

Laboratory of Predictive Microbiology

School of Food Safety, College of Nutrition, Taipei Medical University



臺北醫學大學
TAIPEI MEDICAL UNIVERSITY

Principal Investigator



Kuan-Hung Lu
Ph.D. in Pharmacy
Assistant Professor

Expertise

- ✓ Predictive Microbiology
- ✓ Microbiological Risk Assessment
- ✓ Functional Evaluation and Safety Assessment
- ✓ Functional Food Development

Current Members



Liu-Yean Goh
Ph.D. candidate



Felicia K. Danny
M.S. student



Annisa Rizkitania
M.S. student



Chih-Yu Chang
Undergraduate



More Info.

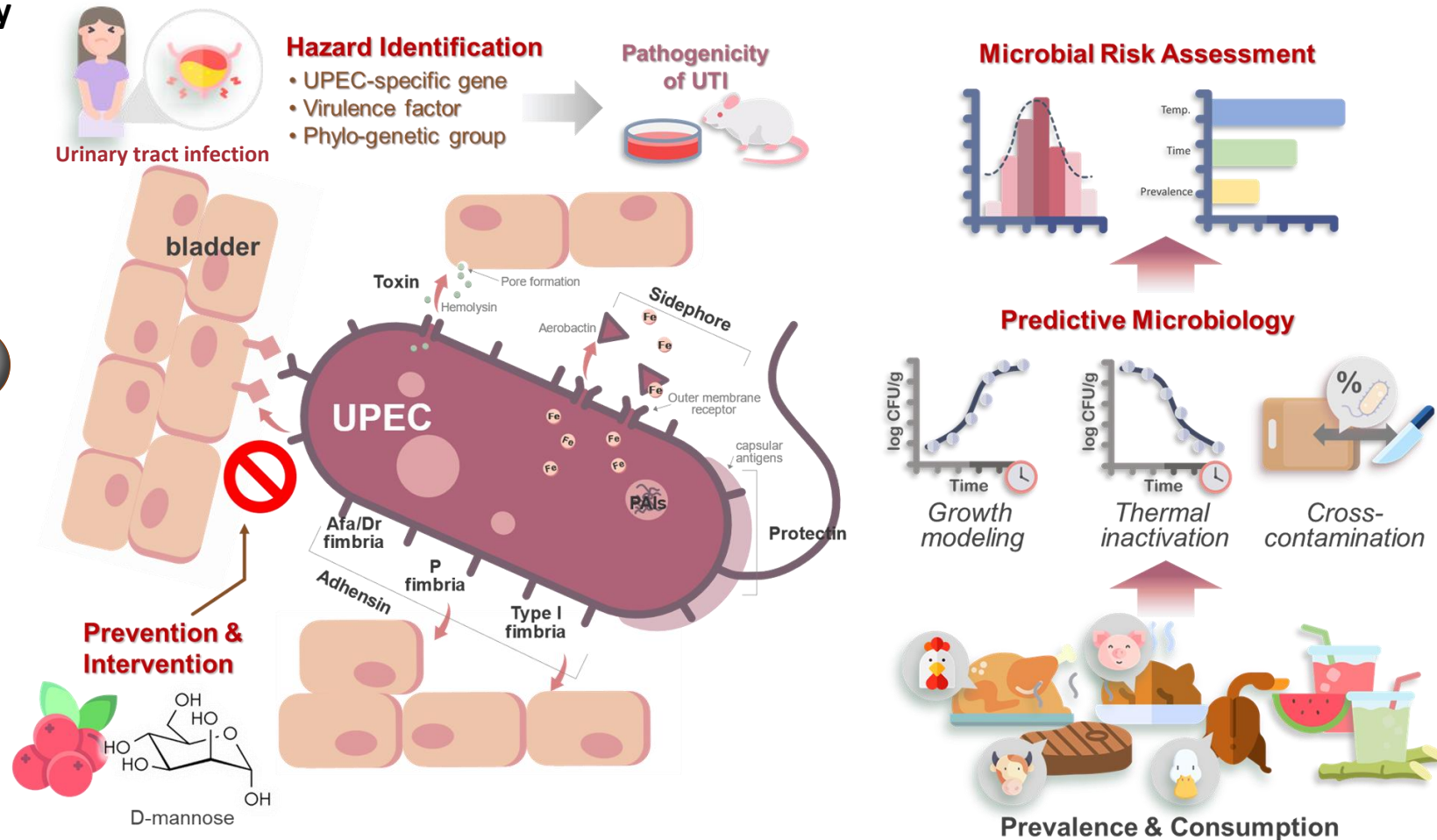


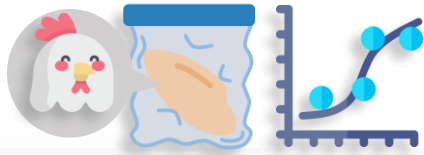
Pin-Chieh Wei
Undergraduate



Yi-Chun Chen
Undergraduate

Research Interests – Foodborne UTI





Foodborne Pathogens and Disease
Volume 20, Number 8, 2023
© 2023, Mary Ann Liebert, Inc., publishers
<https://doi.org/10.1089/fpd.2022.0069>

Mary Ann Liebert, Inc. publishers

Original Research Article

Modeling the Temperature Effect on the Growth of Uropathogenic *Escherichia coli* in *Sous-Vide* Chicken Breast

Kuan-Hung Lu^{a,1,2}, Anne Hsu³, Yi-Chun Pan³, Yun-Ju Huang⁴, Liu-Yean Goh¹, Chun-Yi Kang¹, and Lee-Yan Sheen^{3,5,6}

Lu et al. *Foodborne Pathog. Dis.* 20 (2022) 343-350



Food Research International 164 (2023) 112316



Contents lists available at ScienceDirect

Food Research International

journal homepage: www.elsevier.com/locate/foodres



Thermal inactivation kinetics of uropathogenic *Escherichia coli* in *sous-vide* processed chicken breast

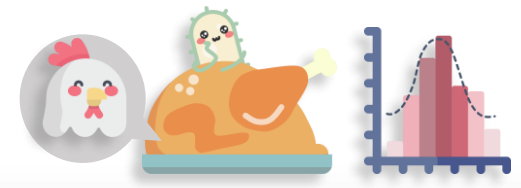
Yun-Jung Lee^a, Yi-Chun Pan^b, Ching-Wen Chang^{c,*}, Kuan-Hung Lu^{a,c,*}

^a Institute of Food Safety and Health, National Taiwan University, Taipei 100, Taiwan

^b Institute of Food Science and Technology, National Taiwan University, Taipei 106, Taiwan

^c Institute of Environmental and Occupational Health Sciences, National Taiwan University, Taipei 100, Taiwan

