)

7. Best Lecture Award in Yonsei University (Feb. 2014)
8. Poster award in Korean international molecular biochemistry meeting, Seoul, Korea (Oct. 2008)
9. Oral presentation award in Pharmaceutical Society of Korea meeting, Seoul, Korea (Apr. 2002)
10. The Korean Pharmaceutical Association scholarship (1997)

PUBLICATIONS

1. Kim C, Kong G, Lee H, Tran Q, Vo TT, **Kwon SH**, Park J, Kim SH, Park J. Scavenger receptor class F member 2 (SCARF2) as a novel therapeutic target in glioblastoma. *Toxicol Res.* 2022 Feb 25;38(2):249-256.
2. Jeon YH, Kim GW, Kim SY, Yi SA, Yoo J, Kim JY, Lee SW, **Kwon SH***. Heterochromatin Protein 1: A Multiplayer in Cancer Progression. *Cancers* (Basel). 2022 Feb 1;14(3):763.
3. Kim J, Park S, **Kwon SH**, Lee EJ, Lee JS. Set1-mediated H3K4 methylation is required for *Candida albicans* virulence by regulating intracellular level of reactive oxygen species. *Virulence.* 2021 Dec;12(1):2648-2658.
4. Yi SA, Nam KG, Lee MG, Oh H, Noh JS, Jeong JK, Kwak S, Jeon YJ, **Kwon SH**, Lee J, Han JW. Transcriptomics-Based Repositioning of Natural Compound, Eudesmin, as a PRC2 Modulator. *Molecules.* Sep 18;26(18):5665.
5. Yoo J, Jeon YH, Lee DH, Kim GW, Lee SW, Kim SY, Park J, **Kwon SH***. HDAC6-selective inhibitors enhance anticancer effects of paclitaxel in ovarian cancer cells. *Oncol Lett.* 2021 Mar;21(3):201.
6. Kim GW, Lee DH, Jeon YH, Yoo J, Kim SY, Lee SW, Cho HY, **Kwon SH***. Glutamine Synthetase as a Therapeutic Target for Cancer Treatment. *Int J Mol Sci.* 2021 Feb 8;22(4):1701.
7. Lee SW, Yeon SK, Kim GW, Lee DH, Jeon YH, Yoo J, Kim SY, **Kwon SH***. HDAC6-Selective Inhibitor Overcomes Bortezomib Resistance in Multiple Myeloma. *Int J Mol Sci.* 2021 Jan 29;22(3):1341.
8. Lee DH, Kim GW, Yoo J, Lee SW, Jeon YH, Kim SY, Kang HG, Kim DH, Chun KH, Choi J, **Kwon SH***. Histone demethylase KDM4C controls tumorigenesis of glioblastoma by epigenetically regulating p53 and c-Myc. *Cell Death Dis.* 2021 Jan 18;12(1):89.
9. Lee H, Hong Y, Kong G, Lee DH, Kim M, Tran Q, Cho H, Kim C, Park S, Kim SH, **Kwon SH**, Park J, Park J. Yin Yang 1 is required for PHD finger protein 20-mediated myogenic differentiation in vitro and in vivo. *Cell Death Differ.* 2020

Dec;27(12):3321-3336.

