Sovannarith Korm, Ph.D.

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SUMMARY

- About 3 years of cancer and aging research experience, from mechanisms identification to investigational drug screening prototypes.
- Deep understanding of cancer therapeutic resistance, cancer metastasis, and mitochondrial biology.
- Hands-on experience with a broad range of methodologies/technologies on bench work, including retrovirus and lentivirus transfection/transduction, flow cytometry, immunoblotting, immunofluorescence, immunoprecipitation, RNA/DNA extraction, PCR, and pRT-PCR.
- Supervised and mentored undergraduate and graduate students in leukemia and breast cancer research using *in vitro* cell culture system and *in vivo* zebrafish and mouse models. Handling and maintenance animals. Zebrafish: microinjection, tumor xenograft by perivitelline space, and drug administration directly to a blood vessel. Mouse: dissection of embryos for primary cultures of brown adipocyte/cardiomyocyte; dissection of mouse tissues; tumor xenograft, tail vein injection.
- Advised/supervised high school, undergraduate, and graduate students on laboratory technical skills and ethics, and knowledge in biology of aging and cancer.
- A passionate and collaborative scientist who enjoys bench researching and sharing knowledge with others in hopes to cure diseases.

EDUCATION

3/2015-2/2019, Chungnam National University, Daejeon, South Korea
Ph.D. in Basic Science / Cancer and Mitochondrial Biology

- Identified mechanism of actions of cancer therapeutic resistance, cancer metastasis, and immunotherapy in leukemia and solid tumor leading to six publication papers.
- Mastered the theory of knowledge and research skill in biochemistry, signaling transduction, and cancer biology (Culture of PBMCs, primary cells, and cancer cell lines, Transfection with lipofectamine, lentivirus and electroporation, Seahorse Technology to measure bioenergetic status, fluorescence, and confocal microscope, FRET, mouse tumor xenograft, mouse tissue dissection, tail vein injection, subcutaneous injection, drug oral administration, H&E staining, tail suspension test.
- Adapted new protocols, set up new research equipment in the lab, and organized lab reagents.
- Supervised and mentored junior Ph.D. student and master's degree students in leukemia research using *in vitro* cell culture and *in vivo* mouse model.
- Received multiple awards for research excellence and oral presentation.

3/2013-2/2015, Sogang University, Seoul, South Korea
M.S. in Life Science / Skin Aging and Cancer Biology

- Screened natural compounds extracted from medicinal plants and identified their anti-cancer and anti-aging properties, leading to two published papers.

9/2008-6/2012, Royal University of Phnom Penh, Phnom Penh, Cambodia
B.S. in General Biology / Microbiology

- Mastered basic knowledge in plant and animal biology, physiology, and biochemistry.
- Identified the differences of the bacterial and fungal population on fruit and vegetables during harvest and post-harvest, published as thesis book.

PROFESSIONAL EXPERIENCE

3/2021-present, Marine Biological Laboratory, MA, USA
Postdoctoral Scientist in Mitochondria and Aging

- Study the cellular, genetic, and epigenetic mechanisms of maternal age effects on offspring health and lifespan. Focus on the role of mitochondrial dynamics and function in maternal age effects, using molecular, bioinformatic, biochemical, and imaging techniques.
- Screen FDA-approved drugs for novel aging therapies based on life table experiments and functional/physiological assays (heat stress, phototaxis, and swimming assays).

3/2019-2/2021**,** Boston University School of Medicine, MA, USA
Postdoctoral Associate in Pharmacology / Cancer Metabolism

- Managed multiple projects, including identification of metabolic heterogeneity of triple-negative breast cancer, explication of the mechanism underlying onset and progression in MYC-driven leukemia, and development of *in vitro* and *in vivo* drug screening prototypes (Fluorescence polarization assay, FRET, and tumor xenograft zebrafish model). The projects lead to three publication papers and two manuscripts as well as a one-year grant award and multiple oral and poster presentations.
- Supervised and mentored undergraduate and graduate students in leukemia research using *in vitro* cell culture and *in vivo* zebrafish model.

7/2012-8/2012, Mahidol University, Bangkok, Thailand
Young Scientist Researcher in Biotechnology

- Identified antibiotic property of Streptomyces extracted from soil and medicinal plants, leading to a poster presentation in the International Center for Biotechnology (ICBiotech).

