Umbhorn UNGKULPASVICH, PhD

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Career Objective

I am keen to work and grow professionally. My initiative, diverse experience, and passion in the Cell Ag industry will be invaluable in achieving the Vow''s goals.

Research interests

- Cellular agriculture
- Bioengineering
- Biotechnology
- Biomedical device

Laboratory skills/experiences

Bioinformatics

- Whole genome sequencing
- Metagenomics

Molecular biology

- Histochemical staining
- Flow cytometer
- HPLC and GC chromatography
- Enzymatic measurement
- Molecular cloning
- PCR (polymerase chain reaction)
- DNA/RNA amplification and purification
- *E.coli* system protein expression
- Protein purification (Ion chromatography)
- Gel electrophoresis
- Zymogram
- Western blot
- Genome editing
- Microinjection
- Chemotaxis assay

Bacteriology and cell culture

- Isolation of chondrocytes from biopsy
- Culture of human mesenchymal stem cells, human chondrocytes, HEK 293 cells (kidney cell lines)
- Aseptic technique
- Cryopreservation
- Cell counting
- Aerobic and anaerobic bacteria culture
- Isolation using roll tube technique
- *C. elegans* culture

Glycoprotein analysis

- Lectin microarray

Education

Mar 2021 **University of Tsukuba (Full scholarship)**
Ph.D. in Bioresource engineering GPA: 4.00

Sep 2017 **Osaka University (Double-degree program with KMUTT)**
M.Eng. in Biotechnology GPA: 4.00

Aug 2017 **King Mongkut's University of Technology Thonburi (KMUTT)**
M.Eng. in Biological Engineering GPA: 3.83

Jun. 2014 **King Mongkut's University of Technology Thonburi (KMUTT)**
B.Eng. in Chemical Engineering GPA: 3.19

Work experiences

HIROTSU BIO SCIENCE (Shonan R&D center), Kanagawa, Japan
Research scientist (Aug 2022- current)

- R&D study: Develop early cancer screening test (N-NOSE)
- Technical writing: Writing manuscripts involving clinical studies

MOON Creative Lab, Tokyo, Japan
Researcher (Apr 2021- June 2022)

- Technical writing: Co-author and revise FDA pre-submission document and an international patent application, elaborated project team meetings.
- R&D study: Collaborated with the development team to engineer a biomedical diagnostic test
  (Worked as a research volunteer from Apr 2021 to Sep 2021)

Cellular Agriculture Institute of the Commons (CAIC) (Oct 2021- current)
Intern

- Technical writing on CAIC website

Research experiences

National Institute of Advanced Industrial Science and Technology (AIST), Ibaraki, Japan
Post graduate intern (Apr 2021- Sep 2021)
Topic: *Glycoprotein analysis of human cell and tissue using lectin microarray*

- R&D study: Develop and implement a protocol for analysis of glycomic profile on HEK cells using the lectin microarray technique. This project was collaborated with senior researchers to design experimental plans and data interpretation.

Japan International Research Center for Agricultural Sciences (JIRCAS) and University of Tsukuba, Ibaraki, Japan
Research assistant (Oct 2017- Mar 2021)
Sep 2018 – Mar 2021
Topic: *Isolation and characterization of the first chitinolytic thermophilic anaerobic bacterium and a symbiotic relationship between chitinolytic bacterial community (PhD thesis)* (Sep 2018 - Mar 2021)

- R&D study: Implemented PhD research project, isolated novel bacteria from bio-compost through a roll tube technique. Designed strategies using metagenomes, a whole genome sequencing, phenotypes, and an enzymatic activity, to identify the novel bacteria characterization, and their symbiotic relationship in chitin degradation.
- Technical writing: authored and revised SOPs, and published research articles

Apr 2018 – Aug 2018
Topic: *Characterization and comparative genome analysis of two strains of thermophilic, anaerobic, cellulolytic-xylanolytic bacterium Herbivorax saccincola* (Apr 2018 - Aug 2018)

- R&D study: Analyzed and interpreted bacterial genomes using a whole genome sequencing. *(Published an article)*

Languages
English: Business
Japanese: Daily Conversational
Thai: Native

Computer skills
- Python (intermediate)
- Microsoft office
- SPSS
- CLC genomics
- Genetyx
- SketchUp (3D printer)
- Adobe Photoshop/ Lightroom

Scholarship
- **JICA Innovative Asia scholarship** (Apr 2018 – Sep 2021)

Diploma, certificate and training
- **Japanese Language for work** by JICE (Jun – Jul 2022)
- **Learn Bioinformatics from Scratch (Theory & Practical)** by Udemy (2022)
- **Python Digital Image Processing from Ground Up** by Udemy (2022)
- **Research Ethics e-Learning** by Japan Society for the Promotion of Science (2018-2020)
- **Data Science Math Skills** by Duke University (Coursera) (2020)
- Diploma in **Understanding the Japanese development experience** at National Graduate Institute for Policy Studies (2018)
- **MEI-Center Summer School Tissue Engineering and Medical Device Development** at Osaka University (2016)

Oct 2017 – Mar 2018
Topic: *The development of glucose production from lignocellulose in rice straw using Clostridium thermocellum with a thermostable β-glucosidase as supplement for large-scale production* (Oct 2017 – Mar 2018)
- R&D study: Studied on the thermostable enzyme using a recombinant protein expression in *E.coli*, protein purification and an evaluation of enzymatic activities.

