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Education

Kyungpook National University

Daegu, South Korea

Ph.D. candidate

Sep 2020 -

Department of Applied Biosciences, Kyungpook National University

Jul 2024 (Expected)

Advisor: Jae-Ho Shin, PhD

Kyungpook National University

Daegu, South Korea

Master

Feb 2020

Department of Applied Biosciences, Kyungpook National University

Master of Science in Applied Life Science (GPA: 4.21/4.3)

Thesis: Optimal multiplex qPCR assay with novel TaqMan primer-probe set for profiling human gut

Kyungpook National University

Daegu, South Korea

Bachelor

Feb 2018

School of Applied Life Science, Kyungpook National University

Bachelor of Science in Applied Life Science (GPA: 3.19/4.3)

Research Interests

Microbiome, Nutrition, Multi-omics, Host-microbe interaction, Gut-brain axis

Publications

1. **Jo, Y.**, Lee, G. D., Ahmad, S., ... & Shin, J. H. (2023). The alteration of the gut microbiome during Ramadan offers a novel perspective on Ramadan fasting. *Microorganisms*, 11, 8.
2. Jeong, M., Tagele, S. B., Kim, M. J., Ko, S. H., Kim, K. S., Koh, J. G., Jung, D. R., **Jo, Y.**, ... & Shin, J. H. (2023). The Death of Korean Fir (*Abies koreana*) Affects Soil Symbiotic Fungal Microbiome: Preliminary Findings. *Frontiers in Forests and Global Change*, 5, 289.
3. **Jo, Y.**, Jung, D. R., Park, T. H., Lee, D., Park, M. K., Lim, K., & Shin, J. H. (2022). Changes in Microbial Community Structure in Response to Gummosis in Peach Tree Bark. *Plants*, 11(21), 2834.
4. Azimirad, M., **Jo, Y. (Co first author)**, Kim, M. S., Jeong, M., Shahrokh, S., Asadzadeh Aghdaei, H., ... & Shin, J. H. (2022). Alterations and prediction of functional profiles of gut microbiota after fecal microbiota transplantation for Iranian

- recurrent *Clostridioides difficile* infection with underlying inflammatory bowel disease: A pilot study. *Journal of inflammation research*, 105-116.
5. Kim, M. S., Kim, S. H., Jeong, M., Park, M. K., **Jo, Y.**, Kang, G. U., ... & Shin, J. H. (2021). Fermented Coffee Grounds Diminish Livestock Odors: A Microbiome Study. *Agronomy*, 11(10), 1914.
 6. Kim, M. J., Park, Y. J., Park, M. K., Park, C. E., **Jo, Y.**, Tägele, S. B., & Shin, J. H. (2020). Complete genome sequence of *Labrys* sp. KNU-23 isolated from ginseng soil in the Republic of Korea. *The Microbiological Society of Korea*, 56(4), 410-412.
 7. **Jo, Y. J.**, Tägele, S. B., Pham, H. Q., Jung, Y., Ibal, J. C., Choi, S., ... & Shin, J. H. (2020). In situ profiling of the three dominant phyla within the human gut using TaqMan PCR for pre-hospital diagnosis of gut dysbiosis. *International journal of molecular sciences*, 21(6), 1916.

Research Experience

Lab. of Molecular Microbiology (Mar 2015 – Present)

Lab. homepage: micro.knu.ac.kr/people.html

Research Projects

1. Exploring the impact of artificial sweeteners on glycemic response and its association with gut microbiome (Dec 2022 - Present)
2. longitudinal microbiome study of gut-lung axis to understand lung cancer (Jul 2022 - Present)
3. Effects of Ramadan fasting on gut microbiome (Sep 2020 - Present)
4. Analysis of gut microbiome of recurrent *Clostridium difficile* infection patient following fecal microbiota transplantation treatment (Oct 2020 – Jan 2022)
5. Microbial reference genome sequencing and comparative genomics analysis for agriculture and food (Jan 2018 ~ Dec 2022)

Teaching Experience

Bio bigdata and statistics

School of Applied Life Science

Contents: Statistics, bigdata in biology

Kyungpook National University

Daegu, South Korea

(Sep 2023 – Dec 2023)

Microbiology Lab.

School of Applied Life Science

Contents: Bacterial culture, Identification, Microbial activity test

Kyungpook National University

Daegu, South Korea

(Sep 2023 – Dec 2023)

Bioinformatics Lab.

