



**School of Biological Sciences  
Faculty of Science  
The University of Hong Kong**



**Food & Nutritional Science Major/Minor**

**Dr. Jetty C.Y. Lee**

*Lead Curriculum Coordinator*

*Faculty, Academic & Course Selection Adviser for Food & Nutritional Science*

*Email: [jettylee@hku.hk](mailto:jettylee@hku.hk)*



# Since 1991 First Food & Nutrition Programme Established in Hong Kong



HKU nutrition scientist releases first report on Salt Content in Common Packaged Food Categories in Hong Kong and new food app to help Hongkongers make healthier food choices

Apr 19th 2018



Microwave food is indeed healthy to overturn the idea of causing carcinogenic

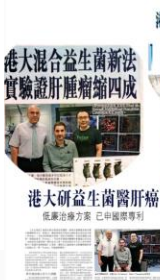
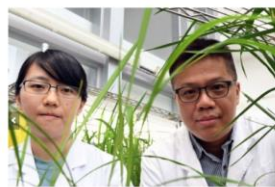
By Lily Ng  
Nov 23rd 2018



Source: Sky Post

Increasing efficiency of cereal straw for biofuel production

May 04th 2017



HKU researchers generate tomatoes with enhanced antioxidant properties by genetic engineering

Nov 09th 2017



**Poor Dietary Habits May Increase the Risk Factors for AMD Development**

By Dr Jetty Chung Yang LL.M., Senior Lecturer of School of Biomedical Sciences

Age-related macular degeneration (AMD) is one of the most common causes of vision impairment among the elderly in Hong Kong. The major symptom involves the gradual blurring of central sight, triggered by the multistage degeneration of retinal cells. As the disease progresses, certain patients with advanced AMD may even require surgical macular translocation laser treatments, causing great loss of vision. In an observational study, we have found AMD patients in Hong Kong were deficient in lipid fat (especially 3-oxo acids and dark green leafy vegetables), and had excessive fat (especially saturated fat) intake in the diet, which increased the risk of developing AMD. The poor dietary habits were also associated with the generation of fatty acid oxidation products (so free radicals), which promoted inflammation and further increased the risk factors for AMD development. It's the first of such research in Asia.

**Food dietary habits**

**Key findings:**

- Omega-6 fatty acid ratio
- Cholesterol

**Lipid metabolism**

- HMG-CoA
- Mevalonate
- HMGCR
- HMGCS1

Photo Release: <https://bit.ly/2T88957>

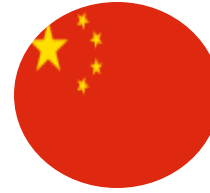
10 JAN 2019

Connection of children to nature brings less distress, hyperactivity and behavioural problems – now measurable with a novel scale developed by HKU scientist

City lifestyle has been criticised for being an important reason for children being disconnected from nature. This has led to an unhealthy lifestyle in regards to active play and eating habits. Even worse, many young...

NEWS DETAIL →





**B.Sc.**  
**in Food & Nutritional Science**  
**Major/Minor at HKU**



**Dr. C.B. Ben Chan**



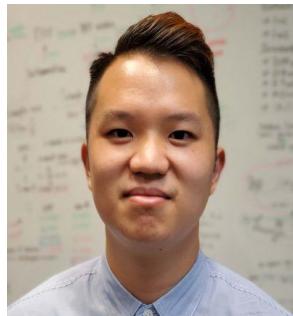
**Dr. Ibis Cheng**



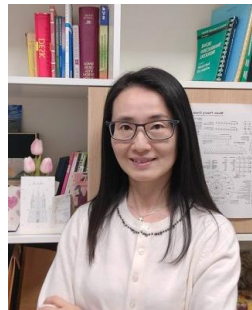
**Dr. Hani El-Nezami**



**Dr. Jetty Lee**



**Dr. Sam Leung**



**Dr. Daphne Wu**



**Dr. Lu Zhang**

# Food Science

TRANSLATE

Security  
Sustainability



# Health Nutrition

## WHAT A MAN NEEDS TO KNOW ABOUT PROSTATE CANCER

Prostate is a walnut-sized gland that located in front of the rectum and below the bladder. It is part of the male reproductive system that produces a thick fluid for semen production. Prostate cancer is resulted from an abnormal growth of the cells in the prostate. However, unlike other types of cancer, for men who diagnosed as having prostate cancer, one-third have a cancer that grows very slowly. [1]