10. Kiem PV, Nhiem NX, Anh NH, Yen DTH, Cuong NT, Tai BH, Yen PH, Nam NH, Minh CV, Chinh PT, Jeon YH, Park SJ, Kim SH, **Kwon SH***. Enantiomeric chromene derivatives with anticancer effects from *Mallotus apelta*. *Bioorg Chem*. 2020 Nov;104:104268.
11. Lee H, Kim M, Kim S, Tran Q, Kong G, Kim C, **Kwon SH**, Park S, Park JB, Park S, Park J. Alpha-Methylacyl-CoA Racemase (AMACR), a Potential New Biomarker for Glioblastoma. *Front Oncol*. 2020 Oct 13;10:550673. doi: 10.3389/fonc.2020.550673. eCollection 2020.
12. Hong Y, Lee H, Tran Q, Bayarmunkh C, Boldbaatar D, **Kwon SH**, Park J, Park J. Beneficial effects of *Diplectria barbata* (Wall. Ex C. B. Clarke) Franken et Roos extract on aging and antioxidants in vitro and in vivo. *Toxicol Res*. 2020 Oct 20;37(1):71-83.
13. Yi SA, Lee DH, Kim GW, Ryu HW, Park JW, Lee J, Han J, Park JH, Oh H, Lee J, Choi J, Kim HS, Kang HG, Kim DH, Chun KH, You JS, Han JW*, **Kwon SH***. HPV-mediated nuclear export of HP1 γ drives cervical tumorigenesis by downregulation of p53. *Cell Death Differ*. 2020 Sep;27(9):2537-2551.
14. Cho HY, Lee SW, Jeon YH, Lee DH, Kim GW, Yoo J, Kim SY, **Kwon SH***. Combination of ACY-241 and JQ1 Synergistically Suppresses Metastasis of HNSCC via Regulation of MMP-2 and MMP-9. *Int J Mol Sci*. 2020 Sep 19;21(18):6873.
15. Yi SA, Kim GW, Yoo J, Han JW*, **Kwon SH***. HP1 γ Sensitizes Cervical Cancer Cells to Cisplatin through the Suppression of UBE2L3. *Int J Mol Sci*. 2020 Aug 19;21(17):E5976.
16. Kim GW, Yoo J, Won HR, Yeon SK, Lee SW, Lee DH, Jeon YH, **Kwon SH***. A452, HDAC6-selective inhibitor synergistically enhances the anticancer activity of immunomodulatory drugs in IMiDs-resistant multiple myeloma. *Leuk Res*. 2020 Aug;95:106398. doi: 10.1016/j.leukres.2020.106398.
17. Tran Q, Lee H, Kim C, Kong G, Gong N, **Kwon SH**, Park J, Kim SH, Park J. Revisiting the Warburg Effect: Diet-Based Strategies for Cancer Prevention. *Biomed Res Int*. 2020 Aug 4;2020:8105735. doi: 10.1155/2020/8105735. eCollection 2020.
18. Park S, Kim GW, Lee JS*, **Kwon SH***. Broad domains of histone H3 lysine 4 trimethylation in transcriptional regulation and disease. *FEBS J*. 2020 Jul;287(14):2891-2902.
19. Kong G, Lee H, Tran Q, Kim C, Gong N, Park J, **Kwon SH**, Kim SH, Park J. Current Knowledge on the Function of α -Methyl Acyl-CoA Racemase in Human Diseases. *Front Mol Biosci*. 2020 Jul 14;7:153. doi: 10.3389/fmolb.2020.00153. eCollection 2020.