Lee et al. *Food Res. Int.* 164 (2022) 112316



Food Research International 222 (2025) 117642



Contents lists available at ScienceDirect

Food Research International

journal homepage: www.elsevier.com/locate/foodres



Quantitative microbial exposure assessment of uropathogenic *Escherichia coli* in ready-to-eat chicken: Consumer risk and mitigation strategies in Taiwan

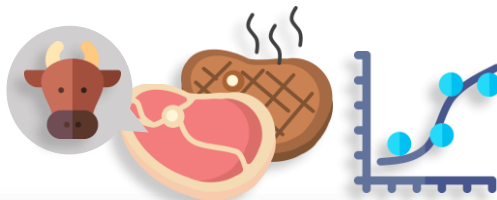
Liu-Yean Goh^a, Ching-Wen Chang^a, L.-W. Antony Chen^b, Kuan-Hung Lu^{c,*}

^a Institute of Environmental and Occupational Health Sciences, College of Public Health, National Taiwan University, Taipei 100, Taiwan

^b Department of Environmental and Global Health, School of Public Health, University of Nevada, Las Vegas, NV 89154, USA

^c School of Food Safety, College of Nutrition, Taipei Medical University, Taipei 110, Taiwan

Goh et al. *Food Res. Int.* 222 (2025) 117642



International Journal of Food Microbiology 442 (2025) 111359

Contents lists available at ScienceDirect

International Journal of Food Microbiology

journal homepage: www.elsevier.com/locate/ijfoodmicro



Growth modeling of uropathogenic *Escherichia coli* in raw and cooked beef as a function of storage temperature for shelf life predictions

Liu-Yean Goh^a, Tzu-Ping Kao^b, Yi-Chun Pan^c, Ching-Wen Chang^a, Kuan-Hung Lu^{d,*}

^a Institute of Environmental and Occupational Health Sciences, College of Public Health, National Taiwan University, Taipei 100, Taiwan

^b Institute of Food Safety and Health, College of Public Health, National Taiwan University, Taipei 100, Taiwan

^c Institute of Food Science and Technology, College of Biorecources and Agriculture, National Taiwan University, Taipei 106, Taiwan

^d School of Food Safety, College of Nutrition, Taipei Medical University, Taipei 110, Taiwan