GRANT AWARDS

07/2021-present, Pilot Project of The University of Washington Nathan Shock Center and Healthy Aging and Longevity Research Institute, WA, USA
Principal Investigator in "Intergenerational effect of maternal age on offspring metabolome"

- Identify mechanistic investigation of maternal metabolic effects and maternal age effects on offspring health and lifespan, leading to discover new therapeutic targets to improve human health and fitness.

07/2019-6/2020, Dahod International Scholar Award, Shamim and Ashraf Dahod Breast Cancer Research Center, Boston University School of Medicine, MA, USA
Principal Investigator in "Targeting altered metabolism in triple-negative breast cancer"

- Identified alternative therapeutic approach for treating aggressive triple-negative breast cancer, leading to one published paper and one manuscript.

HONORS AND AWARDS

6/2017 Excellence Award of *GRAST*, Chungnam National University, South Korea
10/2016 Young Scientists Award of *Cancer Science*, the Japanese Cancer Association & Wiley, Japan
8/2016 Analytical Science Award of *GRAST*, Chungnam National University, South Korea
09/2008-06/2012 Undergraduate Program Scholarship at Royal University of Phnom Penh, Cambodia

ORAL PRESENTATION

KORM, S., The tiny zebrafish validates the choice of breast cancer treatment. Virtual 9th Cambodian student and researcher workshop, 2022.

KORM, S., Targeting mitochondria, protein degradation, and autophagy as anticancer approaches. Virtual 3rd National Research Forum, Cambodia, 2021.

KORM *et al.,* Targeting mitochondrial morphology in triple-negative breast cancer. Boston University Postdoctoral Seminar Series. September 06, Boston, 2020.

KORM, S., CK2 hyperactivation overcomes temporal restriction of MYC-mediated lymphoblast transformation. Zebrafish Disease Models Society the 12th Conference, Boston, 2019.

KORM, S., RAP80 regulates epithelial mesenchymal transition related to metastasis and malignancy of cancer. The 75th Annual Meeting of the Japanese Cancer Association, Japan, 2016.

POSTER PRESENTATION

KORM, GCA induces autophagy via controlling the TRAF6-ULK1 axis in resistant chronic myeloid leukemia. Women in Autophagy (WIA) 1st Annual Symposium. Nov. 30, 2020.

KORM *et al.,* DLST is a therapeutic target for TNBC with intact mitochondrial structure. Department of Pharmacology & Experimental Therapeutics, Boston University School of Medicine, Feb. 06, 2020.

KORM *et al.*, CK2 hyperactivation overcomes temporal restriction of MYC-mediated lymphoblast transformation. Zebrafish Disease Models Society the 12th Conference, 2019: poster P-115

KORM *et al.*, Regulation of EMT by RAP80 in Cancer Metastasis. International Conference of the Korean Society for Molecular and Cellular Biology, 2016: poster O-9.

KORM *et al.*, N. Screening of *Streptomyces* and their activity against plant pathogenic bacteria. Bio-resources: Potential and Applications, YSS, 2012.

JOURNAL REVIEW ACTIVITIES

2021 -	Biomaterials Science
2020 -	PLOS One, Blood, Leukemia
2019 -	RSC Advance, Oncogene, Leukemia, and MDPI-*cancers*
2017 -	Oncotarget

TRAINING AND ADVISING

Graduate students

Rebecca Kang, Ph.D. student in Biomedical/Medical Engineering at Boston University. Training: zebrafish xenograft and western blot, 2021.

Rema Naskar, Ph.D. student in Graduate School of Analytical Science and Technology. Project: mitochondria and lysosomal positioning in cancer development, 2017-2019.

Undergraduate students

Joseph Friedlander, Undergraduate Research Opportunities Program (UROP) at Boston University. Project, DLST serves as a biomarker in the response of AML patients to OXPHOS inhibitors, 2020.

Aozhuo Zeng, Undergraduate Research Opportunities Program (UROP) at Boston University. Project, Exploiting the noncanonical role of DLST in acute myeloid leukemia, 2020.

High School Student

Ilana Jacobs, MBL, Summer 2021. Training, rotifers handling and maintenance.