20. Yoo J, Jeon YH, Cho HY, Lee SW, Kim GW, Lee DH, **Kwon SH***. Advances in Histone Demethylase KDM3A as a Cancer Therapeutic Target. *Cancers* (Basel). 2020 Apr 28;12(5):1098. doi: 10.3390/cancers12051098.
21. Lee DH, Kim GW, Jeon YH, Yoo J, Lee SW, **Kwon SH***. Advances in histone demethylase KDM4 as cancer therapeutic targets. *FASEB J*. 2020 Mar;34(3):3461-3484.
22. Park S, Kim M, Hong Y, Lee H, Tran Q, Kim C, **Kwon SH**, Park J, Park J, Kim S. Myristoylated TMEM39AS41, a Cell-Permeable Peptide, Causes Lung Cancer Cell Death. *Toxicol Res*. 2020 Feb 7;36(2):123-130
23. Kim GW, Lee DH, Yeon SK, Jeon YH, Yoo J, Lee SW, **Kwon SH***. Temozolomide-resistant Glioblastoma Depends on HDAC6 Activity Through Regulation of DNA Mismatch Repair. *Anticancer Res*. 2019 Dec;39(12):6731-6741.
24. Kim YJ, Lee DH, Choi YS, Jeong JH*, **Kwon SH***. Benzo[b]tellurophenes as a potential histone H3 lysine 9 demethylase (KDM4) inhibitor. *Int J Mol Sci*. 2019 Nov 25;20(23).
25. Jin M, Hong Y, Lee H, Tran Q, Cho H, Kim M, **Kwon SH**, Kang NH, Park J, Park J. 1,2-Dichloropropane (1,2-DCP)-Induced Angiogenesis in Dermatitis. *Toxicol Res*. 2019 Oct;35(4):361-369.
26. Won HR, Lee DH, Yeon SK, Ryu HW, Kim GW, **Kwon SH***. HDAC6-selective inhibitor synergistically enhances the anticancer activity of immunomodulatory drugs in multiple myeloma. *Int J Oncol*. 2019 Aug;55(2):499-512.
27. Lee H, Hong Y, Tran Q, Cho H, Kim M, Kim C, **Kwon SH**, Park S, Park J, Park J. A new role for the ginsenoside RG3 in antiaging via mitochondria function in ultraviolet-irradiated human dermal fibroblasts. *J Ginseng Res*. 2019 Jul;43(3):431-441.
28. Lee DH, Kim GW, **Kwon SH***. The HDAC6-selective inhibitor is effective against non-Hodgkin lymphoma and synergizes with ibrutinib in follicular lymphoma. *Mol Carcinog*. 2019 Jun;58(6):944-956.
29. Lee DH, Ryu HW, Kim GW, **Kwon SH***. Comparison of three heterochromatin protein 1 homologs in *Drosophila*. *J Cell Sci*. 2019 Feb 7;132(3). pii: jcs222729.
30. Won HR, Ryu HW, Shin DH, Yeon SK, Lee DH, **Kwon SH***. A452, an HDAC6-selective inhibitor, synergistically enhances the anticancer activity of chemotherapeutic agents in colorectal cancer cells. *Mol Carcinog*. 2018 Oct;57(10):1383-1395.
31. Lee DH, Won HR, Ryu HW, Han JM, **Kwon SH***. The HDAC6 inhibitor ACY-1215 enhances the anticancer activity of oxaliplatin in colorectal cancer cells. *Int J Oncol*. 2018 Aug;53(2):844-854.
32. Tran Q, Jung JH, Park J, Lee H, Hong Y, Cho H, Kim M, Park S, **Kwon SH**, Kim SH, Thomas G, Kim KP, Cho MH, Park J. S6 kinase 1 plays a key role in mitochondrial

morphology and cellular energy flow. *Cell Signal*. 2018 Aug;48:13-24.

33. Yi SA, Lee J, Park JW, Han J, Lee MG, Nam KH, Park JH, Oh H, Ahn SJ, Kim S, **Kwon SH**, Jo DG, Han JW. S6K1 controls epigenetic plasticity for the expression of pancreatic α/β cell marker genes. *J Cell Biochem*. 2018 Aug;119(8):6674-6683.
34. Ryu HW, Shin D, Lee DH, Won HR, **Kwon SH***. A potent hydroxamic acid-based, small-molecule inhibitor A452 preferentially inhibits HDAC6 activity and induces cytotoxicity toward cancer cells irrespective of p53 status. *Carcinogenesis*. 2018 Jan 12;39(1):72-83.
35. Lee H, Park J, Tran Q, Kim D, Hong Y, Cho H, **Kwon SH**, Brazil D, Kim SH, Park J. Mitochondrial transcription factor A (TFAM) is upregulated in glioma. *Mol Med Rep*. 2017 Jun;15(6):3781-3786.
36. Ryu HW, Shin DH, Lee DH, Choi J, Han G, Lee KY, **Kwon SH***. HDAC6 deacetylates p53 at lysines 381/382 and differentially coordinates p53-induced apoptosis. *Cancer Lett*. 2017 Apr 10;391:162-171.
37. Lee DH, Ryu HW, Won HR, **Kwon SH***. Advances in epigenetic glioblastoma therapy. *Oncotarget*. 2017 Mar 14;8(11):18577-18589.
38. Ryu HW, Won HR, Lee DH, **Kwon SH***. HDAC6 regulates sensitivity to cell death in response to stress and post-stress recovery. *Cell Stress Chaperones*. 2017 Mar;22(2):253-261.
39. Park J, Lee H, Tran Q, Mun K, Kim D, Hong Y, **Kwon SH**, Brazil D, Park J, Kim SH. Recognition of Transmembrane Protein 39A as a Tumor-Specific Marker in Brain Tumor. *Toxicol Res*. 2017 Jan;33(1):63-69.
40. Park J, Tran Q, Mun K, Masuda K, **Kwon SH**, Kim SH, Kim DH, Thomas G, Park J. Involvement of S6K1 in mitochondria function and structure in HeLa cells. *Cell Signal*. 2016 Dec;28(12):1904-1915.
41. Lee H, Hong Y, **Kwon SH**, Park J, Park J. Anti-aging effects of Piper cambodianum P. Fourn. extract on normal human dermal fibroblast cells and a wound-healing model in mice. *Clin Interv Aging*. 2016 Jul 29;11:1017-26.
42. Park EK, Lee JC, Park JW, Bang SY, Yi SA, Kim BK, Park JH, **Kwon SH**, You JS, Nam SW, Cho EJ, Han JW. Transcriptional repression of cancer stem cell marker CD133 by tumor suppressor p53. *Cell Death Dis*. 2015 Nov 5;6:e1964.
43. Ryu HW, Lee DH, Won HR, Kim KH, Seong YJ, **Kwon SH***. Influence of toxicologically relevant metals on human epigenetic regulation. *Toxicol Res*. 2015 Mar;31(1):1-9. doi: 10.5487/TR.2015.31.1.001. Review.
44. Ryu HW, Lee DH, Shin DH, Hyun Kim S, **Kwon SH***. Aceroside VIII is a New Natural Selective HDAC6 Inhibitor that Synergistically Enhances the Anticancer Activity of