### SYMPTOMS TO BE AWARE OF (5)

### MAJOR RISK FACTORS

## How Much Do You Know about Hepatitis B? What are the mechanisms behind HBV? The food you eat matters!

### Etiology How does it cause? If left untreated...

- A serious liver infection caused by Hepatitis B virus (HBV)
- Acute Hepatitis B- less than 6 months

### Transmission

- Sexual contact-unprotected sex (3)
- Parental transmission:

Hepatitis B is **bloodborne** infectious diseases!

### Risk Factors

- Age > 40/ male (5)
- Family history of cirrhosis and HCC (5)
- Co-infection with HIV (6,7)

## FATTY LIVER -> NAFLD to LIV

### WHAT IS NAFLD

Non-alcoholic fatty liver disease (NAFLD) - a spectrum of liver disorders, with ACCUMULATION OF FAT in liver due to causes other than alcohol use. Extreme NAFLD can further develop to non-alcoholic steatohepatitis (NASH) which may eventually result in liver fibrosis, cirrhosis, liver failure or even LIVER CANCER.

**HOW?** Excess amount of dietary fat will be stored as fat in liver. **FAT BUILT UP**

**HOW THINGS GO SERIC** Excess fat in liver brings oxidative & cause dysfunction of liver cells. **GOT SCAR**

**THE WORST** mechanism is not complete and COMPLICATED but it would-healing processes in our bodies.

## ALCOHOLIC FATTY LIVER DISEASE

Alcoholic fatty liver disease, also known as alcoholic hepatic steatosis, develops when significant amount of fatty acid accumulates in liver, which is due to alcohol consumption. About 90% of all heavy drinkers consume less than 10 percent of their body weight in lean muscle, which may occur after a lifetime of excessive drinking and is accompanied with low or no symptoms. However, it should not be dropped as it could be further developed into hepatitis and fibrosis, which is among the 14 leading causes of death in Hong Kong.

- Risk Factors**
- Consumes 40-50g alcohol/day for 10-12 years\*
  - Genetic predisposes to alcoholism & liver diseases\*
  - Female are twice susceptible than male\*
  - Selection of Hepatitis C intensifies liver injury\*
  - People suffer from already a liver problem have higher risk!

## eat for better breast health

## NUTRITION & BREAST CANCER

### What is Breast Cancer?

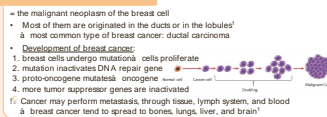
the malignant neoplasm of the breast cell  
 - Most of them are originated in the ducts or in the lobules  
 - Fat most common type of breast cancer: ductal carcinoma

### Prevalence

Breast cancer is one of the most popular cancer, especially in Western and developed countries  
 - Fat both gender:  
 - The 1st leading cancer\*: 2.09 million cases, 627 000 deaths (in 2018)  
 - The 2nd leading cancer\*\* in 4370 cases (13.0%), 712 deaths (5.2%) (in 2018)

