

Curriculum Vitae



Junil Kim Ph. D.

Assistant Professor
School of Systems Biomedical Science,
Soongsil University
369 Sangdo-Ro, Entrepreneurship & Small Business Center
607ho, Dongjak-Gu, Seoul (zip: 06978), Republic of
Korea

Email: junilkim@ssu.ac.kr or neocaleb@gmail.com

Laboratory: <https://sites.google.com/site/neocaleb/>

■ Education

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| 2008 - 2014 | Received Ph.D. , Laboratory for Systems Biology and Bio-Inspired Engineering (Supervisor: Prof. Kwang-Hyun Cho), Department of Bio and Brain Engineering, KAIST, Thesis: " <i>Identification of the core structure of a complex biomolecular regulatory network with respect to evolvability and controllability</i> " |
| 2005 - 2008 | Received M.S. , Systems Biology Laboratory (Supervisor: Prof. Kwang-Hyun Cho), Interdisciplinary Graduate Program in Bioinformatics, Seoul National University, Thesis: " <i>Evolutionary design principles of modules that control cellular differentiation: consequences for hysteresis and multistability</i> " |
| 2001 - 2005 | Received B.S. , Department of Bioinformatics, Soongsil University |

■ Employment

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| 2021 - | Assistant Professor , School of Systems Biomedical Science, Soongsil University, Seoul, Republic of Korea |
| 2018 - 2021 | Postdoctoral Researcher , Biotech Research and Innovation Centre, University of Copenhagen, Copenhagen, Denmark |
| 2016 - 2018 | Postdoctoral Researcher , Department of Genetics, Perelman School of Medicine, University of Pennsylvania, United States |
| 2014 - 2016 | Postdoctoral Researcher , CHA Cancer Institute, CHA University, Republic of Korea |
| 2014 - 2015 | Lecturer , Soongsil University, Republic of Korea |
| 2011 - 2012 | Visiting researcher, Center for Complex Biological Systems (CCBS), University of California, Irvine (UCI), United States |

■ Developed Software

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- **VeTra**: A tool for inferring pseudo-time information from RNA velocity (<https://github.com/wgzgithub/VeTra>)
 - **TENET**: A tool for reconstructing gene regulatory network based on pseudo-time ordered single cell transcriptome data (<https://github.com/neocaleb/TENET>)
 - **CellBIC**: Biomodality-based top-down clustering of single-cell transcriptome data (<https://github.com/neocaleb/CellBIC>)

■ Research experience

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- Developing algorithms for analyzing single cell transcriptomic data
 - Network-based transcriptomic and genomic studies on complex disease including cancer, obesity, and aging.
 - Studies on biomolecular regulatory networks for unravelling evolutionary design principles such as multistationarity, robustness, evolvability, and controllability by integrating network analysis, mathematical modeling, functional genomics, and microarray analysis
 - ODE-based mathematical modeling study of cellular signaling networks for developing toxicity evaluation system
 - Boolean-based mathematical modeling study of cellular signaling networks for identifying effective and safe skin lightening target

■ Research Interest

- What is the evolutionary design principle of biomolecular regulatory networks?
- Can we expect phenotypes of the bio-organisms from genomic information and their interactions?
- Piecing together jigsaw puzzle and single cell dynamics in time-space continuum.

■ Academic Awards and Honours

Apr. 2018	Plenary Oral Award at the SICEM 2018, Seoul, South Korea
Oct. 2016	KASBP-DAEWOONG Fellowship Award at the 2016 KASBP Fall Symposium, New Jersey
Apr. 2015	Best Poster Prize at the Obesity Summit 2015 London
Feb. 2014	Best Paper Award for Graduate of College of Life Science and Bioengineering in KAIST
Oct. 2010	GENESYS Young Scientist Travel Award from the 11th International Conference on Systems Biology (ICSB2010) and GENESYS
2008 - 2014	KAIST scholarship, KAIST
Oct. 2007	Student Travel Award from the 8th International Conference on Systems Biology (ICSB2007)
Oct. 2006	Student Travel Award from the 7th International Conference on Systems Biology (ICSB2006)
2001-2004	4 years of full scholarship, Soongsil University

