JIMIN KANG

Cambridge, MA 02138
Cell: (617) 335-1281 **Work:** (617) 714-7369
jimin@broadinstitute.org
Webpage: http://JiminKang.info **LinkedIn:** https://www.linkedin.com/in/jkkorea/

SUMMARY

My primary research area of interest is in the development of biomedical sensors. I received my Master of Engineering (M.Eng.) in Bio-Nano Lab at Korea University where I designed and fabricated detection sensors for DNA. This includes expertise in using materials (nano-materials, proteins, and DNA beacon), handling relevant instruments, and programming skills (SolidWorks, C/C++). Since then, I have worked in the field of biology in related industries. I participated in various projects including blood analysis method for Rheumatoid Arthritis patients and developing a translator for interpreting genes and compounds. I am now pursuing a Ph.D. to further hone my expertise and knowledge and to open myself to new areas in the biomedical field.

EDUCATION AND TRAINING

INTERNSHIP 07/2019 to 08/2019
Max-Planck Institute for Molecular Biomedicine, Muenster, Germany

- Learned single-cell RNA-Seq analysis pipeline (using BD Rhapsody Express / Ilumina NextSeq550 system).
- Gained practical experience with the entire single-cell RNA-sequencing process.

TRAINEE 01/2019 to 06/2019
Inter-university Semiconductor Research Center (ISRC), Seoul, Korea

- Gained practical experience with the whole MEMS fabrication process.

MASTER OF SCIENCE: MECHANICAL ENGINEERING 02/2018
Korea University, Seoul, Korea
M.Sc. in Mechanical Engineering. Thesis under the supervision of Prof. Dr. SungSoo Na

- Dissertation: " Single-nucleotide polymorphism and low signal-to-noise ratio DNA detection using resonance frequency and voltammetry."

BACHELOR OF SCIENCE: MECHATRONICS ENGINEERING 08/2015
Korea Polytechnic University, Gyeonggi-do, Korea

- Graduation project: Moving Guide Apparatus (An apparatus that recognizes the user and detects obstacles, using NI LabView vision and SolidWorks).

RESEARCH EXPERIENCE

BROAD INSTITUTE OF MIT & HARVARD
Cambridge, Massachusetts

Research Scholar 03/2020 to Present
- Devised an application-programming interface (API) as part of the Biomedical Data Translator (http://ncats.nih.gov/translator) ecosystem that interprets genes and compounds with the RxNorm database. Participated in NIH Translator meetings.
- Developed the “Advisory Tool for Gene and Compound Information” as a web page that allows researchers to quickly retrieve information about expanded candidate sets of genes or compunds for use in their research.

ROKIT GENOMICS
Seoul, Korea

Project Manager 07/2019 to 03/2020
- Set up a Single-cell RNA Sequencing pipeline identical to that of the Max-Planck Institute for molecular biomedicine.- Performed single-cell RNA sequencing and analysis of Rheumatoid Arthritis patients PBMC in collaboration with Yeouido St.Mary hospital and Max-Planck Institute.

- Developed a single cell sorting kit for single-cell RNA sequencing, based on MEMS and fluid mechanics.

KOREA UNIVERSITY
Seoul, Korea

Research Assistant 03/2016 to 02/2018
- KRAS DNA detection sensor design, and fabrication. Using microcantilever and MutS enzyme. Published a paper and patent.
- EGFR DNA detection sensor design, and fabrication. Using Cyclic Voltammetry and DNA Beacon

UNIVERSITY OF SOUTHERN CALIFORNIA
Los Angeles, California

Intern 08/2015 to 10/2015
- Optimized fabrication of single-wall Carbon nanotube using Taguchi analysis.
- Worked on practical Carbon nanotube fabrication.
- Published a manuscript while learning and working.

PUBLICATIONS

- Dančík, Vlado., Bruskiewicz, Kenneth.*, **Kang, Jimin.***, Muller, Sandrine., Wawer, Mathias., Bruskiewich, Richard., Byrd, William E., Flannick, Jason., and Clemons, Paul. (2020). "MolePro: a programmatic interface for systems chemical biology that allows fast and flexible development for workflow-based user interfaces." *Pending.*
- Park, Chanho*., **Kang, Jimin*.**, Baek, Inchul., You, Juneseok., Jang, Kuewhan., & Na, Sungsoo. (2019). "Highly sensitive and selective detection of single-nucleotide polymorphisms using gold nanoparticle MutS enzymes and a microcantilever resonator." *Talanta*, 205, 120154. (Featured Article)
- Kang, DaeJin., Yang, Sisi., Wang, Bo., Chen, Jihan., Dhall, Rohan., Hou, Bingya., **Kang, Jimin.** & Cronin, Stephen. B. (2017). "Taguchi analysis of parameters for small-diameter single wall carbon nanotube growth." *AIP Advances*, 7(9), 095301.
- **Kang, Jimin.**, Jang, Kuewhan., & Na, Sungsoo. (2019). "Extremely Low Signal-to-Noise Ratio EGFR DNA Detection Using Voltammetry." *Under review*.