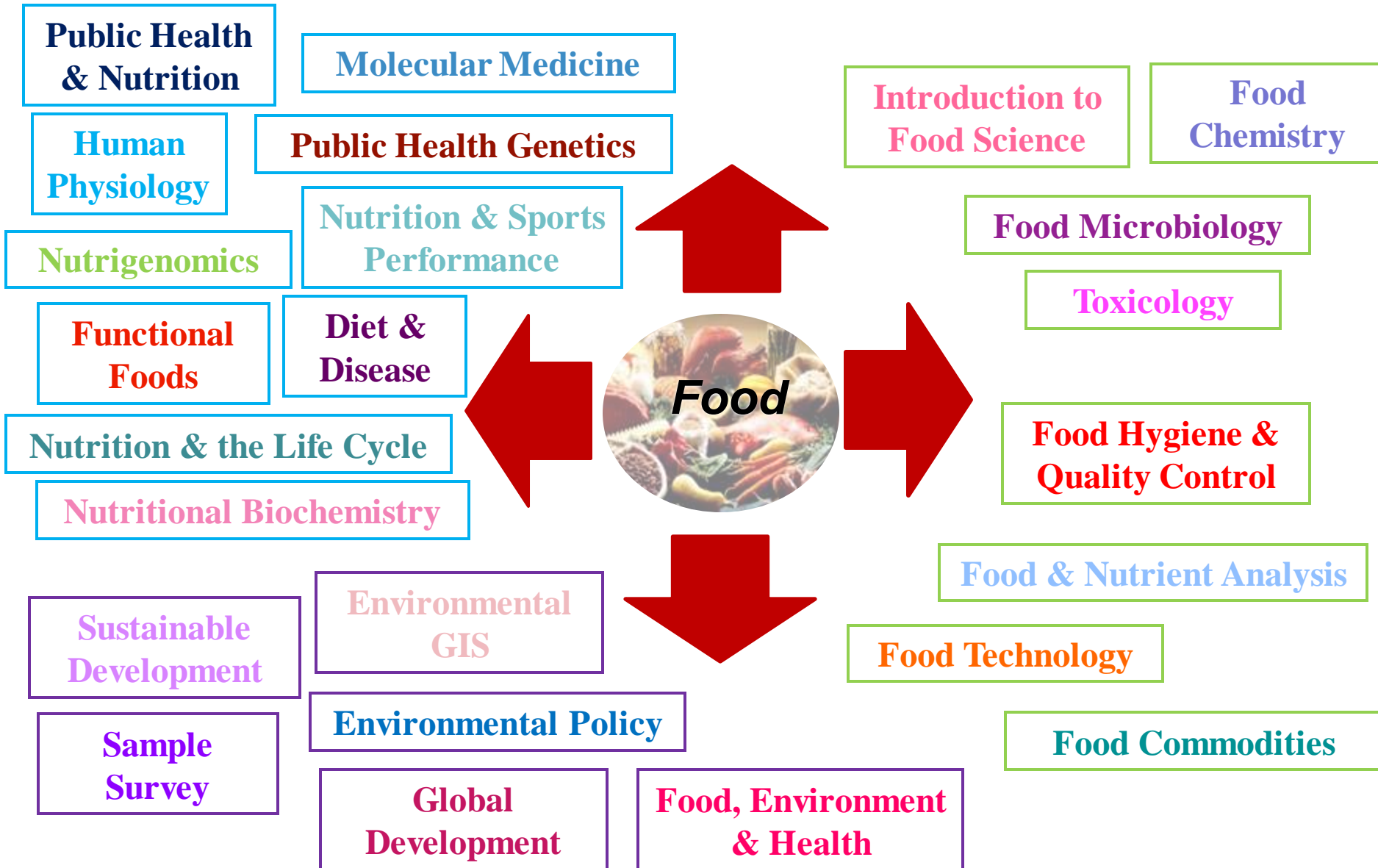


female:male 100:122



Cancer may perform metastasis, through tissue, lymph system, and blood  
 a breast cancer tend to spread to bones, lungs, liver, and brain!