Goh et al. *Int. J. Food Microbiol.* 442 (2025) 111359



Food Research International 201 (2025) 115603



Contents lists available at ScienceDirect

Food Research International

journal homepage: www.elsevier.com/locate/foodres



Modeling the growth and dynamics of uropathogenic *Escherichia coli* in sugarcane juice for shelf life predictions

Liu-Yean Goh^a, Ching-Wen Chang^a, Kuan-Hung Lu^{b,*}

^a Institute of Environmental and Occupational Health Sciences, College of Public Health, National Taiwan University, Taipei 100, Taiwan

^b School of Food Safety, College of Nutrition, Taipei Medical University, Taipei 110, Taiwan

Goh et al. *Food Res. Int.* 201 (2025) 115603



Food and Bioprocess Technology (2026) 19:11
<https://doi.org/10.1007/s11947-025-04080-5>

RESEARCH

Mild Thermal Inactivation Kinetics of Uropathogenic *Escherichia coli* in Sugarcane Juice: Model Validation under Dilution and Acidification Conditions

Liu-Yean Goh¹ · Ching-Wen Chang¹ · L.-W. Antony Chen² · Kuan-Hung Lu³

Received: 14 September 2025 / Accepted: 20 November 2025

© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2025

Goh et al. *Food Bioprocess Technol.* 19 (2026) 11

Consumer exposure risk to uropathogenic *Escherichia coli* from commonly consumed juice retailed in Taiwan: A quantitative microbial exposure assessment focused on sugarcane juice

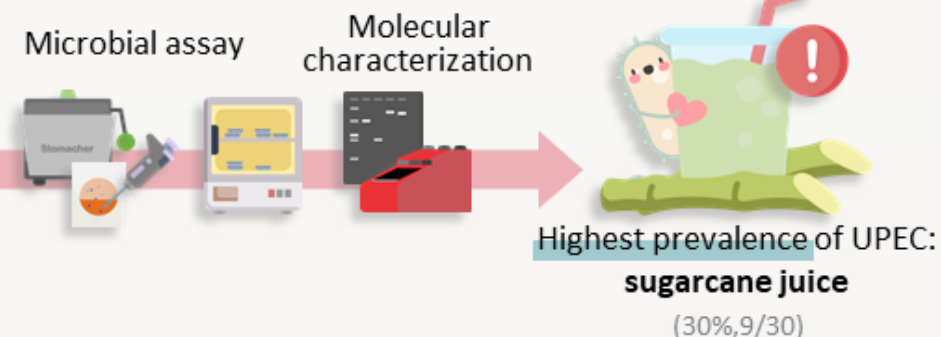
BACKGROUND



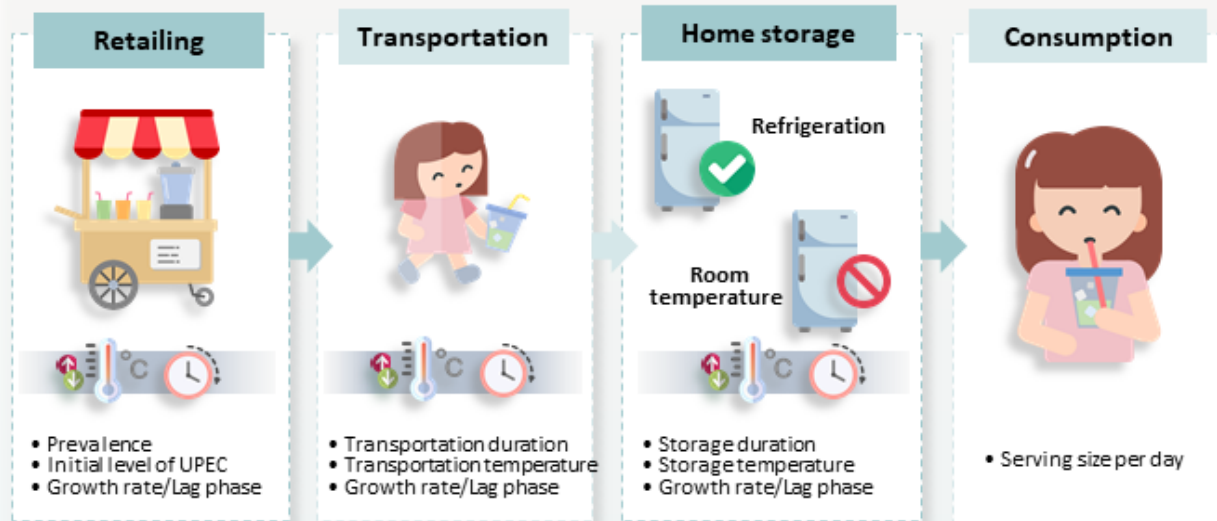
UPEC:
Etiological agent
of UTI



KEY FINDING



KEY FINDING



Probability of exposure to UPEC %
1.5% to 27.2%



Lowest exposure risk:
Immediate consumption after purchase

Probability of exposure
≥ UPEC threshold levels
(10^5 - 10^8 CFU per serving)