■ Research Grant

2021-2022	202110001219 , 10,000,000 KRW (ca. \$8,800) "Study on controllability of gene regulatory network inferred from single cell RNA sequencing data", Soongsil University
2021-2024	2021R1F1A1063914 , 158,610,000 KRW (ca. \$143,000) "Development of machine learning algorithms for cell-cell interaction studies based on spatial transcriptomic data", National Research Foundation of Korea (NRF).
2019-2020	2019R1A6A3A03032419 , 44,000,000 KRW (ca. \$40,000) "Reconstruction of gene regulatory network in pancreatic development based on single cell RNA sequencing", National Research Foundation of Korea (NRF)
2019	R315-2019-18 , 19,732 DKK (ca. \$3,000) "Reconstruction of gene regulatory network from pseudo-time ordered single-cell RNA sequencing using conditional mutual information", Lundbeckfonden, Denmark

■ International Journal Publications

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1. Kyoungwha Pang, Jihee Lee, **Junil Kim**, Jinah Park, Yuna Park, Eunji Hong, Haein An, Akira Ooshima, Minjung Son, Kyung-Soon Park, Jae-Hyu Cho, Cheol Lee, Yong Sang song, Kyung Min yang, and Seong-Jin Kim, "Degradation of DRAK1 by CUL3/SPOP E3 Ubiquitin ligase promotes tumor growth of paclitaxel-resistant cervical cancer cells", Accepted for publication in *Cell Death and Disease* (IF: **8.469**), Nov 2021
 2. Guangzheng Weng, **Junil Kim***, and Kyoung Jae Won*, "VeTra: a tool for trajectory inference based on RNA velocity", *Bioinformatics* (IF: **6.937**), Vol. 37, Issue 20, p3509-3513, 15 Oct. 2021. (*Co-corresponding authors)
 3. Juxiang Yang, Batoul Hammoud, Changhong Li, Abigail Ridler, Daphne Yau, **Junil Kim**, Kyoung-Jae Won, Charles A Stanley, Toshinori Hoshi, Diana Elena Stanescu, "Decreased KATP channel activity contributes to the low glucose threshold for insulin secretion in the early postnatal period", *Endocrinology*, Vol. 162, Issue 9, bqab121, 1 Sept. 2021.
 4. **Junil Kim**, Simon T. Jakobsen, Kedar N. Natarajan, Kyoung Jae Won, "TENET: gene network reconstruction using transfer entropy reveals key regulatory factors from single cell transcriptomic data", *Nucleic Acids Research* (IF: **16.971**), Vol. 49, No. 1, e1-e1, Jan. 2021.
 5. Tomoya Sakamoto, Timothy R Matsuura, Shibiao Wan, David M Ryba, **Junil Kim**, Kyoung Jae Won, Ling Lai, Christopher Petucci, Nataliya Petrenko, Kiran Musunuru, Rick B Vega, and Daniel P Kelly, "A Critical Role for Estrogen-Related Receptor Signaling in Cardiac Maturation", *Circulation Research* (IF: **15.862**), Vol. 126, No. 12, 1685-1702, March 2020. (Google Scholar Citations: **19** / Web of Science Citations: **8**)
 6. Shibiao Wan, **Junil Kim**, Kyoung Jae Won, "SHARP: hyper-fast and accurate processing of single-cell RNA-seq data via ensemble random projection", *Genome Research* (IF: **9.043**), Vol. 30, Issue 2, 205-213, Jan. 2020. (Google Scholar Citations: **13** / Web of Science Citations: **4**)
 7. **Junil Kim**, Diana E. Stanescu, and Kyoung Jae Won, "CellBIC: Bimodality-based top-down clustering of single-cell RNA sequencing data reveals hierarchical structure of the cell type", *Nucleic Acids Research* (IF: **16.971**), Vol. 46, Issue 21, e124, Aug. 2018. (Google Scholar Citations: **8** / Web of Science Citations: **4**)
 8. Sujin Park, Kyung-Min Yang, Yuna Park, Eunji Hong, Chang Pyo Hong, Jinah Park, Kyoungwha Pang, Jihee Lee, Bora Park, Siyoung Lee, Haein An, Mi-Kyung Kwak, **Junil Kim**, Jin Muk Kang, Pyunggang Kim, Yang Xiao, Guangjun Nie, Akira Ooshima, and Seong-Jin Kim "Identification of Epithelial-Mesenchymal Transition-related Target Genes Induced by the Mutation of Smad3 Linker Phosphorylation", *Journal of Cancer Prevention*, Vol. 23, Issue 2, 107, Jun. 2018. (Google Scholar Citations: **9** / Web of Science Citations: **8**)
 9. Jinah Park, **Junil Kim**, Bora Park, Kyung-Min Yang, Eun Jin Sun, Cristina E. Tognon, Poul H. Sorenson, and Seong-Jin Kim, "Novel identification of STAT1 as a crucial mediator of ETV6-NTRK3-induced tumorigenesis",

