MIN JEONG KANG

100 Cedar Street, Athens, Georgia, 30602
+1706-308-2544
MinJeong.Kang@uga.edu
Website: minjeong94.github.io/

EDUCATION

Ph.D., Food Science & Technology, University of Georgia (expected) Jul 2025
M.S., Nutritional Science & Food Management, Ewha Womans University/ KFRI Aug 2020
B.S., Food Science & Human Nutrition, Chonbuk National University Feb 2017

RESEARCH INTERESTS

Metabolomics, Flavoromics, Biomarker discovery with machine learning, Pathway enrichment analysis, Sensory evaluation, Food processing

PUBLICATIONS

< Published >

1) "Metabolomic analysis combined with machine learning algorithms enables the evaluation of postharvest pecan color stability", *Food Chemistry (2024)*
   MJ Kang, RB Pegg, WL Kerr, ML Wells, PJ Conner, JH Suh
2) "Metabolomic analysis reveals linkage between chemical composition and sensory quality of different floral honey samples", *Food Research International (2023)*
   MJ Kang, KR Kim, K Kim, AG Morrill, C Jung, S Sun, DH Lee, JH Suh, JH Sung
3) "LC–MS analysis of urolithin-related metabolites in human plasma reveals glucuronide conjugates as the primary species after 4-weeks of pecan consumption", *Journal of Food Bioactives (2023)*
   MJ Kang, JH Suh, LL Guarneiri, JA Cooper, CM Paton
4) "Metabolomics as a tool to evaluate nut quality and safety", *Trends in Food Science & Technology (2022)*
   MJ Kang, JH Suh
5) "The effects of transglutaminase and refrigerated storage on the physicochemical properties of whole wheat dough and noodles", *Foods (2021)*
   MJ Kang, SJ Chung, SS Kim
6) "Effects of milling methods and cultivars on physicochemical properties of whole wheat flour", *Journal of Food Quality (2020)*
   MJ Kang, MJ Kim, HS Kwak, SS Kim

< In Progress >

1) "Discovery of early biomarkers for the scab resistance of pecan seedlings using metabolomic analysis combined with machine learning algorithms"
   MJ Kang, G Bhattarai, RB Pegg, ML Wells, PJ Conner, JH Suh
2) "Discovery of mature biomarkers for scab resistance of pecan tree leaves using metabolomics and machine learning"
   MJ Kang, RB Pegg, ML Wells, PJ Conner, JH Suh
3) "Approach for flavor biosynthetic pathway discovery in different apple cultivars grown in Korea"
   K Kim, **MJ Kang**, JH Suh, JH Sung
4) "Integrative metabolomics and statistical correlation unravel key flavor biosynthesis in pecans"
   SO Ogundipe, **MJ Kang**, PJ Conner, JH Suh, RB Pegg
5) "Unraveling rewired metabolic network in organic tomato fruits using a pathway-based metabolomics approach"
   JP Kaur, NH Lee, **MJ Kang**, H Zhou, K Cassity-Duffey, JH Suh

RESEARCH EXPERIENCE

Graduate Research Assistant, Food Science and Technology, University of Georgia Aug 2020 - Current

1) Biomarker-based evaluation of pecan quality using metabolomics analysis

Obj 1) Identify the mature biomarkers related to scab resistance of mature pecan trees
Obj 2) Discover the 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

2) Biomarker discovery using machine learning (ML) algorithms with R (e.g., XGBoost, random forest, bayes A/B/C, support vector machine learning, lasso/elastic/ridge regression)
3) Pathway enrichment analysis using RNA-Seq raw data and metabolomics data (KEGG)
4) Interpretation of sensory evaluation data (consumer test and QDA) (e.g., external preference map, pls regression, etc.)
5) Flavoromics with apple and honey samples
6) Analytical method development using LC-MS/MS (QQQ) with Aminex HPX-87P, HILIC-Z, C30, and C18 columns for semi- and absolute quantification using several samples (e.g., pecan, leaves, wine, milk, apple, honey, tomato, blood plasma, etc.).