# What do we teach?



# FNS Syllabus (Major)

## COMPULSORY

*Must take all courses*

### 1. Introductory level courses (60 credits)

#### Disciplinary Core Courses: Science Foundation Courses (12 credits)

SCNC1111	Scientific method and reasoning (6)
SCNC1112	Fundamentals of modern science (6)

#### Disciplinary Core Courses (36 credits)

BIOL1110	From molecules to cells (6)
BIOL1201	Introduction to food and nutrition (6)
BIOL2101	Principles of food chemistry (6)
BIOL2103	Biological sciences laboratory course (6)
BIOL2220	Principles of biochemistry (6)

*Take either BIOL2220 or BIOC2600 to fulfill this 36 credits requirement, but not both. BIOL2220 and BIOC2600 are mutually exclusive.*

BIOL2512	Applied statistics in food and nutrition (6)
BIOC2600	Basic biochemistry (6)

*Take either BIOL2220 or BIOC2600 to fulfill this 36 credits requirement, but not both. BIOL2220 and BIOC2600 are mutually exclusive.*

**1 course = 6 credits**

# FNS Syllabus (Major)

## DISCIPLINARY ELECTIVES

*Take 2 courses*

### **Disciplinary Electives (12 credits)**

*At least 12 credits selected from the following courses:*

CHEM1042	General chemistry I (6)
CHEM2442	Fundamentals of organic chemistry (6)
GEOG2013	Sustainable development (6)
GEOG2030	Global development (6)
GEOG2152	Health and medical geography (6)
GEOG2154	Healthy food, place, and sustainability (6)

**1 course = 6 credits**

# FNS Syllabus (Major)

## Advanced level: COMPULSORY

*Must take all courses*

### **2. Advanced level courses (30 credits)**

#### **Disciplinary Core Courses (12 credits)**

BIOL3202

Nutritional biochemistry (6)

BIOL3203

Food microbiology (6)

**1 course = 6 credits**



# FNS Syllabus (Major)

## Advanced level: ELECTIVES

*Choose 3 courses (two must be BIOL3XXX and/or BIOL4XXX)*

### **Disciplinary Electives (18 credits)**

*At least 12 credits of advanced level BIOL3XXX and/or BIOL4XXX course from the list below:*

BIOL3204	Nutrition and the life cycle (6)
BIOL3205	Human physiology (6)
BIOL3207	Principles of toxicology (6)
BIOL3209	Food and nutrient analysis (6)
BIOL3211	Nutrigenomics (6)
BIOL3216	Food waste management (6)
BIOL3217	Food, environment and health (6)
BIOL3218	Food hygiene and quality control (6)
BIOL3606	Diet and disease (6)
BIOL3608	Food commodities (6)
BIOL4201	Public health nutrition (6)
BIOL4202	Nutrition and sports performance (6)
BIOL4205	Food technology (6)
BIOL4209	Functional foods (6)
BIOL4411	Plant and food biotechnology (6)
BIOC3606	Molecular medicine (6)
STAT3617	Sample survey methods (6)
GEOG3202	GIS in environmental studies (6)
POLI3121	Environmental policy (6)
BBMS4004	Public health genetics (6)

**1 course = 6 credits**

## **We endorse your strength**

### **Specialization Certificate** (*issued by School of Biological Sciences*)

#### **Specialization areas:**

- **Nutrition and Public Health:** help students to prepare for further studies or career related to dietetics, public health and/or nutrition.

*Indicates your strength as a nutritionist for a community.*

- **Food Security:** interdisciplinary studies on global development related to food, environment, health and sustainability.

*Indicates your strength as a potential advisor, stakeholders and/or contributor in global policy.*

# FNS Syllabus (Major)

## Specialization

4. Those who want to specialize in the Nutrition and Public Health Studies should pass the following course:  
Introduction level courses - 2 Disciplinary Core Courses: Science Foundation: SCNC1111 and SCNC1112; 6  
Disciplinary Core Courses: BIOL1110, BIOL1201, BIOL2101; BIOL2102, BIOL2103, BIOL2220 or BIOC2600;  
2 Disciplinary Electives: CHEM1042 and CHEM2442.