Most influential factor:
Temperature during retail

Intervention strategies:



reducing 85.2 to 97.2%
UPEC exposure risk

UPEC, uropathogenic *Escherichia coli*; UTI, urinary tract infection

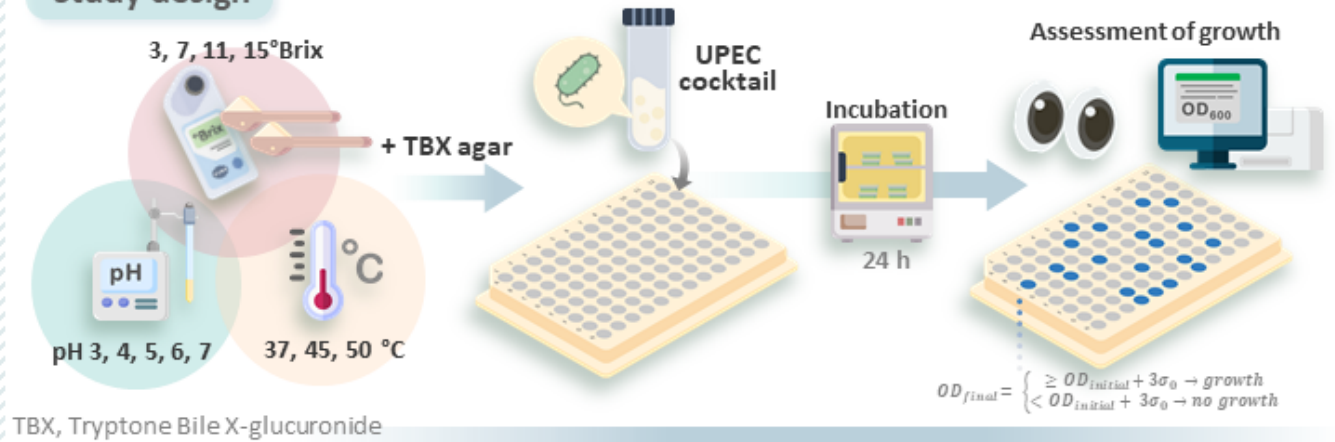
Probabilistic modeling of growth/no-growth boundaries of uropathogenic *Escherichia coli*: Establishing critical control surfaces under multifactorial conditions in sugarcane juice