HDAC Inhibitor in HT29 Cells. *Planta Med.* 2015 Feb;81(3):228-34

45. Bang SY, **Kwon SH**, Yi SH, Yi SA, Park EK, Lee JC, Jang CG, You JS, Lee SH, Han JW. Epigenetic Activation of the Foxa2 Gene Is Required for Maintaining the Potential of Neural Precursor Cells to Differentiate into Dopaminergic Neurons After Expansion. *Stem Cells Dev.* 2015 Feb 15;24(4):520-33
46. Kim TH, Park GY, Shin S, Kwon DR, Seo WS, Shin JC, Choi JH, Joo SH, Weon KY, Min BS, Baek K, Upadhyay N, Zhao BT, Woo MH, **Kwon SH**, Shin BS. Pharmacokinetic Alteration of Baclofen by Multiple Oral Administration of Herbal Medicines in Rats. *Evid Based Complement Alternat Med.* 2014;2014:402126.
47. Yi SA, Ryu HW, Lee DH, Han JW, **Kwon SH***. HP1 β suppresses metastasis of human cancer cells by decreasing the expression and activation of MMP2. *Int J Oncol.* 2014 Dec;45(6):2541-8.
48. Ryu HW, Lee DH, Florens L, Swanson SK, Washburn MP, **Kwon SH***. Analysis of the heterochromatin protein 1 (HP1) interactome in Drosophila. *J Proteomics.* 2014 May 6;102:137-47.
49. Kim M, Yi SA, Lee H1, Bang SY, Park EK, Lee MG, Nam KH, Yoo JH, Lee DH, Ryu HW, **Kwon SH***, Han JW*. Reversine induces multipotency of lineage-committed cells through epigenetic silencing of miR-133a. *Biochem Biophys Res Commun.* 2014 Feb 28;445(1):255-62.
50. Noh JH1, Chang YG, Kim MG, Jung KH, Kim JK, Bae HJ, Eun JW, Shen Q, Kim SJ, **Kwon SH**, Park WS, Lee JY, Nam SW. MiR-145 functions as a tumor suppressor by directly targeting histone deacetylase 2 in liver cancer. *Cancer Lett.* 2013 Jul 28;335(2):455-62
51. Lee DH, Li Y, Shin DH, Yi SA, Bang SY, Park EK, Han JW, **Kwon SH***. DNA microarray profiling of genes differentially regulated by three heterochromatin protein 1 (HP1) homologs in Drosophila. *Biochem Biophys Res Commun.* 2013 May 17;434(4):820-8.
52. Kim SH, **Kwon SH**, Park SH, Lee JK, Bang HS, Nam SJ, Kwon HC, Shin J, Oh DC. Tripartin, a histone demethylase inhibitor from a bacterium associated with a dung beetle larva. *Org Lett.* 2013 Apr 19;15(8):1834-7.
53. Jung KH, Kim JK, Noh JH, Eun JW, Bae HJ, Kim MG, Chang YG, Shen Q, Kim SJ, **Kwon SH**, Park WS, Lee JY, Nam SW. Characteristic molecular signature for the early detection and prediction of polycyclic aromatic hydrocarbons in rat liver. *Toxicol Lett.* 2013 Jan 10;216(1):1-8.
54. Li Y, Shin D, **Kwon SH***. Histone deacetylase 6 plays a role as a distinct regulator of diverse cellular processes. *FEBS J.* 2013 Feb;280(3):775-93
55. Bae HJ, Chang YG, Noh JH, Kim JK, Eun JW, Jung KH, Kim MG, Shen Q, Ahn YM, **Kwon**