Advanced level courses - 2 Disciplinary Core Courses: BIOL3202 and BIOL3203; any 3 Disciplinary Electives  
with at least 2 must be at BIOL3XXX and/or BIOL4XXX in the list: BIOL3204, BIOL3205, BIOL3207,  
BIOL3209, BIOL3211, BIOL3217, BIOL3606, BIOL4201, BIOL4202, BIOL4209, BIOC3606, STAT3617, and  
BBMS4004.

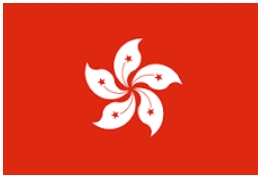
Capstone requirement: any 1 Capstone Course: BIOL3992, BIOL4922, BIOL4962, and BIOL4992.

5. Those who want to specialize in the Food Security Studies should pass the following course:  
Introduction level courses - 2 Disciplinary Core Courses: Science Foundation: SCNC1111 and SCNC1112; 6  
Disciplinary Core Courses: BIOL1110, BIOL1201, BIOL2101; BIOL2102, BIOL2103, BIOL2220 or BIOC2600;  
2 Disciplinary Electives: GEOG2013, GEOG2030, GEOG2152 and GEOG2154.

Advanced level courses - 2 Disciplinary Core Courses: BIOL3202 and BIOL3203; any 3 Disciplinary Electives  
with at least 2 must be at BIOL3XXX and/or BIOL4XXX in the list: BIOL3207, BIOL3216, BIOL3217,  
BIOL3218, BIOL3606, BIOL3608, BIOL4201, BIOL4205, BIOL4209, BIOL4411, GEOG3202, POLI3121;  
STAT3617, and BBMS4004.

Capstone requirement: any 1 Capstone Course: BIOL3992, BIOL4922, BIOL4962, and BIOL4992.

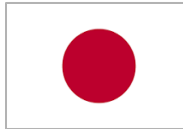
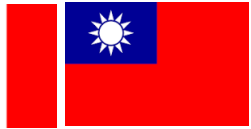
It is **NOT** written in HKU transcript. School of Biological Sciences (SBS) will issue a certificate of specialization when you complete your BSc in FNS



# FNS CAPSTONE



- Project (Final year and directed studies)
- Internship (hospital, food companies, NGO, field course research, nutrition consultancy, quality assurance); University of British Columbia (UBC)



# FNS Syllabus (Minor)

## COMPULSORY *Choose 2 courses*

### Required courses (36 credits)

#### 1. Introductory level courses (12 credits)

#### Disciplinary Electives (12 credits)

*At least 12 credits selected from the following courses:*

BIOL1110	From molecules to cells (6)
BIOL1201	Introduction to food and nutrition (6)
BIOL2101	Principles of food chemistry (6)
BIOL2220	Principles of biochemistry (6)

BIOC2600	Basic biochemistry (6)
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Take either BIOL2220 or BIOC2600 to fulfill this 12 credits requirement, but not both. BIOL2220 and BIOC2600 are mutually exclusive.

Take either BIOL2220 or BIOC2600 to fulfill this 12 credits requirement, but not both. BIOL2220 and BIOC2600 are mutually exclusive.

**1 course = 6 credits**

# FNS Syllabus (Minor)

## Advanced level: ELECTIVES

*Choose 4 courses*

### 2. Advanced level courses (24 credits)

#### Disciplinary Electives (24 credits)

*At least 24 credits selected from the following courses:*

BIOL3202	Nutritional biochemistry (6)	
BIOL3203	Food microbiology (6)	
BIOL3204	Nutrition and the life cycle (6)	
BIOL3205	Human physiology (6)	
BIOL3207	Principles of toxicology (6)	[previous title: Food and nutritional toxicology (6) ]
BIOL3209	Food and nutrient analysis (6)	
BIOL3211	Nutrigenomics (6)	
BIOL3216	Food waste management (6)	
BIOL3217	Food, environment and health (6)	
BIOL3218	Food hygiene and quality control (6)	
BIOL3606	Diet and disease (6)	
BIOL3608	Food commodities (6)	
BIOL4201	Public health nutrition (6)	
BIOL4202	Nutrition and sports performance (6)	
BIOL4205	Food technology (6)	[previous title: Food processing and engineering (6) ]
BIOL4209	Functional foods (6)	
BIOL4411	Plant and food biotechnology (6)	