- Oncogene* (IF: 7.971), Vol. 37, 2270-2284, Feb. 2018. (Google Scholar Citations: 6 / Web of Science Citations: 4)
10. Kyung-Min Yang, Eunjin Bae, Sung Gwe Ahn, Kyoungwha Pang, Yuna Park, Jinah Park, Jihee Lee, Akira Ooshima, Bora Park, **Junil Kim**, Yungshin Jung, Satoru Takahashi, Joon Jeong, Seok Hee Park, Seong-Jin Kim, "Co-chaperone BAG2 Determines the Pro-oncogenic Role of Cathepsin B in Triple-Negative Breast Cancer Cells", *Cell Reports* (IF: 9.423), Vol. 21, Issue 10, 2952-2964, Dec. 2017. (Google Scholar Citations: 31 / Web of Science Citations: 23)
 11. **Junil Kim**, Sujin Park, Haein An, Ji-Young Choi, Myung-Sook Choi, Sang-Woon Choi, Seong-Jin Kim, "Differential Tissue-specific and Pathway-specific Anti-obesity Effects of Green Tea and Taeumjowitang, a Traditional Korean Medicine, in Mice", *Journal of Cancer Prevention*, Vol. 22, Issue 3, 147, Sep. 2017.
 12. Ji-Young Choi, Robin McGregor, Eun-Young Kwon, Ye jin Kim, Youngji Han, Jung Han Yoon-Park, Ki Won Lee, Seong-Jin Kim, **Junil Kim**, Jong Won Yun, and Myung-Sook Choi, "The metabolic response to a high-fat diet reveals obesity-prone and -resistant phenotypes in mice with distinct mRNA-seq transcriptome profiles", *International Journal of Obesity* (IF: 5.337), Vol. 40, 1452-1460, Sep. 2016. (Google Scholar Citations: 18 / Web of Science Citations: 12)
 13. Jong-Eun Kim*, Dasom Song*, **Junil Kim***, Jina Choi, Jong Rhan Kim, Hyun-Sun Yoon, Jung-Soo Bae, Mira Han, Sein Lee, Ji Eun Shin, Ji Sun Hong, Dayoung Song, Seong-Jin Kim, Myung-Jin Son, Sang-Woon Choi, Jin Ho Chung, Tae-Aug Kim, and Ki Won Lee, "Oral supplementation with cocoa extract reduces UVB-induced wrinkles in hairless mouse skin", *Journal of Investigative Dermatology* (IF: 7.143), Vol. 136, Issue 5, 1012-1021, May 2016. (*Co-first authors) (Google Scholar Citations: 31 / Web of Science Citations: 20)
 14. Sang Woon Choi, Jina Choi, **Junil Kim**, Yuri Kim, Simonetta Friso, "Walnut Substantially Alters the DNA Methylation Profile in Colon Cancer Stem Cells", *The FASEB Journal*, Vol. 30, Issue S1, 912.5-912.5, April 2016. (Google Scholar Citations: 1 / Web of Science Citations: 0)
 15. **Junil Kim**, Seong-Jin Kim, and Kazuhito Naka, "Transcriptome sequencing of hematopoietic stem cells and chronic myelogenous leukemia stem cells", *Genomics Data*, Vol. 7, 57-59, March 2016. (Google Scholar Citations: 3 / Web of Science Citations: 4)
 16. **Junil Kim**, Eun-Young Kwon, Sujin Park, Jeong-Rae Kim, Sang-woon Choi, Myung Sook Cho, and Seong-Jin Kim, "Integrative systems analysis of diet-induced obesity identified a critical transition in the transcriptomes of the murine liver and epididymal white adipose tissue", *International Journal of Obesity* (IF: 5.337), Vol. 40, 338-345, Feb. 2016. (Google Scholar Citations: 8 / Web of Science Citations: 4)
 17. Yung-Keun Kwon, **Junil Kim**, and Kwang-Hyun Cho, "Dynamical Robustness Against Multiple Mutations in Signaling Networks", *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, Vol. 13, Issue 5, 996-1002, Oct. 2015. (Google Scholar Citations: 9 / Web of Science Citations: 4)
 18. Kazuhito Naka, Yoshie Jomen, Kaori Ishihara, **Junil Kim**, Takahiro Ishimoto, Eunjin Bae, Robert Mohnney, Steven M. Stirdivant, Hiroko Oshima, Masanobu Oshima, Dong-Wook Kim, Hiromitsu Nakauchi, Yoshihiro Takihara, Yukio kato, Akira Ooshima, and Seong-Jin Kim, "Dipeptide species regulate p38MAPK-Smad3 signalling to maintain chronic myelogenous leukaemia stem cells", *Nature Communications* (IF: 14.919), Vol. 6, 8039, Aug. 2015. (Google Scholar Citations: 41 / Web of Science Citations: 27)
 19. Jin Muk Kang, Sujin Park, Staci Jakyong Kim, Hyojung Kim, Bona Lee, **Junil Kim**, Jinah Park, Shin Tae Kim, Han-Kwang Yang, Woo Ho Kim, and Seong-Jin Kim, "KIAA1324 suppresses gastric cancer progression by inhibiting the oncoprotein GRP78", *Cancer Research* (IF: 9.130), Vol. 75, 3087, June 2015. (Google Scholar Citations: 51 / Web of Science Citations: 20)
 20. Ho Sung Lee*, Myung-Jin Goh*, **Junil Kim***, Taejun Choi, Hae Kwang Lee, Yong Ju Na, and Kwang-Hyun Cho, "A systems-biological study on the identification of safe and effective molecular targets for the reduction of ultraviolet B-induced skin pigmentation", *Scientific Reports*, Vol. 5, 10305, May 2015. (*Co-first authors) (Google Scholar Citations: 27 / Web of Science Citations: 17)
 21. Bona Lee, Kwiyeom Yoon, Sunghoon Lee, Jin Muk Kang, **Junil Kim**, Sung Han Shim, Hak-Min Kim, Sanghoon Song, Kazuhito Naka, An Keun Kim, Han-Kwang Yang, and Seong-Jin Kim, "Homozygous deletions at 3p22, 5p14, 6q15, and 9p21 result in aberrant expression of tumor suppressor genes in gastric cancer", *Genes, Chromosomes, and Cancer*, Vol. 54, Issue 3, 141-155, March 2015. (Google Scholar Citations: 15 / Web of Science Citations: 10)
 22. **Junil Kim**, Drieke Vandamme, Jeong-Rae Kim, Amaya Garcia Munoz, Walter Kolch, and Kwang-Hyun Cho, "Robustness and evolvability of the human signaling network", *PLoS Computational Biology*, Vol. 10, Issue 7, e1003763, July 2014. (Google Scholar Citations: 30 / Web of Science Citations: 21)
 23. **Junil Kim**, Sang-Min Park, and Kwang-Hyun Cho, "Discovery of a kernel for controlling biomolecular regulatory networks", *Scientific Reports*, Vol. 3, 2223, July 2013. (Google Scholar Citations: 88 / Web of Science Citations: 44)
 24. **Junil Kim**, Minsoo Choi, Jeong-Rae Kim, Hua Jin, V. Narry Kim, and Kwang-Hyun Cho, "The Co-regulation Mechanism of Transcription Factors in the Human Gene Regulatory Network", *Nucleic Acids Research* (IF:

