Curriculum Vitae

Sangsoo Lim (임상수)

postdoc
Bio and Health Informatics Lab, Bioinformatics Institute
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Education

2014 – 2019 **Ph.D.**, Interdisciplinary Program in Bioinformatics, Seoul National University, Seoul, Korea

- Research areas: transcriptome data analysis, data mining, computational modeling of biological data
- Advisor: *Sun Kim*
- Thesis title: Quantification of pathway activity using RNA-seq data

2011 – 2013 **M.S.** in Chemistry, Yonsei University, Seoul, Republic of Korea

- Research areas: Lipidomics, LC-MS
- Advisor: *Myeong Hee Moon*
- Thesis title: Development of computational algorithm for structural identification of phospholipids and profiling of phospholipid biomarkers for prostate cancer from human urine

2006 – 2011 **B.S.** in Chemistry & Applied Statistics, Yonsei University, Seoul, Republic of Korea

2003 – 2005 Daeil Foreign Language High School

Professional experiences

2019 – Present ***Postdoc***, Bioinformatics Institute, Seoul National University, Seoul, Republic of Korea

- Research areas:
  cheminformatics – drug toxicity prediction, chemical space representation
  pharmacogenomics – multi-omics integration for drug response prediction

Teaching experiences

2022 Spring IT Fundamentals for Bioinformatics @SNU (head TA)

- Role: Managing Lecture Materials, Practices, and Assignments

2021 Spring IT Fundamentals for Bioinformatics @SNU (head TA)

- Role: Managing Lecture Materials, Practices, and Assignments

2020 Fall Bioinformatics 2 @SNU (Lecturer for practice)

- Role: Overview and Practices of ML techniques in Bioinformatics

2017 Fall Bioinformatics 2 @SNU (Lecturer for practice)

- Role: Finding differentially expressed genes using DEseq package

2016 Fall Bioinformatics 2 @SNU (Lecturer for practice)

- Role: Finding differentially expressed genes using DEseq package

2016 Spring IT Fundamentals for Bioinformatics @SNU (Lecturer for practice)

- Role: Data mining in WEKA

2015 Fall Computer Convergence Applications @SNU (Teaching Assistant)

- Role: Lecture preparation

2012 Fall General Chemistry Experiments @Yonsei University (Teaching Assistant)

- Role: Managing students' experiment: "Precipitation of Sodium Oxalate using potassium permanganate"
- ***Excellence in TA award***

2012 Spring Analytical Chemistry Experiments @Yonsei University (Teaching Assistant)

- Role: Managing students' experiment: "Separation of alkanes using gas/liquid chromatography"
- ***Excellence in TA award***

2011 Spring Analytical Chemistry @Yonsei University (Teaching Assistant)

- Role: Lecture preparation

Grants

2022 Basic Science Research Program
- National Research Foundation of Korea funded by the Ministry of Education
- 2022 Sep ~ 2024 Aug
- 2022R1A6A3A01087470

2021 AIGENDRUG research grant
- AIGENDRUG, Co., Ltd.
- 2021 Nov ~ 2022 Oct

Awards

2021 Best Poster Award (BIOINFO 2021 by Korean Society for Bioinformatics)
2012 Excellent Teaching Assistant (Department of Chemistry, Yonsei University)
2011 Excellent Teaching Assistant (Department of Chemistry, Yonsei University)

Publications

[At Seoul National University]

1. **Sangsoo Lim***, Sangseon Lee*, Yinhua Piao, MinGyu Choi, Dongmin Bang, Jeonghyeon Gu, Sun Kim "On modeling and utilizing chemical compound information with deep learning technologies: A task-oriented approach", *Computational and Structural Biotechnology Journal* 20, 2022 **[IF: 6.018]**

2. Gung Lee, Ye Young Kim, Hagoon Jang, Ji Seul Han, Hahn Nahmgoong, Yoon Jeong Park, Sang Mun

Han, Changyun Cho, **Sangsoo Lim**, Jung-Ran Noh, Won Keun Oh, Chul-Ho Lee, Sun Kim, Jae Bum Kim
"SREBP1c-PARP1 axis tunes anti-senescence activity of adipocytes and ameliorates metabolic imbalance in obesity", *Cell Metabolism* 34(5), 2022 **[IF: 27.29]**

3. Jungwoo Kim, Sangsoo Lim, **Sangseon Lee**, Changyun Cho, Sun Kim
"Embedding of FDA Approved Drugs in Chemical Space Using Cascade Autoencoder with Metric Learning" *IEEE BigComp*, 2022.