**1 course = 6 credits**

**NO SPECIALIZATION**

# Food & Nutritional Science Laboratory

## The Kadoorie Biological Sciences Building

- FNS Teaching Laboratory (1/F)
- Kitchen & Nutrition Room (5/F)
- Analytical Laboratory (5/F)



*Analytical Laboratories*



*Kitchen*

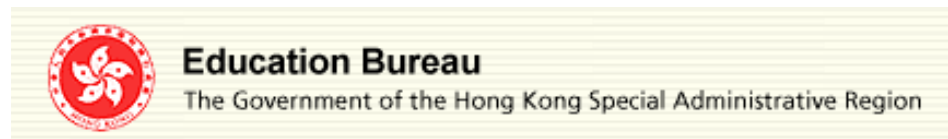


*Teaching Laboratories*



*Human Nutrition*

# Jobs (Past Graduates)





# Jobs

- Manufacturing
- Marketing
- QA/QC
- R&D
- Food Services (e.g. hotels, restaurants, catering)
- Logistics
- Procurement
- Nutritionists
- Health Inspectors
- Clinical Trial Unit
- Hospital Laboratory Technicians
- Research Laboratory
- Biotechnology
- e-Retail
- Entrepreneur



# We GUIDE Students to a Career Path

## ***Disciplinary core courses***

- 6 Foundation courses

## ***Disciplinary electives***

- 2 Courses (depends on Specialization)

## ***Advanced Disciplinary electives***

- Food microbiology
- Nutritional biochemistry

## ***Advanced disciplinary electives***

- Principles of toxicology
- Food hygiene and quality control
- Food and nutrient analysis
- Food microbiology
- Food technology

## ***Capstone***

- Internship e.g. quality assurance, quality control



- ***Quality control/quality assurance***
- ***Hygiene inspector***
- ***Food safety***
- ***HACCP auditor license***

# We GUIDE Students to a Career Path

## ***Disciplinary core courses***

- 6 Foundation courses

## ***Disciplinary electives***

- 2 Courses (depends on Specialization)

## ***Advanced Disciplinary electives***

- Food microbiology
- Nutritional biochemistry

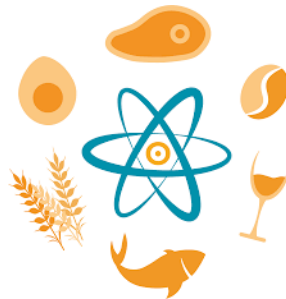
## ***Advanced disciplinary electives***

- Principles of toxicology
- Functional foods
- Food commodities
- Food technology
- Food and nutrient analysis
- Sample survey methods

## ***Capstone***

- Internship in food product development and evaluation

Top Best **Lee Kum Kee** Sauce  
Reviews



- ***Product development in industry***
- ***Research and analytical laboratory e.g. HKBiotek, SGS, Prenetics***

# We GUIDE Students to a Career Path

## *Disciplinary core courses*

- 6 Foundation courses

## *Disciplinary electives*

- 2 Courses (depends on Specialization)

## *Advanced Disciplinary electives*

- Food microbiology
- Nutritional biochemistry

## *Advanced disciplinary electives*

- Principles of toxicology
- Food, health and environment
- Food technology
- Healthy food, place and sustainability
- Sustainable development

## *Capstone*

- Internship in ESG related industry

**TINDLE™**



**GREEN**  
HOSPITALITY



- *Food and ESG*
- *Green industry*

# We GUIDE Students to a Career Path

## Dietitian (HKUSPACE, Australia, UK)

### *Disciplinary core courses*

- 6 Foundation courses

### *Disciplinary electives*

- 2 Courses (depends on Specialization)

