

# **MIN JEONG KANG**

Graduate Assistant at University of Georgia, Department of Food Science and Technology

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## **Research Interests**

Food Metabolomics, Machine Learning Algorithms, Biomarker Discovery, Pathway Enrichment Analysis, Food Processing, Physicochemical Properties of Food, Sensory Evaluation

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## **Education**

### **Doctor of Philosophy of Food Science & Technology**

Department of Food science & Technology, University of Georgia

Aug 2020

Advisor: Dr. Joonhyuk Suh

- Current

Committee members: Dr. Ronald Pegg, Dr. William Kerr, Dr. Patrick J. Conner

GPA(3.60/4.0)

Dissertation Title: Biomarker-Based Evaluation of Pecan Quality

: Scab Resistance and Color Stability

### **Master of Nutritional Science & Food Management**

Department of Science & Industry Convergence, Ewha Womans University

Sept 2017

Advisor: Dr. Sang Sook Kim & Dr. Seo Jin Chung

- Aug 2020

Thesis: The Change of Physicochemical Properties on Whole-Wheat Dough and Noodle by Refrigerated Storage and Enzyme Treatment

GPA(3.84/4.0)

### **Bachelor of Food Science & Human Nutrition**

Mar 2013

Department of Human Ecology, Chonbuk National University

- Feb 2017

GPA(3.66/4.0)

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## **Publications**

<In Progress>

***Metabolomics Analysis with Machine Learning Approach Enables the Evaluation of Postharvest Pecan Color Stability***

Min Jeong Kang, Ronald B. Pegg, William Kerr, Lenny Wells, Patrick J. Conner, Joon Hyuk Suh

<Published>

1) ***Metabolomic Analysis Reveals Linkage between Chemical Composition and Sensory Quality of Different Floral Honey Samples***

Min Jeong Kang, Keup-Rae Kimb, Keono Kim, Aria G. Morrill, Chuleui Jungc, Donghui Lee, Joon Hyuk Suha, Jeehye Sung

Food Research International, (2023)

<https://doi.org/10.1016/j.foodres.2023.113454>

2) ***LC-MS Analysis of Urolithin-related Metabolites in Human Plasma Reveals Glucuronide Conjugates as the Primary Species after 4-weeks of Pecan Consumption***

Min Jeong Kang, Joon Hyuk Suh1, Liana L. Guarneiri, Jamie A. Cooper, Chad M. Paton

Journal of Food Bioactives (2023)

<https://doi.org/10.31665/JFB.2023.18336>

3) ***Metabolomics as a Tool to Evaluate Nut Quality and Safety***

Min Jeong Kang, Joon Hyuk Suh

Trends in Food Science & Technology, (2022)

<https://doi.org/10.1016/j.tifs.2022.11.002>

4) ***The Effects of Transglutaminase and Refrigerated Storage on the Physicochemical Properties of Whole Wheat Dough and Noodles***

Min Jeong Kang, Seo-Jin Chung, Sang Sook Kim

Foods, (2021)

<https://doi.org/10.3390/foods10071675>

5) ***Effects of milling methods and cultivars on physicochemical properties of whole wheat flour.***

Min Jeong Kang, Mi Jeong Kim, Han Sub Kwak and Sang Sook Kim

Journal of Food Quality, (2020)

<https://doi.org/10.1155/2019/3416905>

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## **Research/Teaching Experience**

Graduate Research Assistant in Food Science and Technology department

University of Georgia (UGA)

Advisor: Prof. Joon Hyuk Suh

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- ♦ *Biomarker-Based Evaluation of Pecan Quality [2022 – Current]*