4. Sungjoon Park, Dohoon Lee, Youngkuk Kim, **Sangsoo Lim**, Heejoon Chae and Sun Kim
"BioVLAB-Cancer-Pharmacogenomics: Tumor Heterogeneity and Pharmacogenomics Analysis of Multi-omics Data from Tumor on the Cloud", *Bioinformatics* 38(1), 2022 **[IF: 6.937]**

5. Minsu Kim, Sangseon Lee, **Sangsoo Lim**, Doh Young Lee and Sun Kim
"Subnetwork representation learning for discovering network biomarkers in predicting lymph node metastasis in early oral cancer", *Scientific reports* 11(1), 2021 **[IF: 4.379]**

6. Jee Hyung Sohn, Yul Ji, Chang-Yun Cho, Hahn Nahmgoong, **Sangsoo Lim**, Yong Geun Jeon, Sang Mun Han, Ji Seul Han, Isaac Park, Hyun-Woo Rhee, Sun Kim, Jae Bum Kim
"Spatial Regulation of Reactive Oxygen Species via G6PD in Brown Adipocytes Supports Thermogenic Function", *Diabetes* 70(12), 2021 **[IF:7.273]**

7. Yoon Jeong Park, Sangseon Lee*, **Sangsoo Lim***, Hahn Nahmgoong, Yul Ji, Jin Young Huh, Assim A. Alfadda, Sun Kim, and Jae Bum Kim
"DNMT1 maintains metabolic fitness of adipocytes through acting as an epigenetic safeguard of mitochondrial dynamics", *Proceedings of the National Academy of Sciences* 118(11), 2021 **[IF: 9.412]**

8. Inuk Jung, Minsu Kim, Sungmin Rhee, **Sangsoo Lim**, and Sun Kim
"MONTI: A Multi-Omics Non-negative Tensor Decomposition Framework for Gene-Level Integrative Analysis", *Frontiers in Genetics* 12, 2021 **[IF: 3.789]**

9. Dabin Jeong, **Sangsoo Lim**, Sangseon Lee, Minsik Oh, Changyun Cho, Hyeju Seong, Woosuk Jung, Sun Kim
"Construction of Condition-Specific Gene Regulatory Network using Kernel Canonical Correlation Analysis", *Frontiers in Genetics* In Press, 2021 **[IF: 3.789]**

10. **Sangsoo Lim***, Yijinxiu Lu*, Chang Yun Cho, Inyoung Sung, Jungwoo Kim, Youngkuk Kim, Sungjoon Park and Sun Kim
"A review on compound-protein interaction prediction methods: Data,format, representation and model", *Computational and Structural Biotechnology Journal* 19:1541, 2021 **[IF: 6.018]**

11. Minsik Oh, Sungjoon Park, Sangseon Lee, Dohoon Lee, **Sangsoo Lim**, Dabin Jeong, Kyuri Jo, Inuk Jung and Sun Kim
"DRIM: A web-based system for investigating drug response at the molecular level by condition-specific multi-omics data integration", *Frontiers in Genetics* 11:564792, 2020 **[IF: 3.789]**

12. Sangseon Lee, **Sangsoo Lim**, Taeheon Lee, Inyoung Sung and Sun Kim
"Cancer subtype classification and modeling by pathway attention and propagation", *Bioinformatics*, In press, 2020 **[IF: 4.531]**

13. **Sangsoo Lim**, Sangseon Lee, Inuk Jung, Sungmin Rhee and Sun Kim
"Comprehensive and critical evaluation of individualized pathway activity measurement tools on pan-cancer data", *Briefings in Bioinformatics* 21(1), 2020 **[IF: 9.101]**

14. Aeran Lim*, **Sangsoo Lim*** and Sun Kim
"Enhancer prediction with histone modification marks using a hybrid neural network model", *Methods* 166, 2019 **[IF: 3.782]**

15. Minsu Kim, Sangseon Lee, **Sangsoo Lim** and Sun Kim
"SpliceHetero: An information theoretic approach for measuring spliceomic intratumor heterogeneity from bulk tumor RNA-seq", *Plos one* 14(10), 2019 **[IF: 2.776]**

16. Ji Hwan Moon, **Sangsoo Lim**, Kyuri Jo, Sangseon Lee, Seokjun Seo and Sun Kim
"PINTnet: construction of condition-specific pathway interaction network by computing shortest paths on weighted PPI", *BMC systems biology* 11(2), 2017 **[IF: 2.048]**

17. Sungmin Rhee, **Sangsoo Lim** and Sun Kim
"Iterative segmented least square method for functional microRNA-mRNA module discovery in breast cancer", *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, 2016