Background

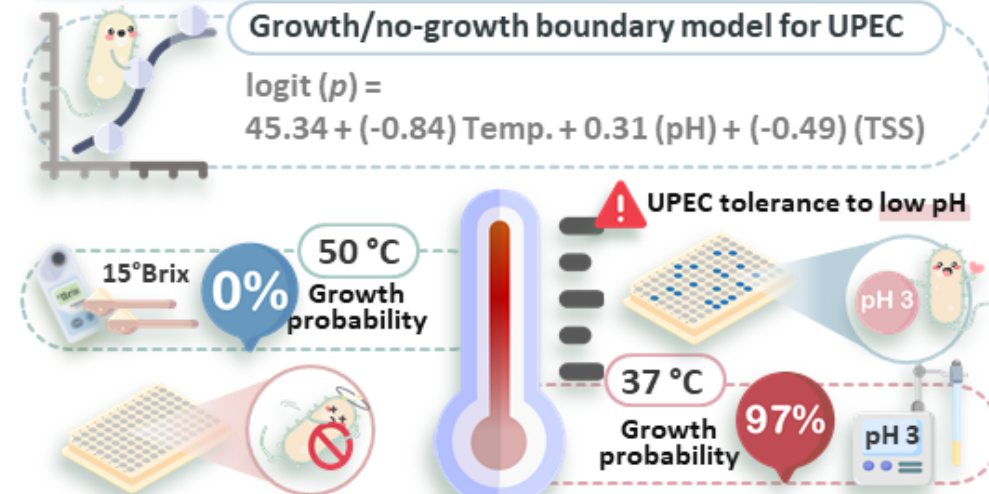


UPEC, uropathogenic *Escherichia coli*; UTI, urinary tract infection

Study design

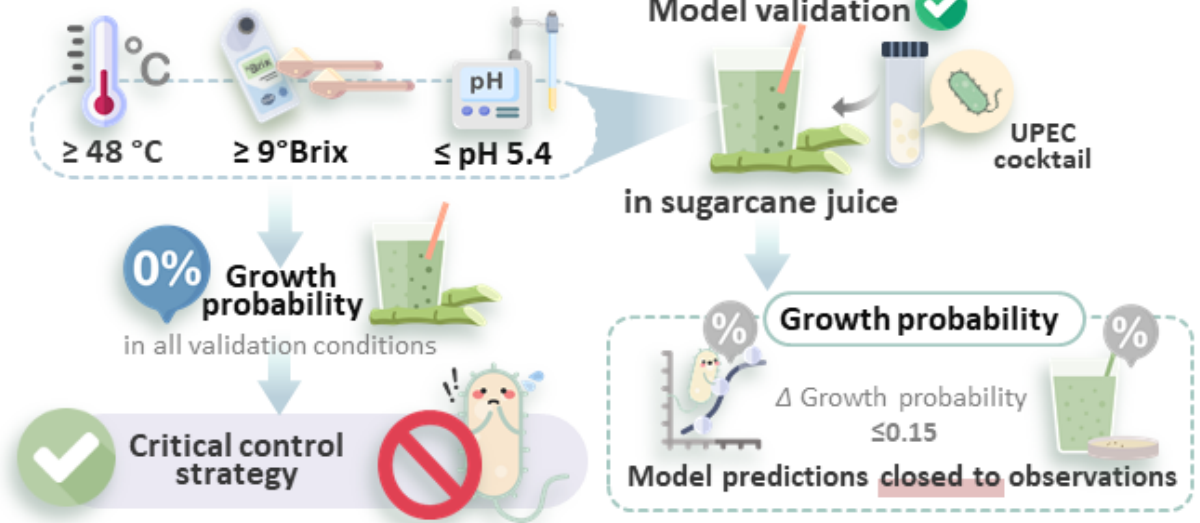


Significant findings



Temp., temperature; TSS, total soluble solids

Model validation



Highlight UPEC is effectively inhibited at ≥ 48 °C with ≥ 9°Brix → Applicable as critical control strategies for reducing UPEC in sugarcane juice

預測微生物學實驗室



盧冠宏 藥學博士

助理教授

臺北醫學大學食品安全學系

TEL: +886-2-2736-1661 ext.7520

E-mail: khlu@tmu.edu.tw



Modeling the growth and dynamics of uropathogenic *Escherichia coli* in sugarcane juice for shelf life predictions

Background

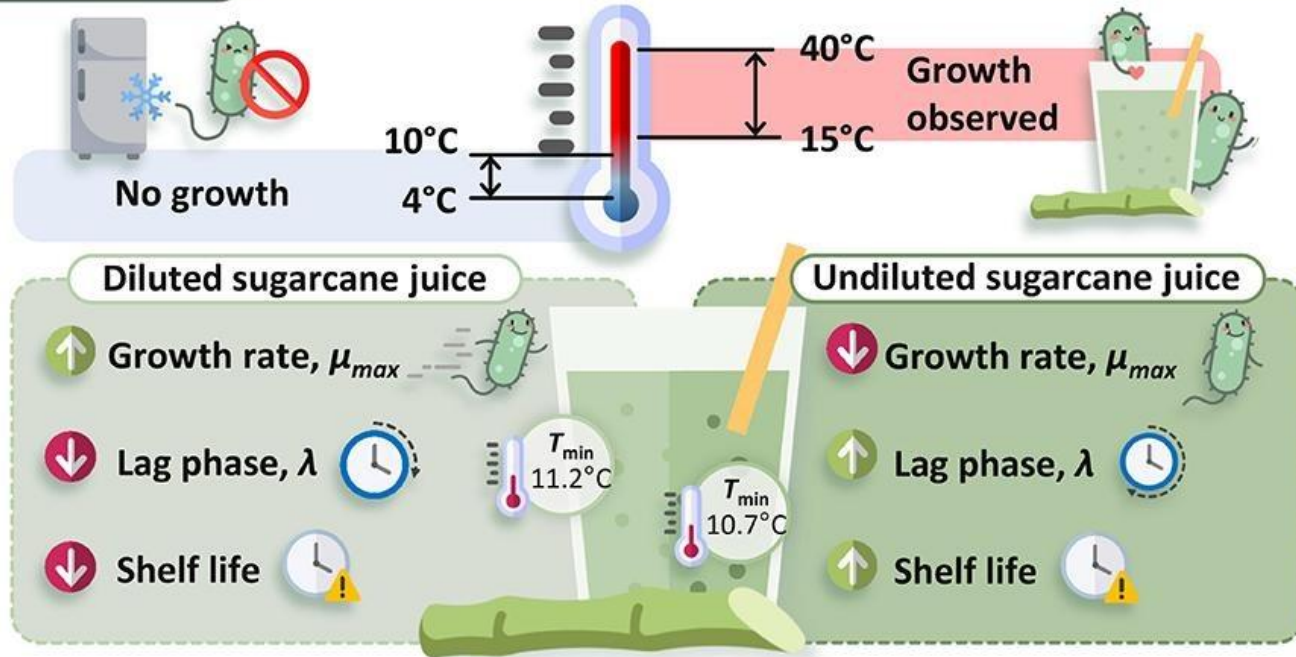
UPEC:
Major causative agent
for foodborne UTI



