Eunjeong Hong, Ph.D.

Postdoctoral researcher of G-LAMP Research Institute

Department of Biological Sciences, Chonnam National University, Republic of Korea

RESEARCH & COLLABORATION PROFILE

KEY WORDS: Metabolic Diseases, Energy Metabolism, Metabolic Homeostasis, Molecular Signaling



Research Snapshot. Ph.D Hong's research focuses on elucidating the molecular mechanism underlying metabolic liver disease and energy metabolism. Using molecular biological analyses and cell-based mechanistic approaches, she investigates signaling pathways and transcriptional regulatory networks involved in hepatic metabolic dysfunction, mitochondrial homeostasis, and cellular energy regulation. Her research aims to identify key regulatory mechanisms that contribute to metabolic dysfunction and to provide mechanistic insights into potential strategies for maintaining metabolic health.

RESEARCH EXPERTISE

- **Metabolic Disease Research**: Investigating molecular mechanisms underlying lipid accumulation, metabolic dysfunction, and disease progression.
- **Mitochondrial Biology and Energy Metabolism**: Exploring the regulation of mitochondrial function, cellular energy production, and metabolic homeostasis.
- **Aging and Metabolic Health**: Identifying molecular pathways liking aging-associated changes to hepatic dysfunction and systemic metabolic alterations.
- **Molecular Target Discovery and Functional Validation**: Identifying and validating molecular targets and signaling pathways involved in metabolic diseases through collaborative mechanistic studies.

RECENT RESEARCH HIGHLIGHTS

- **Molecular regulation of hepatic lipogenesis**: Demonstrated that *Lactobacillus johnsonii* JNU3402 attenuates diet-induced fatty liver by activating the PKA-SREBP-1c pathway, suppressing lipogenic gene expression and hepatic lipid accumulation.
- **Age-associated hepatic dysfunction**: Investigated the role of PGC-1α-PPARα-SIRT1 signaling in hepatic mitochondrial function, lipid accumulation, and cellular senescence in aged mice.
- **Adipose energy metabolism**: Demonstrated that *Lactiplantibacillus plantarum* L67 modulates SIRT1-PPARα signaling, promoting adipose lipolysis and energy expenditure in diet-induced obesity.
- **Probiotic-mediated metabolic regulation**: Investigated the molecular mechanisms through which specific probiotic strains modulate metabolic homeostasis in obesity- and aging-associated conditions.

POTENTIAL COLLABORATION RESEARCH

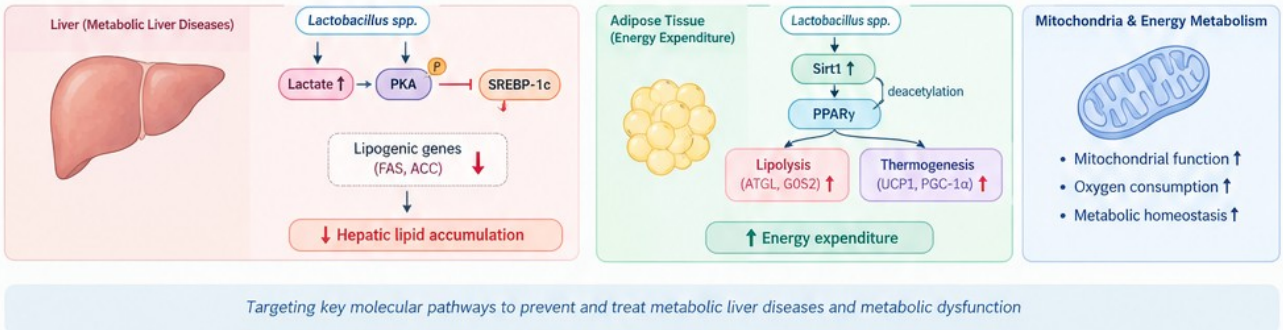
Best-fit collaborator areas:

- **Metabolic Diseases**: Investigating molecular mechanisms underlying hepatic lipid accumulation, metabolic dysfunction, and the progression of metabolic liver diseases.
- **Energy metabolism and mitochondrial biology**: Exploring the molecular regulation of mitochondrial function, cellular energy homeostasis, and metabolic adaptation.
- **Molecular signaling and transcriptional regulation**: Identifying and functionally validating key signaling pathways and transcriptional regulators involved in metabolic processes using molecular biological and cell-based approaches.
- **Probiotics and metabolic health**: Investigating the effects of probiotics strains and their metabolites on metabolic regulation and elucidating the cellular and molecular mechanisms underlying their metabolic benefits.

SELECTED RECENT PUBLICATIONS

- ***BioFactors*, 2025, 51.6: e70069.**: *Lactobacillus johnsonii* JNU3402 (LJ3402) administration mitigates age-related hepatic dysfunction and systemic inflammation in aged mice by improving mitochondrial function and suppressing hepatocyte senescence through the PGC-1α–SIRT1–p53 pathway.
- ***Journal of Functional Foods*, 2024, 113: 106028**: Investigates the potential modulatory effects of *Lactiplantibacillus plantarum* L67 (L67) administration on lipolysis and energy expenditure in diet-induced obese mice and 3T3-L1 adipocytes.
- ***Molecular Nutrition & Food Research*, 2023, 67.20: 2200496**: The protective effect of *Lactobacillus johnsonii* JNU3402 (LJ3402) against diet-induced non-alcoholic fatty liver disease (NAFLD) and determines the underlying mechanism in mice and hepatocytes.

REPRESENTATIVE RESEARCH FIGURES / SCHEMES



Targeting key molecular pathways to prevent and treat metabolic liver diseases and metabolic dysfunction