

Kuglae Kim, Ph. D

Assistant Professor

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Education

2016. 8 **M.S. and Ph.D.** unified course in Department of Systems Biology
Yonsei University, Seoul, Korea
Advisor: Dr. Hyun-Soo Cho, Ph.D
2007. 2 **B.S.** in Department of Biology
Chung-Buk National University, Chung-Ju, Korea
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Training and Professional Experience

2022. 3 – Present Assistant Professor in Department of Pharmacy,
Yonsei University, Incheon, South Korea
2017. 9 – 2022. 2 **Postdoctoral Fellow** in Department of Pharmacology,
University of North Carolina at Chapel Hill, United States
Advisor: Dr. Bryan Roth, MD and Ph.D
2016. 9 - 2017. 8 **Postdoctoral Fellow** in Department of Systems Biology
Yonsei University, Seoul, Korea
Advisor: Dr. Hyun-Soo Cho, Ph.D
2011. 12 Student of the 1st Okinawa Institute of Science and Technology CCP4: From data processing
to structure refinement
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Awards and Honors

- 2017-2018 Abroad Postdoctoral Fellowship, Korea Research Foundation (2017R1A6A3A03012547)
2017. 07 Young Scientist Award, Korean Society for Structural Biology (KSSB), Korea
2016. 11 Best Paper Award, Yonsei University, Korea
2016. 07 Best Poster Award, 2016 Annual Conference (KSSB), Korea

2011. 11 Best Poster Award, Brain Korea 21 (BK21) Symposium, Korea
2009-2010 LOTTE Scholarship Foundation, Korea

Oral Presentation

2017. 03 Invited Prof. Cho's Lab seminar at POSTECH, Korea
2017. 02 Invited Prof. Kim's Lab seminar at Korea University, Korea
2017. 01 Methods in GPCR structure determination. 2017 Winter Workshop, Korean Society for Structural Biology (KSSB), Korea
2016. 12 Protein Crystal structure of a Unique Light-driven Chloride Pump Rhodopsin. The 28th Synchrotron Radiation User's Workshop, KOSUA, Korea

Publications (*: co-first author)

1. Anat Levit*, Danielle N. Confair*, **Kuglae Kim***, Ximena Barros Alvarez*, Ying Yang, Oh Sang Kwon, Tao Che, John McCorvey, David N. Kamber, James P. Phelan, Luan Carvalho Martins, William C. Wetsel, Jeffrey F. DiBerto, Sameul T. Slocum, Xi-Ping Huang, Jian Manish Kumar, John. J. Irwin[†], Georgios Skiniotis[†], Brian K. Shoichet[†], Bryan L. Roth[†] and Jonathan A. Ellman[†]. Docking a bespoke ultra-large tetrahydropyridine library for selective 5-HT_{2A}R ligands. *Nature*. (Under revision).
2. Can Cao*, Hye Jin Kang*, Isha Singh, He Chen, Chengwei Zhang, Wenlei Ye, Jing Liu, Ryan H. Gumper, Brian J. Bender, Sam Slocum, Brian E. Krumm, Katherine Lansu, John D. McCorvy, Wesley K. Kroeze, Jeffrey F. DiBerto, Reid H. J. Olsen, Xi-Ping Huang, Shicheng Zhang, Yongfeng Liu, **Kuglae Kim**, Lily Y. Jan, Jian Jin Brian Shoichet[†], Jonathan F. Fay[†], and Bryan L. Roth[†]. Structure, Function and Pharmacology of Human Itch GPCRs. *Nature*. Dec. 2021
3. **Kuglae Kim***, Tao Che*, Ouliana Panova*, Jeffrey F. DiBerto, Jiankun Lyu, Brian E. Krumm, Daniel Wacker, Michael J. Robertson, Alpay B. Seven, David E. Nichols, Brian K. Shoichet, Georgios Skiniotis[†] and Bryan L. Roth[†]. Structure of a Hallucinogen activated Gq-Coupled 5-HT_{2A} Serotonin Receptor. *Cell*. Sep. 2020.
4. Tao Che, Justin English, Brian E Krumm, **Kuglae Kim**, Els Pardon, Reid HJ Olsen, Sheng Wang, Shicheng Zhang, Jeffrey F Diberto, Noah Sciaky, F Ivy Carroll, Jan Steyaert, Daniel, Wacker, Bryan L Roth[†]. Nanobody-enabled monitoring of kappa opioid receptor states. *Nature Communications*. Mar. 2020.
5. **Kuglae Kim**, Jeong Seok Cha, Jin-Sik Kim, Jinsook Ahn, Nam-Chul Ha, Hyun-Soo Cho. Crystal structure of GSK3 β in complex with the flavonoid, morin. *Biochemical and Biophysical Research Communications*. Sep. 2018.
6. Inhye Lee*, **Kuglae Kim***, Sumin Lee*, Seungjun Lee, Eunjin Hwang, Kihye Shin, Dayoung Kim, Jungki Choi, Hyunmo Choi, Jeong Seok Cha, Hoyoung Kim, Rin-A Lee, Suyeong Jeong, Jeongsik Kim, Yumi Kim, Hong Gil Nam, Hyun-Soo Cho[†] and Moon-Soo Soh[†]. Functional analysis of a missense allele of *KARRIKIN-INSENSITIVE2* that impairs ligand-binding and downstream signaling in *Arabidopsis thaliana*. *Journal of Experimental Botany*. May. 2018.