- 16.971), Vol. 40, No. 18, pp. 8849-8861, Oct 2012. (Google Scholar Citations: 23 / Web of Science Citations: 11)
25. Jeong-Rae Kim, **Junil Kim**, Yung-Keun Kwon, Hwang-Yeol Lee, Pat Heslop-Harrison, and Kwang-Hyun Cho, "Reduction of complex signaling networks to a representative kernel", *Science Signaling* (IF: 8.192), Vol. 4, Issue 175, pp. Ra35, May 2011. "Featured Cover Article - the cover caption: This week features a Research Article that describes an algorithmic approach to simplifying complex networks and then examines the properties of the nodes in those simplified networks, which may have implications for drug targeting." (Google Scholar Citations: 54 / Web of Science Citations: 43)
 26. Tae-Hwan Kim*, **Junil Kim***, Pat Heslop-Harrison, and Kwang-Hyun Cho, "Evolutionary design principles and functional characteristics based on kingdom-specific network motifs", *Bioinformatics* (IF: 6.937), Vol. 27, No. 2, pp. 245-251, Jan. 2011. (*Co-first authors) (Google Scholar Citations: 23 / Web of Science Citations: 13)
 27. Jungsoo Gim*, Ho-Shik Kim*, **Junil Kim***, Minsoo Choi, Jeong-Rae Kim, Yeun Jun Chung, and Kwang-Hyun Cho, "A system-level investigation into the cellular toxic response mechanism mediated by AhR signal transduction pathway", *Bioinformatics* (IF: 6.937), Vol. 26, No. 17, pp. 2169-2175, Sep. 2010. (*Co-first authors) (Google Scholar Citations: 12 / Web of Science Citations: 9)
 28. **Junil Kim**, Tae-Geon Kim, Sung Hoon Jung, Jeong-Rae Kim, Taesung Park, Pat Heslop-Harrison, and Kwang-Hyun Cho, "Evolutionary design principles of modules that control cellular differentiation: Consequences for hysteresis and multistationarity", *Bioinformatics* (IF: 6.937), Vol. 24, No. 13, pp. 1516-1522, July 2008. (Google Scholar Citations: 17 / Web of Science Citations: 12)
 29. Shinuk Kim, **Junil Kim**, and Kwang-Hyun Cho, "Inferring gene regulatory networks from temporal expression profiles under time-delay and noise", *Computational Biology and Chemistry*, Vol. 31, Issue 4, pp. 239-245, Aug. 2007. (Google Scholar Citations: 60 / Web of Science Citations: 39)
 30. Kwang-Hyun Cho, Sang-Mok Choo, Sung Hoon Jung, Jeong-Rae Kim, H. S. Choi, and **Junil Kim**, "Reverse Engineering of Gene Regulatory Networks", *IET Systems Biology*, Vol. 1, No. 3, pp. 149-163, May 2007. (Google Scholar Citations: 149 / Web of Science Citations: 72)