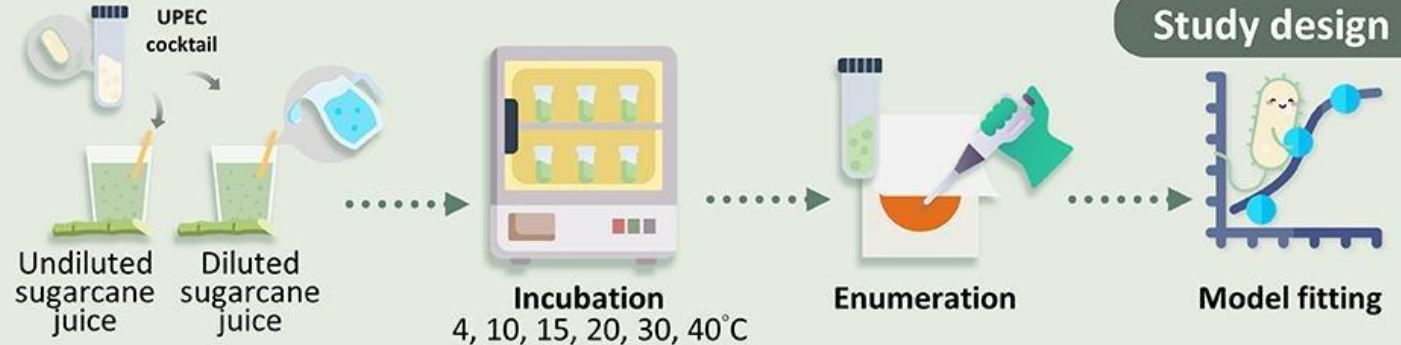
Sugarcane juice:
High prevalence
of UPEC