Osaka University, Osaka, Japan
Topic: *Determination of Cell Passage and Cryopreservation Process based on Time Consideration in Cell Manufacturability of Human Mesenchymal Stem Cells (Master's thesis I)* (Oct 2015 - Sep 2017)
- R&D study: Pioneered a set of performance indices to quantify the cell abilities. Validated cell apoptosis and undifferentiated cells on surface markers using a flow cytometer. *(Published an article and a proceeding)*

King Mongkut's University of Technology Thonburi (KMUTT), Bangkok, Thailand
Research assistant and Teaching assistant (Mar 2013- Aug 2017)
Topic: *Effect of Suspension Time on Human Chondrocyte Cells (Master's thesis II)* (Oct 2016 - Aug 2017)
- R&D study: Evaluated the quality of human primary chondrocyte cells using the set of performance indices for an automated cell culture system.

Topic: *Characterization of Hyaluronic acid hydrogel as a cell sheet delivery vehicle (Bachelor thesis)* (Mar 2013 – Jun 2014)
- R&D study: Designed the SOPs and pioneered a construction of thermo-responsive hydrogel and optimized the hydrogel stability.

National Taiwan University of Science and Technology (NTUST), Taipei, Taiwan
Undergraduate intern (May 2013 - Jul 2013)
Topic: *Determined the surface tension of several chemicals*
- R&D study: Studied the characterization of chemical droplet.

Publications

Unakulpasvich U, Hatakeyama H, Hirotsu T, di Luccio E, Pancreatic Cancer and Detection Methods, Biomedicines, **2023** Sep 18, doi:10.3390/biomedicines11092557

Boottanun P, Nagai-Okatani C, Nagai M, **Ungkulpasvich U**, Yamane S, Yamada M, Kuno A, An improved evanescent fluorescence scanner suitable for high-resolution glycome mapping of formalin-fixed paraffin embedded tissue sections, Anal Bioanal Chem, **2023** Jul 03, doi:10.1007/s00216-023-04824-2

Ungkulpasvich U, et al., *Capillibacterium thermochitinicola* gen. nov., sp. nov., a novel anaerobic thermophilic chitinolytic bacterium from compost, Int. J. Syst. Evol. Mir, **2021** Mar 16, doi:10.1099/ijsem.0.004693

Chhe C, Uke A, Baramee S, **Ungkulpasvich U**, Tachaapaikoon C, Pason P, Waeonukul R, Ratanakhanokchai K, Kosugi A, Draft genome sequence data of the facultative, thermophilic, xylanolytic bacterium *Paenibacillus* sp. strain DA-C8, Data in Brief, 2021 Jan 19,106784, doi:10.1016/j.dib.2021.106784

Ungkulpasvich U, et al, Symbiotic chitin degradation by a novel anaerobic thermophilic bacterium *Hydrogenispora* sp. UUS1-1 and the bacterium *Tepidanaerobacter* sp. GT38 Enzyme and Microbial Technology, **2020** Dec 29,109740, doi:10.1016/j.enzmictec.2020.109740

Ungkulpasvich U, Uke A, Baramee S, Kosugi A, Draft genome sequence data of the anaerobic thermophilic chitinolytic bacterium strain UUS1-1 belonging to genus *Hydrogenispora* of the uncultured taxonomic OPB54 cluster, Data in Brief, 2020 Nov 14,106528, doi:10.1016/j.dib.2020.106528

Activities/volunteer works

- **Special lecturer in** JICA-Thailand Ministry of Agriculture visit program, Japan (2019)
- **Candidate (Honored award)** in the ideas for Thailand Development contest by Thai Students' Association in Japan (2017)
- **Delegate** at Thailand Youth to Business organized by AIESEC (2013)
- **The president** of International Joy Club in KMUTT (IJC) at King Mongkut's University of Technology Thonburi (2011-2013)

Aikawa S, **Ungkulpasvich U**, et al, Phenotypic characterization and comparative genome analysis of two strains of thermophilic, anaerobic, cellulolytic-xylanolytic bacterium *Herbivorax saccincola*. Enzyme and Microbial Technology. **2020** May 1;136:109517.

Kagihiro M, **Ungkulpasvich U**, et al., Kinetic analysis of cell decay during the filling process: application to lot size determination in manufacturing systems for human induced pluripotent and mesenchymal stem cells. Biochemical Engineering Journal. **2018** Mar 15;131:31-8.

International Conferences and proceedings

Ungkulpasvich U., Kosugi A. Characterization of a Novel Thermophilic Anaerobic Chitinolytic bacterium *Hydrogenispora* sp. UU3. In 2019 7th Asian Conference on Biomass Science (ACBS) 2019 Dec 10

Ungkulpasvich U, Fukumori K, Viravaidya-Pasuwat K, Kino-oka M. Effect of suspension time on growth potential in cryopreservation process of human mesenchymal stem cells. In 2016 9th Biomedical Engineering International Conference (BMEiCON) 2016 Dec 7 (pp. 1-4). IEEE.