■ International Conferences

1. **Junil Kim**, Simon Toftholm Jakobsen, Kedar Nath Natarajan, and Kyoung Jae Won, "Gene network reconstruction using single cell transcriptomic data reveals key factors for embryonic stem cell differentiation", Oral presentation 28399, 2020 *German Conference on Bioinformatics (GCB)*, Frankfurt (Virtual Conference), Germany, Sept. 14-17, 2020
2. **Junil Kim**, Dongha Kim, Yong Ryoul Kim, Kedar Nath Natarajan, Sung Hee Baek, and Kyoung Jae Won, "Gene network reconstruction using single cell transcriptomic data reveals key factors for autophagic process", Poster No. E12, 2019 *Intelligent Systems for Molecular Biology and European Conference on Computational Biology (ISBM and ECCB)*, Basel, Switzerland, July 21-25, 2019
3. **Junil Kim** and Kyoung Jae Won, "Reconstruction of gene regulatory network from pseudo-time ordered single-cell RNA sequencing data using conditional mutual information", Poster No. 2033, 2019 *Keystone Symposia Conference F1: Single Cell Biology*, Breckenridge, Colorado, USA, Jan. 13-17, 2019
4. **Junil Kim**, Diana Stanescu, Julia Wang, Maria Golson, Doris Stoffers, Klaus Kaestner, and Kyoung Jae Won, "Bimodality-based top-down clustering of single-cell RNA sequencing data reveals hierarchical structure of the cell type", Poster No. 51, 2017 *Cold Spring Harbor Laboratory Meeting on Single Cell Analysis*, New York, USA, Nov. 8-11, 2017
5. Jinah Park, **Junil Kim**, Poul H Sorensen, Seong-Jin Kim, "Novel identification of STAT1 as a crucial mediator of ETV6-NTRK3-induced tumorigenesis", Vol. 77 (13 Supplement), 536-536, *Cancer Research, American Association for Cancer Research (AACR)*, Washington D.C., USA, Apr. 1-5, 2017
6. **Junil Kim**, Sujin Park, Jinny Choe, Pyunggang Kim, Yuna Park, Jihee Lee, Kyoungwha Pang, Ji-Young Choi, Myung-Sook Choi, Seong-Jin Kim, "Sequencing of mRNA in epididymal adipose tissue reveals regulation of the transcriptome underpinning aberrations in glucose metabolism as well as the obesity-prone or obesity-resistant phenotype of mice fed a high-fat diet", *The Obesity Summit*, London, UK, Apr. 14-16, 2015
7. Sujin Park, **Junil Kim**, Jinny Choe, Pyunggang Kim, Yuna Park, Jihee Lee, Kyoungwha Pang, Sang-Woon Choi, Seong-Jin Kim, "Tissue-specific gene expression of diet-induced obese mouse in response to green tea and taemjowitang a traditional Korean medicine", *The Obesity Summit*, London, UK, Apr. 14-16, 2015
8. Jinah Park, **Junil Kim**, and Seong-Jin Kim, "The ETV6-NTRK3-mediated Transcriptome Profile Using Next Generation Sequencing", *Proc. 26th Int. Conf. of the Korean Society for Molecular and Cellular Biology (ICKSMCB2014)*, Seoul, Korea, Poster L-26, Oct. 21-23 2014
9. **Junil Kim**, Eun-Young Kwon, Myung-Sook Choi, and Seong-Jin Kim, "Transcriptomic switch from metabolic process to immune process in the white adipose tissue during diet-induced obesity development", *Proc. 26th Int. Conf. of the Korean Society for Molecular and Cellular Biology (ICKSMCB2014)*, Seoul, Korea, Poster L-25, Oct. 21-23 2014