- SH**, Park WS, Lee JY, Nam SW. DBC1 does not function as a negative regulator of SIRT1 in liver cancer. *Oncol Lett*. 2012 Nov;4(5):873-877.
56. Lee JC, Kang SU, Jeon Y, Park JW, You JS, Ha SW, Bae N, Lubec G, **Kwon SH**, Lee JS, Cho EJ, Han JW. Regulation of p53 Activity by Protein L-Isoaspartyl Methyltransferase. *Nat Commun*. 2012 Jun 26;3:927.
57. Park JW, Lee JC, Ha SW, Bang SY, Park EK, Yi SA, Lee MG, Kim DS, Nam KH, Yoo JH, **Kwon SH***, Han JW*. Requirement of protein l-isoaspartyl O-methyltransferase for transcriptional activation of trefoil factor 1 (TFF1) gene by estrogen receptor alpha. *Biochem Biophys Res Commun*. 2012 Apr 6;420(2):223-9.
58. **Kwon SH**, Workman JL. HP1c casts light on dark matter. *Cell Cycle*. 2011 Feb 15;10(4):625-30.
59. **Kwon SH**, Florens L, Swanson SK, Washburn MP, Abmayr SM, Workman JL. The changing faces of HP1: From heterochromatin formation and gene silencing to euchromatic gene expression: HP1 acts as a positive regulator of transcription. *Bioessays*. 2011 Apr;33(4):280-9. doi: 10.1002/bies.201000138.
60. **Kwon SH**, Workman JL. Heterochromatin Protein 1 (HP1) connects the FACT histone chaperone complex to the phosphorylated CTD of RNA polymerase II. *Genes Dev*. 2010 Oct. 1; (24)19
61. **Kwon SH**, Workman JL. The heterochromatin protein 1 (HP1) family: put away a bias toward HP1. *Mol Cells*. 2008 Sep 30;26(3):217-27. Review.
62. Zhang Y, **Kwon SH**, Yamaguchi T, Cubizolles F, Rousseaux S, Kneissel M, Cao C, Li N, Cheng HL, Chua K, Lombard D, Mizeracki A, Matthias G, Alt FW, Khochbin S, Matthias P. Mice lacking histone deacetylase 6 have hyperacetylated tubulin but are viable and develop normally. *Mol Cell Biol*. 2008 Mar;28(5):1688-701.
63. **Kwon SH**, Zhang Y, Matthias P. The deacetylase HDAC6 is a novel essential component of stress granules involved in the stress response. *Genes Dev*. 2007 Dec 15;21(24):3381-94.
64. Boyault C, Zhang Y, Fritah S, Caron C, Gilquin B, **Kwon SH**, Garrido C, Yao TP, Vourc'h C, Matthias P, Khochbin S. HDAC6 controls major cell response pathways to cytotoxic accumulation of protein aggregates. *Genes Dev*. 2007 Sep 1;21(17):2172-81.
65. **Kwon SH**, Ahn SH, Kim YK, Bae GU, Yoon JW, Hong S, Lee HY, Lee YW, Lee HW, Han JW. Apicidin, a histone deacetylase inhibitor, induces apoptosis and Fas/Fas ligand expression in human acute promyelocytic leukemia cells. *J Biol Chem*. 2002 Jan 18;277(3):2073-80.