School of Applied Life Science

Contents: NGS, Microbiome, Transcriptome

Kyungpook National University

Daegu, South Korea

(Mar 2023 – Jun 2023)

Advanced Genetic Engineering

School of Applied Life Science

Contents: Genetics, Statistics, Microbiome

Kyungpook National University

Daegu, South Korea

(Sep 2022 – Dec 2022)

R programming seminar

Pukyong National University

Patents

1. "The imitative culture method of the animal gut microbiome" (PCT application number: PCT/KR2020/002710). Application date: 02/25/2020
2. "Methods of artificial proliferation of intestinal microbial communities derived from human and animal gut and use of gut microorganisms grown therefrom" (Korea patent application number: 10-2020-0015182). Application date: 02/07/2020
3. "Design of TaqMan-qPCR primers and probes for detects human gut microbiota" (Korea patent application number: 10-2020-0008189). Application date: 01/21/2020
4. "A novel *Labrys neptuniae* KNU-23 and its associated gene sequence, which can be used as plant growth promoting bacterium and an antiseptic for root rot disease of ginseng. Isolation of Plant growth-promoting activation" (Korea patent application number: 10- 2019-0078622). Application date: 07/01/2019

Conference

1. Poster presentation, "Title: Interventional Multi-Omics Analysis of the Gut-Liver Axis Reveals the Potential Inflammatory Effects of Artificial Sweeteners in the *ob/ob* Mouse Model", *Keystone symposia*, United States (Oct 2023)
2. Oral presentation, "Exploring the Impact of Artificial Sweeteners on Glycemic Response and Its Association with Gut Microbiome", *The Korean Society for Microbiology and Biotechnology*, South Korea (Jun 2023)
3. Poster presentation, "Investigating the Impact of Artificial Sweeteners on Glycemic Responses through Analysis of the Gut Microbiome", *The Korean Society for Applied Biological Chemistry*, South Korea (Jun 2023)
4. Poster presentation, "Alterations and Prediction of Functional Profiles of Gut Microbiota After Fecal Microbiota Transplantation for Iranian Recurrent *Clostridioides difficile* Infection with Underlying Inflammatory Bowel Disease: A Pilot Study", *The Korean Society for Applied Biological Chemistry*, South Korea (Jun 2022)
5. Oral presentation, "The First Successful Fecal Microbiota Transplant for Iranian Recurrent CDI Patients Underlying Inflammatory Bowel Disease and the Alterations of Gut Microbiota", *The Korean Society for Microbiology and Biotechnology*, South Korea (Aug 2021)
6. Poster presentation, "Set up the optimal TaqMan qPCR method for the screening of human gut microbiota", *Cold Spring Harbor Laboratory-microbiome meeting*, United States (Jul 2019)

Awards and Honors

1. Best Poster Award by KSABC (Jun 2023)
2. Best Poster Award by KSABC (Jun 2022)

3. Honors scholarship awarded by BrainKorea21: 15,600 USD (Sep 2022 – Jun 2023)
4. Honors scholarship awarded by BrainKorea21: 15,600 USD (Sep 2021 – Jun 2022)

Skills and Techniques

Sequencing

- Illumina Miseq
- MGI DNBSEQ-G400RS
- Oxford Nanopore MiniON

Microbiome

- QIIME2
- PICRUST2
- SourceTracker2
- R

Metagenome

- MetaPhlAn4
- Trimmomatic
- Bowtie2
- HUMAnN3
- Kraken2/Bracken
- Binning/MAG

Transcriptome

- DESeq2
- Weighted correlation network analysis
- Gene regulatory network

Metabolome

- Agilent 6545XT AdvanceBio LC/Q-TOF System

Statistical analysis

- R
- GraphPad Prism

Machine learning

- Predictive modeling
- Feature selection

Data visualization

- R
- Adobe Illustrator
- Adobe Photoshop

Molecular and microbial experiments

- Multiplex qPCR using TaqMan
- Anaerobic culture
- Digital droplet PCR

Animal experiments

- Oral gavage
- Glucose tolerance test
- Sacrifice

Extracurricular activity

1. Research Internship at Molecular Genetics and Soybean Genomics Laboratory, Division of Plant Sciences, University of Missouri, United States (Jul 2016 - Dec 2016), Supervisor: Henry T. Nguyen, PhD