UPEC, uropathogenic *Escherichia coli*
UTI, urinary tract infection

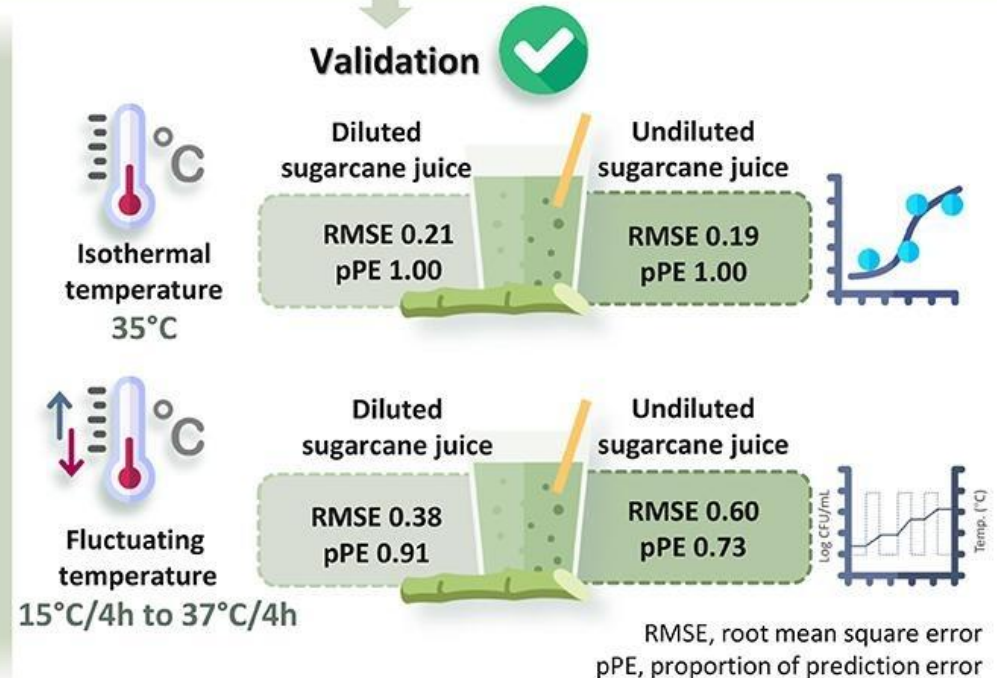
Significance



Study design



Validation



Highlight Dilution of sugarcane juice ushers an increased growth rate of UPEC, which may reduce the shelf life and heighten the risk of foodborne UTI.

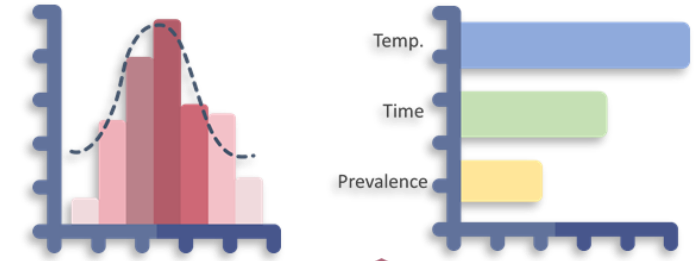
Hazard Identification

- UPEC-specific gene
- Virulence factor
- Phylo-genetic group

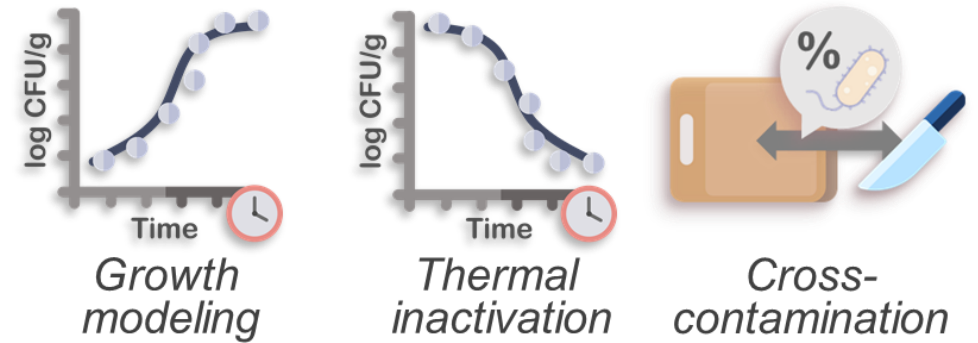
Pathogenicity of UTI



Microbial Risk Assessment



Predictive Microbiology



Prevalence & Consumption



bladder

Toxin

Pore formation

Hemolysin

Sidephore

Aerobactin

Outer membrane receptor

UPEC

PAIs

Protectin

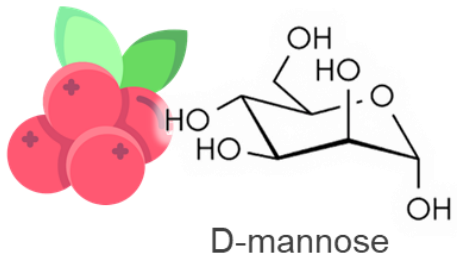
Afa/Dr fimbria

P fimbria

Type I fimbria

Adhensin

Prevention & Intervention



Laboratory of Predictive Microbiology

School of Food Safety, College of Nutrition, Taipei Medical University



臺北醫學大學
TAIPEI MEDICAL UNIVERSITY

Principal Investigator



Kuan-Hung Lu

Ph.D. in Pharmacy
Assistant Professor

Expertise

- ✓ Predictive Microbiology
- ✓ Microbiological Risk Assessment
- ✓ Functional Evaluation and Safety Assessment of Food
- ✓ Functional Food Development