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- Obj 1) Identify and characterize mature biomarkers related to scab resistance of mature pecan trees  
Obj 2) Discover early biomarkers for scab resistance of pecan seedlings at the initial infection stage  
Obj 3) Metabolomics analysis with machine learning approach enables to evaluation of postharvest pecan color stability
- Using KEGG database, perform the pathway enrichment analysis
  - Using machine learning (ML) in classification or regression task, identify the biomarkers for each research goal
- ◆ *Metabolomic analysis to reveal the relationship between sensory quality and chemical profiles in honey [2022 – 2023]*
    - Interpretation of data between sensory analysis and metabolomic analysis
  - ◆ *Pathway analysis to uncover the biomarker and pathways that affect the flavor and aroma of apple [2023]*
    - Organic acids, flavonoids, fatty acids, -CoA conjugates, etc.: HILIC-Z, C30 columns with LC-MS (QQQ) using diverse mobile phases (pH 2.0 – 9.0)
    - Sugars: Aminex HPX-87P column with HPLC-RI.
  - ◆ *LC-MS analysis of urolithin conjugates in human plasma [2022]*
    - Method development to measure 7 urolithin conjugates simultaneously.
  - ◆ Publication of review paper on metabolomics for nut quality and safety in Trends in Food Science & Technology (IF = 16.0) [2022]
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**Graduate Teaching Assistant in Food Science and Technology department**  
**University of Georgia (UGA)**  
**Class: Food Chemistry (Fall of 2022 and 2023)**  
Instructor: Dr. Joon Hyuk Suh

- ◆ Leading lab sessions: Schedule and design the entire lab procedures
  - ◆ Teach the students how to perform the food chemistry experiments
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**Graduate Research Assistant in Food Science and Technology department**  
**University of Georgia (UGA)**  
**Advisor: Prof. Jose I. Reyes-De-Corcuera**

- ◆ Effect of high hydrostatic pressure (HHP) on enzymes [2020 – 2022]
    - (1) Galactose oxidase: Poster presentation at the Extreme Biophysics RCN meeting
    - (2) Alcohol oxidase: Evaluation of thermal stability under HHP
    - (3) Small angle X-ray scattering (SAXS): To observe the structural transitions of enzymes depending on the HHP and temperature
  - ◆ Protein purification [2021]  
: To purify isomer of alcohol oxidase from yeast that could act differently under HHP and high temperature.
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**Graduate Teaching Assistant in Food Science and Technology department**  
**University of Georgia (UGA)**  
**Class: Food Processing 2 (Spring of 2021 and 2022)**  
Instructor: Dr. Jose I. Reyes-De-Corcuera

- ◆ Leading lab sessions: Teach the students how to perform the food processing experiments
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**Student Researcher, Research group of Food Processing**  
**Korea Food Research Institute (KFRI)**  
Iseo-myeon, Wanju-gun, Jeollabuk-do, Republic of Korea  
Advisor: Dr. Sang Sook Kim & Dr. Seo Jin Chung

- ◆ *Analysis of Whole-Wheat grain [2017 – 2020]*
    - (1) Physicochemical Properties of Whole-Wheat Flour according to the Effects of Milling Methods and Cultivars
    - (2) Characteristics of Wheat Kernel according to the Milling Degree
    - (3) In Vitro Digestion - Functional Properties of Germinated Wheat Kernel
    - (4) Processing Ability of Whole-Wheat Noodle with Enzymes & Refrigerated Storage
  - ◆ *Sensory Evaluation of Various Foods [2017 – 2020]*  
: Consumer Acceptance and Quantitative Descriptive Analysis (QDA) – Soybean Paste, Tea, Korean Traditional Liquor, Wheat Beer, Cooked Rice, etc.
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**Internship, Department of R&D, MEGACOS BIO CO., LTD.**  
Dongan-gu, Anyang-si, Gyeonggi-do, Republic of Korea

- ◆ To conduct the functional evaluation of foods for health functional food [2017]
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### **Book Chapter**

*Effect of High-Pressure Technologies on Enzymes: Science and Applications*  
Júnior, Bruno Ricardo de Castro Leite, and Alline Artigiani Lima Tribst, eds.  
- **Chapter 14.** Michael Diehl, **Min Jeong Kang**, Jose I. Reyes-De-Corcuera  
Elsevier, (2023) <https://doi.org/10.1016/B978-0-323-98386-0.00007-5>

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## **Conference Presentations**