18. Benjamin Hur, **Sangsoo Lim**, Heejoon Chae, Seokjun Seo, Sangseon Lee, Jaewoo Kang and Sun Kim
"CLIP-GENE: a web service of the condition specific context-laid integrative analysis for gene prioritization in mouse TF knockout experiments", *Biology direct* 11(1), 2016 **[IF: 3.010]**

19. Youngjune Park, **Sangsoo Lim**, Jun-Wu Nam and Sun Kim
"Measuring intratumor heterogeneity by network entropy using RNA-seq data", *Scientific reports* 6, 2016 **[IF: 4.011]**

20. **Sangsoo Lim**, Youngjune Park, Benjamin Hur, Minsu Kim, Wonshik Han and Sun Kim
"Protein interaction network (PIN)-based breast cancer subsystem identification and activation measurement for prognostic modeling", *Methods* 110, 2016 ***[SCI; IF: 3.782]***

21. Jinwoo Park, Benjamin Hur, Sungmin Rhee, **Sangsoo Lim**, Minsu Kim, Kwangsoo Kim, Wonshik Han and Sun Kim
"Information theoretic sub-network mining characterizes breast cancer subtypes in terms of cancer core mechanisms", *Journal of bioinformatics and computational biology* 14(5), 2016 ***[SCIE; IF: 0.845]***

[At Yonsei University]

22. **Sangsoo Lim**, Dae Young Bang, Koon Ho Rha and Myeong Hee Moon
"Rapid screening of phospholipid biomarker candidates from prostate cancer urine samples by multiple reaction monitoring of UPLC-ESI-MS/MS and statistical approaches", *Bulletin of the Korean Chemical Society* 35(4), 2014 ***[SCI; IF: 0.602]***

23. Ju Yong Lee, **Sangsoo Lim**, Sungha Park and Myeong Hee Moon
"Characterization of oxidized phospholipids in oxidatively modified low density lipoproteins by nanoflow liquid chromatography-tandem mass spectrometry", *Journal of Chromatography A* 1288, 2013 ***[SCI; IF: 3.858]***

24. Ki Hun Kim, Ju Yong Lee, **Sangsoo Lim** and Myeong Hee Moon
"Top-down lipidomic analysis of human lipoproteins by chip-type asymmetrical flow field-flow fractionation-electrospray ionization-tandem mass spectrometry", *Journal of Chromatography A* 1280, 2013 ***[SCI; IF: 3.858]***

25. Seul Kee Byeon, Ju Yong Lee, **Sangsoo Lim**, Donghoon Choi and Myeong Hee Moon
"Discovery of candidate phospholipid biomarkers in human lipoproteins with coronary artery disease by flow field-flow fractionation and nanoflow liquid chromatography-tandem mass spectrometry", *Journal*

of Chromatography A 1270, 2012 ***[SCI; IF: 3.858]***

26. **Sangsoo Lim**, Seul Kee Byeon, Ju Yong Lee and Myeong Hee Moon
"Computational approach to structural identification of phospholipids using raw mass spectra from nanoflow liquid chromatography-electrospray ionization-tandem mass spectrometry", *Journal of mass spectrometry* 47(8), 2012 ***[SCI; IF: 2.267]***

27. Dae Yong Bang, **Sangsoo Lim** and Myeong Hee Moon
"Effect of ionization modifiers on the simultaneous analysis of all classes of phospholipids by nanoflow liquid chromatography/tandem mass spectrometry in negative ion mode", *Journal of Chromatography A* 1240, 2012 ***[SCI; IF: 3.858]***

28. Rae Ung Jeong, **Sangsoo Lim**, Myoung Ok Kim and Myeong Hee Moon
"Effect of D-allose on prostate cancer cell lines: phospholipid profiling by nanoflow liquid chromatography-tandem mass spectrometry", *Analytical and bioanalytical chemistry* 401(2), 2011 ***[SCI; IF: 3.286]***

29. Ju Yong Lee, **Sangsoo Lim** and Myeong Hee Moon
"Effects of column lengths and particle diameter on phospholipid analysis by nanoflow liquid chromatography-electrospray ionization-mass spectrometry", *Mass Spectrometry Letters* 2(3), 2011 ***[IF: 1.280]***

30. Hye Kyeong Min, **Sangsoo Lim**, Bong Chul Chung and Myeong Hee Moon
"Shotgun lipidomics for candidate biomarkers of urinary phospholipids in prostate cancer", *Analytical and bioanalytical chemistry* 399(2), 2011 ***[SCI; IF: 3.286]***

* Equal Contribution