

## Curriculum Vitae

### **Myunggon Ko, Ph.D.**

Engineering Bldg. #110. Rm 401-6  
School of Life Sciences  
Ulsan National Institute of Science and Technology  
50 UNIST-gil, Eonyang-eup, Ulju-gun, Ulsan 44919, Republic of Korea

**Tel:** +82-52-217-2516

**FAX:** +82-52-217-5309

**E-mail:** [mgko@unist.ac.kr](mailto:mgko@unist.ac.kr)

---

### **RESEARCH INTERESTS**

The research in the Ko Lab aims to determine how dysregulation of key epigenetic players is implicated in the onset and progression of hematologic malignancies and solid cancers, thereby identifying novel pathways that can be clinically targeted for the treatment of cancers. The methylation of cytosine and subsequent oxidation constitutes a fundamental epigenetic modification in mammalian genomes, and its abnormalities are intimately coupled to various pathogenic processes including cancer development. In particular, alterations in DNA modifications due to aberrant TET protein expression or function are commonly observed in a wide range of cancers, and TET loss-of-function is causally related to the development of hematologic malignancies in vivo. Thus, we are investigating the molecular basis of the normal and pathogenic function of TET proteins in regulating hematopoietic stem cells as well as other adult stem cells using mouse models.

---

### **A. EDUCATION AND TRAINING**

Mar 1992-Aug 1999 **B.S.** in Molecular Biology (*Summa cum laude*)

Department of Molecular Biology,  
Seoul National University, Seoul, Korea  
(Mandatory military service: April 1994- June 1996)

Mar 2000-Feb 2002 **M.S.** in Genetic Engineering

Interdisciplinary Graduate Program in Genetic Engineering,  
Seoul National University, Seoul, Korea (Advisor: Dr. Rho Hyun Seong)

Thesis title: *TCR/CD3 signaling inhibits glucocorticoid-induced apoptosis of immature thymoma cells by downregulating the SRG3 expression via Ras activation.*

Sep 2003-Aug 2006 **Ph.D.** in Biological Sciences (Molecular Immunology)

School of Biological Sciences and Institute of Molecular Biology and Genetics,  
*School of Life Sciences, Ulsan National Institute of Science and Technology (UNIST)*

Seoul National University, Seoul, Korea (Advisor: Dr. Rho Hyun Seong)

Thesis title: *Studies on the role of SWI3-related gene (SRG3) during B and T lymphocyte development.*

## **B. PROFESSIONAL EXPERIENCE**

- Sep 2006-Mar 2009 **Post-doctoral Fellow** (Laboratory of Dr. Rho Hyun Seong)  
 Laboratory of Molecular Immunology,  
 Institute of Molecular Biology and Genetics,  
 Seoul National University, Seoul, Korea
- Apr 2009-Mar 2010 **Post-doctoral Fellow** (Laboratory of Dr. Anjana Rao)  
 Immune Disease Institute and Program in Cellular and Molecular Medicine at  
 Children's Hospital Boston, Boston, MA  
 Department of Pathology, Harvard Medical School, Boston, MA
- Apr 2010-Dec 2010 **Post-doctoral Fellow** (Laboratory of Dr. Anjana Rao)  
 Division of Signaling and Gene Expression,  
 La Jolla Institute for Allergy and Immunology, La Jolla, CA
- Jan 2011-June 2015 **Instructor**, (Laboratory of Dr. Anjana Rao)  
 Division of Signaling and Gene Expression,  
 La Jolla Institute for Allergy and Immunology, La Jolla, CA
- July 2015-present **Assistant Professor**  
 School of Life Sciences  
 Ulsan National Institute of Science and Technology, Ulsan, Korea

## **C. Awards/Honors/Membership**

- 2015 ~: Member of Korean Society for Biochemistry and Molecular Biology
- 2016 ~: Member of Korean Society for Molecular and Cellular Biology
- 2016 ~: Editorial Board Member, *Molecular and Cellular Biology*
- TJ Park Science Fellowship, POSCO TJ Park Foundation (2015)
- Special Fellow Award, Leukemia & Lymphoma Society, USA (2011 ~ 2014)
- Woosan Fellowship, Woosan Foundation (2000 ~ 2001)

## **D. PUBLICATIONS**

1. Jungeun An, Anjana Rao, **Myunggon Ko**. TET family dioxygenases and DNA demethylation in stem cells and cancers. (2017) *Exp. Mol. Med.* 49(4):e323 [PMID: 28450733]

2. Nair VS, Song MH, **Ko M**, Oh KI. DNA Demethylation of the Foxp3 Enhancer Is Maintained through Modulation of Ten-Eleven-Translocation and DNA Methyltransferases. (2016) *Mol. Cells*. 39(12):888-897. [PMID: 27989104]
  