7. **Kuglae Kim***, Jeong Seok Cha*, Yong-Soon Cho, Hoyoung Kim, NIENPING CHANG, Hye-Jung Kim and Hyun-Soo Cho[†]. Crystal structure of human dual-specificity tyrosine-regulated kinase 3 reveals new structural features and insights into its auto-phosphorylation. *Journal of Molecular Biology*. Apr. 2018.
8. Eun-Kyung Kwon, Chan-Ki Min, Yuri Kim, Jae-Won Lee, Abdimadiyeva Aigerim, Sebastian Schmidt, Hyun-Jun Nam, Seong Kyu Han, **Kuglae Kim**, Jeong Seok Cha, Hoyoung Kim, Sanguk Kim, Hyun-Soo Cho, Myung-Sik Choi and Nam-Hyuk Cho[†]. Constitutive activation of T cells by γ 2-herpesviral GPCR through the interaction with cellular CXCR4. *BBA-Molecular Cell Research*. Jan. 2017.
9. **Kuglae Kim***, Soon-kyeong Kwon*, Sung-Hoon Jun*, Jeong Seok Cha, Hoyoung Kim, Weontae Lee, Jihyun F Kim[†], Hyun-Soo Cho[†]. Crystal structure and functional characterization of a light-driven chloride pump having an NTQ motif. *Nature Communications*. Aug. 2016. **F1000 Recommendation**
10. Jiyeon Kim, Shin Hye Noh, He Piao, Dong Hee Kim, **Kuglae Kim**, Jeong Seok Cha, Woo Young Chung, Hyun-Soo Cho, Joo Young Kim, Min Goo Lee[†]. Monomerization and ER Relocalization of GRASP Is a Requisite for Unconventional Secretion of CFTR. *Traffic*. Apr. 2016.
11. Yangmi Lim, Jiho Yoo, Min-Soo Kim, Minkyu Hur, Eun Hee Lee, Hyung-Suk Hur, Jae-Chul Lee, Shinai Lee, TaeWook Park, Kyuhyun Lee, Ki Hwan Chang, **Kuglae Kim**, YingJin Kang, Kwang-Won Hong, Se-Ho Kim, Yeon-Gil Kim, Yeup Yoon, Do-Hyun Nam, Heekyoung Yang, Dong Geon Kim, Hyun-Soo Cho[†] and Jonghwa Won[†]. GC1118, an Anti-EGFR Antibody with a Distinct Binding Epitope and Superior Inhibitory Activity against High-Affinity EGFR Ligands. *Molecular Cancer Therapeutics*. Feb. 2016.
12. Gyongseon Yang, Wei Zhu, **Kuglae Kim**, Soo Young Byun, Gahee Choi, Ke Wang, Jeong Seok Cha, Hyun-Soo Cho, Eric Oldfield and Joo Hwan No. In Vitro and In Vivo Investigation of the Inhibition of Trypanosoma brucei Cell Growth by Lipophilic Bisphosphonates. *Antimicrobial agents and chemotherapy*. Dec. 2015.
13. Sun Ah Jeong*, **Kuglae Kim***, Ji Hoon Lee, Jeong Seok Cha, Prabhat Khadka, Hyun-Soo Cho[†] and In Kwon Chung[†]. Akt-mediated phosphorylation increases the binding affinity of hTERT for importin α to promote nuclear translocation. *Journal of Cell Science*. Jun. 2015.
14. **Kuglae Kim**, Jin-Sik Kim, Jeong Seok Cha, Hyun-Soo Cho, and Nam-Chul Ha. Structural analysis of mouse GSK3 β fused with the LRP6 peptide. *Bio Design*. Mar. 2015
15. Ji-Hye Yun, Minsup Kim, **Kuglae Kim**, Dongju Lee, Youngjin Jung, Daeseok Oh, Yoon-Joo Ko, Art E. Cho, Hyun-Soo Cho, Weontae Lee. Solution structure of the transmembrane 2 domain of the human melanocortin-4 receptor in sodium dodecyl sulfate (SDS) micelles and the functional implication of the D90N mutant *BBA-Biomembranes*. Mar. 2015.
16. Ji-Hye Yun, **Kuglae Kim**, Youngjin Jung, Jae-Hyun Park, Hyun-Soo Cho, Weontae Lee. Co-expression of human agouti-related protein enhances expression and stability of human melanocortin-4 receptor. *Biochemical and Biophysical Research Communications*. Jan. 2015.
17. **Kuglae Kim**, Yingjin Kang and Hyun-Soo Cho. Current advances in the development of G-Protein-coupled receptor structure and their future application in drug design. *Bio Design*. Mar. 2014
18. Yong-Soon Cho, YingJin Kang, **Kuglae Kim**, Young-je Cha and Hyun-Soo Cho. The crystal structure of MPK38 in complex with OTSSP167, an orally administrative MELK selective inhibitor. *Biochemical and Biophysical Research Communications*. Mar. 2014.
19. Si-Hyeon Um, Jin-Sik Kim, **Kuglae Kim**, Nahee Kim, Hyun-Soo Cho and Nam-Chul Ha. Structural basis for the inhibition of human lysozyme by PliC from Brucella abortus *Biochemistry*. Dec. 2013.