10. Jin Muk Kang, Sujin Park, Bona Lee, **Junil Kim**, Jinah Park, and Seong-Jin Kim, "Tumor suppressive role of AITP (KIAA1324) in gastric cancer through regulation of GRP78 oncoprotein", *Proc. 26th Int. Conf. of the Korean Society for Molecular and Cellular Biology (ICKSMCB2014)*, Seoul, Korea, Poster B-178, Oct. 21-23 2014
11. Bona Lee, Kwiyeom Yoon, Sunghoon Lee, Jin Muk Kang, **Junil Kim**, An Keun Kim, and Seong-Jin Kim, "Homozygously Deleted Tumor Suppressor Genes in Human Gastric Cancer: Impact on Gene Expression Levels", *Proc. 26th Int. Conf. of the Korean Society for Molecular and Cellular Biology (ICKSMCB2014)*, Seoul, Korea, Poster B-177, Oct. 21-23 2014
12. **Junil Kim**, Eun-Young Kwon, Myung-Sook Choi, and Seong-Jin Kim, "Oscillating expression patterns in the liver during diet-induced obesity development", *Proc. 15th Int. Conf. on Systems Biology (ICSB2014)*, Melbourne, Australia
13. **Junil Kim**, Jeong-Rae Kim, and Seong-Jin Kim, "Mathematical model of human cancer gene regulatory network", *Proc. 15th Int. Conf. on Systems Biology (ICSB2014)*, Melbourne, Australia
14. Ho-Sung Lee, Myeong-Jin Goh, **Junil Kim**, Taejun Choi, Hae-Kwang Lee, Yongjoo Na, and Kwang-Hyun Cho, "Systems biological identification of effective and safe molecular targets for skin lightening", *Proc. Int. Investigative Dermatology (IID2013)*, Edinburgh, Scotland, UK, Poster 1330, May 2013
15. Jae-Kyung Won, **Junil Kim**, and Su-Jong Yu, "Gene expression analysis on sorafenib-sensitive and resistant cell lines reveals the candidate biomarker for sorafenib-responsiveness and related pathways", *Proc. Systems Biology of the Liver, Luxembourg*, Poster 46, Feb. 2013
16. Sang-Min Park, **Junil Kim**, and Kwang-Hyun Cho, "Controllability kernel of biological networks", *Proc. 13th Int. Conf. on Systems Biology (ICSB2012)*, Toronto, Canada, Poster 430A, Aug. 2012
17. **Junil Kim**, Jeong-Rae Kim, and Kwang-Hyun Cho, "Decomposition of Human Signaling Network into Two Modules: Evolvable Core and Robust Neighbor", *Proc. 12th Int. Conf. on Systems Biology (ICSB2011)*, Heidelberg/Mannheim, Germany, Parallel Session PA044, Aug. 2011
18. Kwang-Hyun Cho, **Junil Kim**, Tae-Hwan Kim, and Pat Heslop-Harrison, "Kingdom-specific network motifs for evolutionary design principles", *Proc. 11th Int. Conf. on Systems Biology (ICSB2010)*, Edinburgh, Scotland, UK, Poster P01.391, Oct. 2010
19. Kwang-Hyun Cho, Sung-Hwan Cho, and **Junil Kim**, "Identification of marker genes for Alzheimer's disease from a systems biology approach", *Proc. 11th Int. Conf. on Systems Biology (ICSB2010)*, Edinburgh, Scotland, UK, Poster P01.427, Oct. 2010
20. Jeong-Rae Kim, **Junil Kim**, Yung-Keun Kwon, Hwang-Yeol Lee, and Kwang-Hyun Cho, "The kernel of a complex biomolecular interaction network", *Proc. International Conference on Systems Biology of Stem Cells*, UC Irvine, California, USA, p. 14, May 24-25, 2010.
21. **Junil Kim**, Minsoo Choi, and Kwang-Hyun Cho, "The bi-phasic regulatory role of hub transcription factors in the gene regulatory network of HepG2 cells", *Proc. 10th Int. Conf. on Systems Biology (ICSB2009)*, Stanford, California, U.S.A., Poster 3.023, Sep. 2009.
22. Sung-Hwan Cho, **Junil Kim**, and Kwang-Hyun Cho, "Investigations into the time-varying gene regulatory network of embryonic stem cell developments", *Proc. 10th Int. Conf. on Systems Biology (ICSB2009)*, Stanford, California, U.S.A., Poster 1.027, Aug. 2009.
23. **Junil Kim**, Tae-Geon Kim, Sung Hoon Jung, Jeong-Rae Kim, Taesung Park, Pat Heslop-Harrison, and Kwang-Hyun Cho, "Design principles of gene regulatory networks governing the differentiation processes", *Proc. 9th Int. Conf. on Systems Biology (ICSB2008)*, Gothenburg, Sweden, OS-12, p.203, Aug. 2008.
24. **Junil Kim**, Jungsoo Gim, Sang-Woo Lee, Minsoo Choi, and Kwang-Hyun Cho, "In silico TCDD toxicity evaluation system", *Proc. 8th Int. Conf. on Systems Biology (ICSB2007)*, Long Beach, California, U.S.A., G16, p. 57, Oct. 2007.
25. Jeong-Rae Kim, Hyung-Seok Choi, **Junil Kim**, Dongsan Kim, Yeo-in Yoon, Sang-Woo Lee, and Kwang-Hyun Cho, "Systems microbiological investigations into the two-component systems in E. coli", *Proc. 7th Int. Conf. on Systems Biology (ICSB2006)*, Yokohama, Japan, OT02, Oct. 2006.