3. Xiaotian Zhang\*, Jianzhong Su\*, Mira Jeong\*, **Myunggon Ko**, Yun Huang, Hyun Jung Park, Anna Guzman, Yong Lei, Yung-Hsin Huang, Anjana Rao, Wei Li & Margaret A Goodell. (2016). DNMT3A and TET2 compete and cooperate to repress lineage-specific transcription factors in hematopoietic stem cells. *Nat. Genet.* 48(9):1014-23. [PMID: 27428748]
  
4. Sara Motagner, Cristina Leoni, Stefan Emming, Giulia Della Chiara, Chiara Balestrieri, Iros Barozzi, Viviana Piccol, Susan Tougher, **Myunggon Ko**, Anjana Rao, Cioacchino Natoli, Silvia Monticelli. (2016). TET2 regulates mast cell differentiation and proliferation through catalytic and non-catalytic activities. *Cell Reports* 15: 1566-1579. [PMID: 27160912]
  
5. Jungeun An, Edahí González-Avalos, Ashu Chawla, Mira Jeong, Isaac F. López-Moyado, Wei Li, Margaret A. Goodell, Lukas Chavez\*, **Myunggon Ko**\*, Anjana Rao\*. (2015). Acute loss of *TET* function results in aggressive myeloid cancer in mice. *Nat. Comm.* 6: 10071. (\*co-corresponding authors) [PMID: 26607761]
  
6. **Myunggon Ko**<sup>#</sup>, Jungeun An, Anjana Rao. DNA methylation and hydroxymethylation in hematologic differentiation and transformation. (2015) *Curr. Opin. Cell Biol.* 37: 91-101. (#corresponding author) [PMID: 26595486]
  
7. Jae-A Han, Jungeun An, **Myunggon Ko**, Functions of TET proteins in hematopoietic transformation. (2015) *Mol. Cells* 38: 925-935. [PMID: 26552488]
  
8. Evisa Gjini, Marc R. Mansour, Jeffry D. Sander, Nadine Moritz, Ashley T. Nguyen, Michiel Kesarsing, Si Chen, **Myunggon Ko**, You-Yi Kuang, Song Yang, Yi Zhou, Leonard I. Zon, J. Keith Joung, Anjana Rao, A. Thomas Look. (2015) A zebrafish model of myelodysplasia produced through tet2 genomic editing, *Mol. Cell. Biol.* 35: 789-804. [PMID: 25512612]
  
9. **Myunggon Ko**\*, Jungeun An\*, William A. Pastor, Sergei Koralov, Klaus Rajewsky, Anjana Rao. (2015) TET proteins and 5-methylcytosine oxidation in hematological cancers. *Immunological Reviews* 263: 6-21. (\*equally contributed) [PMID: 25510268]
  
10. Jeong M, Sun D, Luo M, Huang Y, Challen GA, Rodriguez B, Zhang X, **Ko M**, Wang H, Chen R, Gunaratne P, Godley LA, Darlington GJ, Rao A, Li W and Goodell MA. (2014) Large conserved domains of low DNA methylation maintained by 5-hydroxymethylcytosine and Dnmt3a, *Nat. Genet.* 46: 17-23. [PMID: 24270360]
  
11. **Myunggon Ko**\*, Jungeun An\*, Hozefa S. Bandukwala, Lukas Chavez, Tarmo Äijö, William A. Pastor, Matthew F. Segal, Huiming Li, Kian Peng Koh, Harri Lähdesmäki, Patrick G. Hogan, L. Aravind, Anjana Rao. (2013). Modulation of TET2 expression and 5-methylcytosine oxidation by the CXXC domain protein IDAX, *Nature* 497:122-126. (\*equally contributed) [PMID: 23563267]