BIBLIOGRAPHY

First or co-first Author *

1. Xu S.*, **KORM S.***, Kemet C. and Feng H. Targeting the p97-UFD1 interaction as a novel anti-cancer approach. (Manuscript preperation)
2. Ning S.*, **KORM S.***, Theodoros K., Dun L., Xiaoyu Z., Dane M. W., Joseph K., Eleni R., Mayuko S., Hanfei W., Justin E., Wei-Xing Z., Ching-Ti L., Orian S., and Feng H. DLST promotes the TCA cycle and mitochondrial integrity in triple-negative breast cancer. ***Commun Biol.*** 2021 Nov; 4(1): 1289. ***Highlighted by EurekAlert and many online science news.***
3. Han S.H. *, **KORM S. ***, Han Y.G. *, Choi S.Y. *, Kim S.H., Chung H.J., Park K., Kim J.Y., Myung K., Lee J.Y., Kim H., Kim D.W. GCA links TRAF6-ULK1-dependent autophagy activation in resistant chronic myeloid leukemia. ***Autophagy***. 2019 Dec; 15(12): 2076-2090.
4. Chung H.J. *, **KORM S.** *, Lee S.I. *, Phorl S., Noh S.H., Han M.A., Naskar R., Kim H.T., Lee J.Y. RAP80 binds p32 to preserve the functional integrity of mitochondria. ***Biochem Biophys Res Commun***. 2017 Oct 21; 492(3): 441-446.
5. Park S.Y*, **KORM S.** *, Chung H.J, Choi S.J., Jang J.J., Cho S.H., Lim, Y.T., Kim H.T, Lee J.Y. RAP80 regulates epithelial mesenchymal transition related with metastasis and malignancy of cancer. ***Cancer Sci.*** 2016 Mar; 107(3): 267-73. ***Highlighted in Editor's Choice in Cancer Science journal and appointed as a Cancer Science Young Scientists Award by The Japanese Cancer Association and Wiley-Blackwell.***
6. **KORM S.** *, Jeong, H.C*, Kim O.S, Park, J.R., Cho H., Kim Y.M., Chin Y.W. and Cha, H.J. α-mangostin induces G1 cell cycle arrest in HCT116 cells through p38MAPK-p16INK4a pathway. ***RSC Adv.*** 2015; 5: 34752-34760
7. Kim, J.J. *, **KORM, S.** *, Kim, W.S., Kim, O.S., Lee, J.S., Min, H.G., Chin, Y.W., and Cha, H.J. Nobiletin suppresses MMP-9 expression through modulation of p38 MAPK activity in human dermal fibroblasts. ***Biol Pharm Bull***. 2014; 37(1): 158-63.

Contributing Author

1. Friedlander E.J., Ning S., Zeng A. **KORM S.**, and Feng H. Failure to Guard: Mitochondrial Protein Quality Control in Cancer. ***Int J Mol Sci.*** 2021 Aug 2; 22(15): 8306.
2. Zhou Y., Lian H., Shen N., **KORM S.**, Lam A.K.P., Layton O., Huiting L.N., Li D., Miao K., Zeng A., Landesman-Bollag E., Seldin D.C., Fu H., Hong L., and Feng H. The multifaceted role of protein kinase CK2 in high-risk acute lymphoblastic leukemia. ***Haematologica.*** 2021 May 1; 106(5): 1461-1465.
3. Jung S., Han M., **KORM S.**, Lee S.I.; Noh S., Phorl S., Naskar R., Lee K.S., Kim G.H., Choi Y.J., Lee J.Y. HDAC6 regulates thermogenesis of brown adipocytes through activating PKA to induce UCP1 expression. ***Biochem Biophys Res Commun.*** 2018 Sep 3; 503(1): 285-290.
4. Park S.Y., Phorl S., Jung S., **KORM S.**, Lee S.I., Noh S., Han M., Naskar R., Kim J.Y., Choi Y.J., Lee J.Y. HDAC6 deficiency induces apoptosis in mesenchymal stem cells through p53 K120 acetylation. ***Biochem Biophys Res Commun***. 2017 Dec 9; 494(1-2): 51-56.
5. Seth A., Lee H., Cho M.Y., Park C.S., **KORM S.**, Lee J.Y., Choi I.P., Lim Y.T., and Hong K.S. Combining vasculature disrupting agent and toll-like receptor 7/8 agonist for cancer therapy. ***Oncotarget.*** 2017 Jan 17; 8(3): 5371–5381.