Current Members



Liu-Yean Goh
Ph.D. student



Shao-Chi Lin
M.S. student

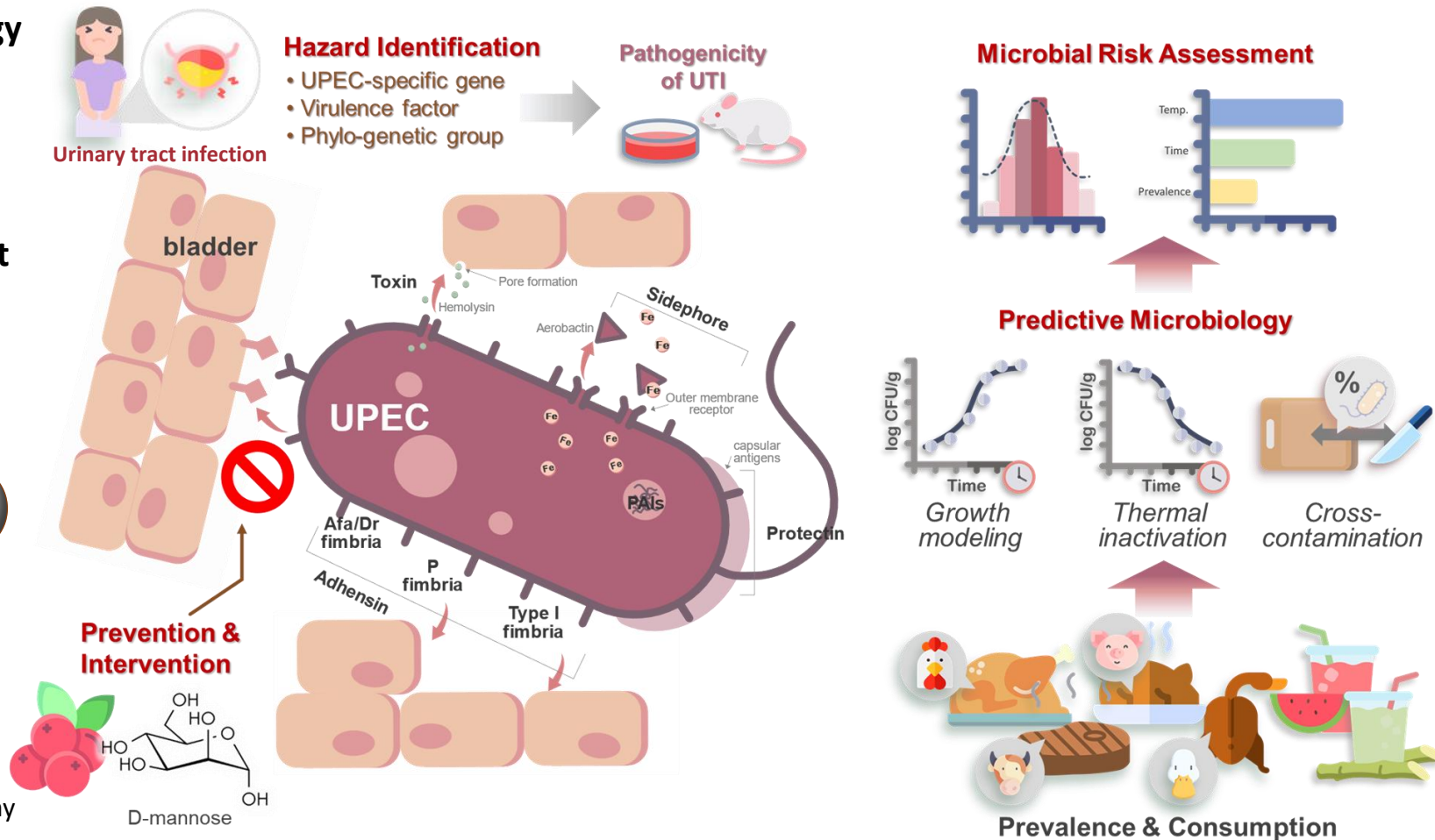


Jia-Huei Zhou
M.S. student



Felicia K. Danny
M.S. student

Research Interests – Foodborne UTI



Laboratory of Predictive Microbiology

School of Food Safety, College of Nutrition, Taipei Medical University



臺北醫學大學
TAIPEI MEDICAL UNIVERSITY

Principal Investigator



Kuan-Hung Lu

Ph.D. in Pharmacy
Assistant Professor

Expertise

- ✓ Predictive Microbiology
- ✓ Microbiological Risk Assessment
- ✓ Functional Evaluation and Safety Assessment of Food
- ✓ Functional Food Development

Current Members



Liu-Yean Goh
Ph.D. student



Shao-Chi Lin
M.S. student



Jia-Huei Zhou
M.S. student



Felicia K. Danny
M.S. student

Research Interests – Foodborne UTI