12. Masato Sasaki, Christiane B. Knobbe, Momoe Itsumi, Andrew J. Elia, Isaac S. Harris, Iok In Christine Chio, Rob A. Cairns, Susan McCracken, Andrew Wakeham, Jillian Haight, Annick You Ten, Bryan Snow, Takeshi Ueda, Satoshi Inoue, Kazuo Yamamoto, **Myunggon Ko**, Anjana Rao, Katharine E. Yen, Shinsan M. Su, and Tak Wah Mak. (2012). D-2-hydroxyglutarate produced by mutant IDH1 perturbs collagen maturation and basement membrane function, **Genes Dev.** 26: 2038-2049. [PMID: 22925884]
13. Jinwook Choi\*, **Myunggon Ko**\* Shin Jeon, Yoon Jeon, Kyungsoo Park, Changjin Lee, Ho Lee, and Rho H. (2012). The SWI/SNF-like BAF complex is essential for early B cell development, **J. Immunol.** 188: 3791-3803. (*\*equally contributed*) [PMID: 22427636]
14. **Myunggon Ko** and Anjana Rao. (2011). TET2: epigenetic safeguard for HSC, **Blood** 118: 4501-4503. (*Commentary*) [PMID: 22033942]
15. **Myunggon Ko**\*, Hozefa S. Bandukwala\*, Jungeun An, Edward D. Lamperti, Elizabeth C. Thompson, Ryan Hastie, Angeliki Tsangaratou, Klaus Rajewsky, Sergei B. Koralov, and Anjana Rao. (2011). Ten-Eleven-Translocation 2 (TET2) negatively regulates homeostasis and differentiation of hematopoietic stem cells in mice, **Proc. Natl. Acad. Sci. USA** 108: 14566-14571. (*\*equally contributed*) [PMID: 21873190]
16. William A. Pastor\*, Utz J. Pape\*, Yun Huang\*, Hope R. Henderson, Ryan Lister, **Myunggon Ko**, Erin M. McLoughlin, Yevgeny Brudno, Sahasransu Mahapatra, Philipp Kapranov, Mamta Tahiliani, George Q. Daley, X. Shirley Liu, Joseph R. Ecker, Patrice M. Milos, Suneet Agarwal & Anjana Rao. (2011). Genome-wide mapping of 5-hydroxymethylcytosine in embryonic stem cells. **Nature** 473, 394–397. [PMID: 21552279]
17. Jeongeun Ahn\*, **Myunggon Ko**\*, Changjin Lee, Jieun Kim, Hana Yoon, and Rho H. Seong. (2011). Srg3, a mouse homolog of BAF155, is a novel p53 target and acts as a tumor suppressor by modulating p21<sup>WAF1/CIP1</sup> expression. **Oncogene** 30: 445-456. (*\*equally contributed*) [PMID: 20935679]
18. **Myunggon Ko**\*, Yun Huang\*, Anna M. Jankowska, Utz J. Pape, Mamta Tahiliani, Hozefa S. Bandukwala, Jungeun An, Edward D. Lamperti, Kian Peng Koh, Rebecca Ganetzky, X. Shirley Liu, L. Aravind, Suneet Agarwal, Jaroslaw P. Maciejewski & Anjana Rao. (2010). Impaired hydroxylation of 5-methylcytosine in myeloid cancers with mutant *TET2*. **Nature** 468: 839-843. (*\*equally contributed*) [PMID: 21057493]
19. **Myunggon Ko**, Dong H. Sohn, Heekyoung Chung, Rho H. Seong. (2008). Chromatin remodeling, development and disease, **Mut. Res.** 647: 59-67. (*Review*) [PMID: 18786551]
20. Jaehak Oh, Dong H. Sohn, **Myunggon Ko**, Heekyoung Chung, Sung H. Jeon, and Rho H. Seong. (2008). Baf60a interacts with p53 to recruit the SWI/SNF complex. **J. Biol. Chem.** 283: 11924-11934. [PMID: 18303029]

21. Jeongeun Ahn\*, **Myunggon Ko**\*, Kyuyoung Lee, Jaehak Oh, Sung H. Jeon and Rho H. Seong. (2005). Expression of SRG3, a core component of mouse SWI/SNF chromatin-remodeling complex, is regulated by cooperative interactions between Sp1/Sp3 and Ets transcription factors. **Biochem. Biophysic. Res. Comm.** 338: 1435-1446. (\**equally contributed*) [PMID: 16288722]
22. Cheol Yi Hong, Ji Ho Suh, Kabsun Kim, Eun-Yeung Gong, Sung Ho Jeon, **Myunggon Ko**, Rho Hyun Seong, Hyuk Bang Kwon, and Keesook Lee. (2005). Modulation of androgen receptor transactivation by the SWI3-related gene product (SRG3) in multiple ways. **Mol. Cell Biol.** 25: 4841-4852. [PMID: 15923603]
23. **Myunggon Ko**, Jiho Jang, Jeongeun Ahn, Kyuyoung Lee, Heekyoung Chung, Sung H. Jeon, and Rho H. Seong. (2004b). T cell receptor signaling inhibits glucocorticoid-induced apoptosis by repressing the SRG3 expression via Ras activation. **J. Biol. Chem.** 279: 21903-21915. [PMID: 15016814]
24. **Myunggon Ko**, Jeongeun Ahn, Changjin Lee, Heekyoung Chung, Sung H. Jeon, Hee-Y. Chung, and Rho H. Seong. (2004a). E2A/HEB and Id3 proteins control the sensitivity to glucocorticoid-induced apoptosis in thymocytes by regulating the SRG3 expression. **J. Biol. Chem.** 279: 21916-21923. [PMID: 15016815]
25. Chung H, Choi YI, **Myunggon Ko**, Seong RH. (2002). Rescuing developing thymocytes from death by neglect. **J. Biochem. Mol. Biol.** 35:7-18. (*Review*) [PMID: 16248964]
26. Sunmi Han, Heonsik Choi, **Myung-gon Ko**, Young I. Choi, Dong H. Sohn, Joong K. Kim, Dongho Shin, Heekyoung Chung, Han W. Lee, Jae-B. Kim, Sang D. Park, and Rho H. Seong. (2001). Peripheral T cells become sensitive to glucocorticoid- and stress-induced apoptosis in transgenic mice overexpressing SRG3. **J. Immunol.** 167: 805-810. [PMID: 11441086]