■ Issued Patents

1. Y.J. Na, M.J. Goh, H.K. Lee, J.C. Cho, K.-H. Cho, **J. Kim**, H.-S. Lee, and T.-J. Choi, (AMOREPASIFIC Co., KAIST), Screening method of melanin synthesis control factor, device thereof and screening method of whitening material using the same, *Korea Patent No. 10-2026290* (Sep. 23, 2019).

■ Invited talk

- Invited Speaker at the German Conference on Bioinformatics (GCB2020), Sept. 14-17, 2020. Talk Title: "Gene network reconstruction using single cell transcriptomic data reveals key factors for embryonic stem cell differentiation"

- Invited Speaker at the KEYSTONE SYMPOSIA on Molecular and Cellular Biology: Single Cell Biology, Breckenridge, Colorado, USA, Jan. 13-17, 2019. Talk Title: "Reconstruction of gene regulatory network from pseudotime ordered single-cell RNA sequencing data using conditional mutual information"
- Plenary talk at the 6th Seoul International Congress of Endocrinology and Metabolism 2018, Seoul, Korea, April 19-22, 2018. Talk title: "Bimodality-based top-down clustering of single-cell RNA sequencing data reveals type 2 diabetes and age specific beta cell signatures"
- Invited Speaker at KSBSB2014 Yonsei University, Seoul, Korea, Nov. 14, 2014. Talk title: "Mathematical modeling of human gene regulatory network"
- Invited Speaker at ICSB2011 Heidelberg/Mannheim, Germany, Aug. 2011. Talk title: "Decomposition of Human Signaling Network into Two Modules: Evolvable Core and Robust Neighbor"