Student Researcher, Korea Food Research Institute (KFRI) Aug 2017 – May 2020

- Performed sensory evaluation for several foods (e.g., soybean paste, yea, korean traditional liquor, wheat beer, cooked rice, etc.) using consumer acceptance and quantitative descriptive analysis (QDA)
- Analyzed the physicochemical properties of whole wheat grain
  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

R&D Internship, MEGACOS BIO CO., LTD Apr 2017 – Jul 2017

- Conducted the functional evaluation of foods for health supplement food

TEACHING EXPERIENCE

Graduate Teaching Assistant, Food Science and Technology, University of Georgia

Food Chemistry F 2022, F 2023

- Taught and developed lab sessions: 1) Reducing sugars, 2) Lipid-1, 3) Lipid-2, 4) Protein analysis, 5) Solvent retention capacity, 6) Enzymatic browning, 7) Non-enzymatic browning, 8) Vitamin C titration

Food Processing 2 S 2021, S 2022

- Taught lab sessions: 1) Titratable acidity, 2) Pectin esterase unit test, 3) Viscosity, 4) Polyphenol oxidase activity, 5) Alkaline phosphatase activity

AWARDS AND FELLOWSHIPS

- **2024 ASHS Scholars Ignite Competition – Second place**, ASHS 2024
- **Graduate Student Domestic/International Travel Grant,** UGA S 2024, F 2024
- **Romeo Toledo Graduate Student Travel Support Award**, UGA S 2024
- **Professional Development of Graduate Students,** UGA F 2024, S 2024, F 2023
- **UKC 2023 Travel Support,** US-Korea Conference on Science, Technology, and Entrepreneurship 2023
- **Graduate Assistant,** UGA 2022 - Current
- **Graduate Research Fellowship of Graduate School of Ewha Womans University,** KFRI 2017 – 2020
- **Academic Scholarship,** Chonbuk National University 2013, 2014, 2015, 2016
- **Work-Study, Tuition Aid Scholarship,** Chonbuk National University 2016
- **National Grant Scholarship,** Chonbuk National University 2014

SEMINARS AND CONFERENCE PRESENTATIONS

Oral Presentations

1) ***"Discovery of early biomarkers for the scab resistance of pecan seedlings using metabolomic analysis combined with machine learning algorithms"***

American Society for Horticultural Science (ASHS), Honolulu, Hawaii Sep 2024

2) ***"Metabolomics with machine learning: Application for Food Science and Technology"***
FDST 3000, University of Georgia, Athens, GA Sep 2024
3) ***"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
4) ***"Pathway-based metabolomics reveals the biosynthesis of key flavor compounds in apple"***
US-Korea Conference (UKC), Dallas, TX Aug 2023
5) ***"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

Poster Presentations

1) ***"Discovery of biomarkers for postharvest pecan color stability using metabolomics and machine learning algorithms"***
American Society for Horticultural Science (ASHS), Honolulu, Hawaii Sep 2024
2) ***"Metabolomics approach for flavor biosynthetic pathway discovery in different apple cultivars grown in Korea"***
20th Annual Conference of Metabolomics Society (MetSoc), Osaka, Japan Jun 2024
3) ***"Metabolomic analysis reveals the relationship between sensory quality and metabolites of different floral honey"***
International Flavor Summit, Orlando, FL Mar 2024
4) ***"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

REFEREE FOR JOURNALS

- **Food Research International** 2024
- **Food and Bioprocess Technology** 2024

EXTENSION ACTIVITIES

- **Student Representative of Faculty Search Committee** F 2024 – Current
  Food Science and Technology, UGA
- **Diversity, Equity, and Inclusion (DEI) Committee Member** F 2023 – Current
  Food Science and Technology, UGA
- **Communication Chair** F 2022 – S 2023
  Food Science Club Executive Board, UGA
- **Young Scholars Program (YSP) Poster Symposium Judge** Summer 2022
  College of Agriculture and Environmental Sciences, UGA

TECHNICAL SKILLS

- **Metabolomics analysis:** LC-MS/MS (QQQ) (sugars, organic acids, flavonoids, etc.), GC-MS (volatiles and fatty acids), HPLC-DAD/RI (sugars, organic acids, flavonoids, etc.)
- **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
- **Physicochemical properties of food**: SEM, Particle Analyzer, Image Analyzer, Mixolab®, RVA, Differential scanning calorimetry (DSC), Texture Analyzer – TPA, Kieffer Dough Extensibility, Rheometer®, Glutomatic®, Falling Number, SDmatic®, Colorimeter
- **Cell culture**: Raw 264.7 (Anti-inflammation), HepG2 (Antioxidant)
- **Functional analysis**: Antioxidant activity, TPC, TFC, DPPH Radical Scavanger Assay, Oxygen Radical Absorbance Capacity (ORAC)
- **Food analysis**: Moisture, Protein, Fat, Ash and Dietary Fiber

- **Processability analysis**: Cooking Parameters of Noodles, Cooked Rice/Wheat, WSI, WAI
- **Software and operational systems**: R studio, Linux, XLSTAT, MetaboAnalyst 5.0, Microsoft

STUDENTS MENTORED

1) Braden Trocolli - 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 Month and Year Range

LANGUAGES

English – native / bilingual proficiency, Korean – native / bilingual proficiency