### *Oral Presentations*

- 1) **"Metabolomic analysis with machine learning algorithms enables the evaluation of postharvest color stability in different pecan varieties"**  
American Chemistry Society (ACS), New Orleans, LA, [Mar 2024]
- 2) **"Pathway-based metabolomics reveals the biosynthesis of key flavor compounds in apple"**  
US-Korea Conference (UKC), Dallas, TX, [Aug 2023]
- 3) **"Determination of Urolithin Related Metabolites in Human Plasma by LC-MS Analysis – Potential Biomarkers for Pecan Consumption"**  
36th Southern Section of AOAC INTERNATIONAL (SSAOAC), Atlanta, GA, [Apr 2023]

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### *Poster Presentation*

- 1) **"Metabolomic analysis reveals linkage between chemical composition and sensory quality in different varieties of honey"**  
19th Annual Conference of Metabolomics Society (MetSoc), Niagara Falls, Canada, [Jun 2023]

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## **Students Mentored**

- 1) Braden Troccoli - CAES Young Scholar's Program [2022]  
: LC-MS-Based Determination of Urolithin Metabolites in Human Plasma
- 2) Aria G. Morrill – Undergraduate Researcher [2022 – 2023]  
: Metabolomic analysis to discover the biomarkers and pathways that can affect the flavor and aroma of apple

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## **Technical Skills**

- ♦ **Metabolomic analysis:** LC-MS/MS (sugars, organic acids, flavonoids, etc.), GC-MS (volatiles and fatty acids)
- ♦ **Data Processing and Machine Learning:** XGboost, random forest, Bayes A/B/C, Support vector machine learning, Lasso/Elastic/Ridge regression, PLSR, Multiple linear regression
- ♦ **Sensory Evaluation:** Consumer acceptance & QDA
- ♦ **Instruments for Measurement of Food Physical Properties:** SEM, Particle Analyzer, Image Analyzer, Mixolab<sup>®</sup>, RVA, Differential scanning calorimetry (DSC), Texture Analyzer – TPA, Kieffer Dough Extensibility, Rheometer<sup>®</sup>, Glutomatic<sup>®</sup>, Falling Number, SDmatic<sup>®</sup>, Colorimeter
- ♦ **Cell Culture:** Raw 264.7 (Anti-inflammation), HepG2 (Antioxidant)
- ♦ **Functional Analysis:** Antioxidant activity, TPC, TFC, DPPH Radical Scavenger Assay, Oxygen Radical Absorbance Capacity (ORAC)
- ♦ **Compositions of Food:** Moisture, Protein, Fat, Ash and Dietary Fiber
- ♦ **Processability Analysis:** Cooking Parameters of Noodles, Cooked Rice/Wheat, WSI, WAI
- ♦ **Statistical Analysis:** R studio, XLSTAT, MetaboAnalyst 5.0, Microsoft

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## **Extra-curricular Activities**

- ♦ **Diversity, Equity, and Inclusion (DEI) Committee Member** [Fall 2023 – Current]  
Food Science and Technology | University of Georgia
- ♦ **Communication Chair** [Fall 2022 – Spring 2023]  
Food Science Club Executive Board | University of Georgia
- ♦ **Young Scholars Program (YSP) Poster Symposium Judge** [Summer 2022]  
College of Agriculture and Environmental Sciences | University of Georgia

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## **Honors/Grants**

- ♦ **Graduate Student Domestic Travel** [Spring 2024]  
University of Georgia
  - ♦ **UKC 2023 Travel Support** [Summer 2023]  
US-Korea Conference 2023 on Science, Technology, and Entrepreneurship
  - ♦ **Professional Development of Graduate Students** [Feb 2023]  
University of Georgia
  - ♦ **Graduate Assistant** [Aug 2020 – Current]  
University of Georgia
  - ♦ **Graduate Research Fellowship of Graduate School of Ewha Womans University** [Sep 2017 – May 2020]  
Korea Food Research Institute (KFRI)
  - ♦ **Academic Scholarship** [Mar 2013, Mar 2014, Sep 2015, Mar 2016, Sep 2016]  
Chonbuk National University
  - ♦ **National Grant Scholarship** [Sep 2014]  
Chonbuk National University
  - ♦ **Work-Study, Tuition Aid Scholarship** [Sep 2016]  
Chonbuk National University
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