PATENTS

- **Kang, Jimin.**, Jang, Kuewhan., Na, Sungsoo. "Sensor for detection of gene mutation using resonance frequency shift" Korea 10-1991593 Issued June 14, 2019
- Kang, DaeJin., Jeon, Kyungmin., Lee, Eugene., **Kang, Jimin.**, Kim, Eunjeong., "WALKING GUIDE APPARATUS", Korea 10-20140192684 Issued June 23, 2016
- **Kang, Jimin.**, "Sending and Receiving Method for Sound and Data of Television Using Remote Control" Korea 10-08561140000, Issued August 27, 2008
- **Kang, Jimin.,** Na, Sungsoo. "Extremely low signal-to-noise ratio EGFR DNA detection method and apparatus" Application Number Korea 10-2017-0182420

HONORS & AWARDS

- Korean Government Funding (February 2020, $38,952)
- Korea University Graduate Research Scholarship (March, 2017; $9000)
- Korea Polytechnic University Dean's award (November, 2015)

SELECTED POSTER PRESENTATIONS & ABSTRACTS

- **Jimin Kang,** Chanho Park, Juneseok You, Kuewhan Jang* and Sungsoo Na*, "High Sensitive KRAS Detection Using Single Base Mutation Detection Protein" The Korean Society for Noise and Vibration Engineering (KSNVE), October. 2017
- Chanho Park, **Jimin Kang,** Sungsoo Na*, "KRAS single point mutation DNA detection using specific binding of MutS to the mismatched DNA and AuNPs" The Korean Society of Mechanical Engineers (KSME), April 2018.

SKILLS

- Biosensor fabrication. (e.g., RNA detection sensor, Nanomaterial, Nanosensor)
- Able to manage Single-cell Sequencing instruments (10x chromium, BD Rhapsody, Illumina NextSeq)
- Programming skills for designing sensors (SolidWorks, Catia), processing (Python, R, C++)
- Statistical analysis for the Bioinformatics (Seurat, Monocle3)
- DNA manipulation using molecular beacon (e.g. DNA hairpin, binding force manipulation)

TEACHING EXPERIENCE

KOREA UNIVERSITY
Seoul, Korea

Teaching Assistant 03/2017 to 12/2017
Taught third-year university-level physics at Korea University. Held small-group tutorials to explain vibration, resonance frequency, microscopy, stress and strain, and computer-aided design. Helped students design experiments to demonstrate these concepts. Graded scientific papers and presentations according to University standards and was nominated for a teaching award.

KOREA POLYTECHNIC UNIVERSITY
Gyeonggi-do, Korea

Teaching Assistant 03/2015 to 06/2015
Taught a SolidWorks course at Korea Polytechnic University to juniors. Helped students design a project to demonstrate their ideas. Graded scientific papers and presentations according to University standards.

CODEWINGS.COM
Seoul, Korea

Programming Mentor (Python, Java, C) 06/2017 to 06/2019
Taught coding to middle school students.

FOOD FOR THE HUNGRY, INC.
Seoul, Korea

Tutoring (Mathematics) 03/2009 to 12/2009
Tutoring for children who could not afford private education

SCIENTIFIC MEETINGS

- Biomedical Data Translator Meeting (http://ncats.nih.gov/translator). Virtual, September, 2020
- Engineering Research Center for DNA Sensor Meeting. Jeju, Korea, July, 2017
- Engineering Research Center for DNA Sensor Meeting. Incheon, Korea, July, 2016

TEST SCORE

- **IELTS 7.0** / Listening 7.5 / Reading 6.5 / Writing 6.0 / Speaking 7.5 (9th, September, 2020)
- **TOEFL 101** (My best score) / Listening 28 / Reading 27 / Writing 24 / Speaking 22 (25th, August, 2020)

OTHER EXPERIENCE

2018 PYEONGCHANG OLYMPIC & PARALYMPIC ORGANIZING COMMITTEE
Pyeongchang, Korea

Translator 01/2018 to 03/2018
Working at the Arriving and Departure department as a translator during the Winter Olympic and Paralympic games.

WEBS DATA SYSTEM
Seoul, Korea

SolidWorks Modeling Internship 12/2013 to 02/2014
Working and learning about CAD modeling, structural designing with SolidWorks.

REPUBLIC OF KOREA AIR FORCE
Korea

Sergeant 05/2011 to 05/2013
Compulsory military service