### *Advanced Disciplinary electives*

- Food microbiology
- Nutritional biochemistry

### *Advanced disciplinary electives*

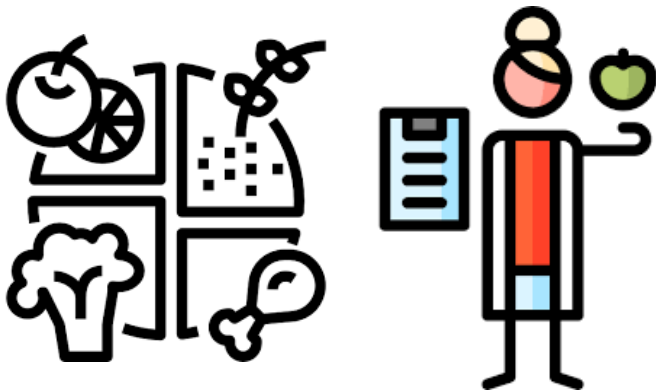
- Nutrition and the life cycle
- Human physiology
- Molecular medicine
- Diet and disease
- Public health and nutrition

### *Additional elective courses (not in the curriculum)*

- 3 Courses

### *Capstone*

- Final Year Project
- Food and nutritional science internship e.g. public health, community nutrition, health company, hospital authority, NGO





What is **desirable** to users?

What is **possible** (to the community) with technology?

**INNOVATION**

What is **viable** (nutrition & health) to the marketplace?



**Encourage Undergraduates to research: Innovation & Entrepreneurship**

Clean label product examples



VitaSoy Botanix Dr. Soya  
New: Black Soy Drink  
(Singapore, Feb 2015)  
Claims: Features: Made with non-genetically engineered soybeans.



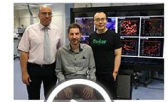
Nature's Cuppa Organic Ceylon Tea (Malaysia, Mar 2015)  
Claims: Features: Unbleached, organic, non-GMO, fair trade.



Owl Nutrifield Soy Deacidified Flaxseed (Singapore, Apr 2015)  
Claims: Features: Non-GMO, organic.

News HKU News

HKU develops "Prohep" that may offer potential therapeutic effects on liver cancer  
港大醫學者研發對肝癌具潛在療效的"Prohep"質成為低成本治療方案



A research team led by Dr. Hari El-Nezami and Dr. Gianni Panagiotou, of the HKU School of Biological Sciences, in collaboration with the HKU Li Ka Shing Faculty of Medicine and the School of Medicine, University of Eastern Finland, develops a novel probiotic mixture "Prohep" that may have potential therapeutic effects on Hepatocellular carcinoma. The findings have been published in the Proceedings of the National Academy of Sciences (USA), a top international journal.

由港大生物系的Hari El-Nezami博士及Gianni Panagiotou博士領導的科研團隊，與東芬蘭大學醫學院及東芬蘭大學醫藥系合作，研發出一種對肝癌具有潛在治療效的益生菌Prohep。有望成為治療肝癌的一種低成本方案。Prohep的成否在國際權威期刊《美國科學院院刊》中發表，以及與國際醫學界產生相互作用。研究成果已刊登於國際權威期刊《美國科學院院刊》。

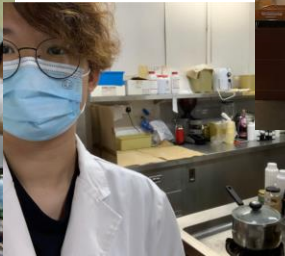


# SBS have undergraduates from local and international cities

## Undergraduates' Life at SBS FNS



**Student-Teacher Interaction**



**Innovation**



**University of Hong Kong students turn Food waste into dog toothpaste through upcycling competition**

- Food Waste to Good Taste! innovation programme challenged science students to rethink how to use food scraps for new products
- Winning invention, Upcyclists, is a toothpaste for dogs made from shrimp shells, carrot peels and pork bone

by Andee Capellan | Published: 15:13pm, 23 Jun, 2023

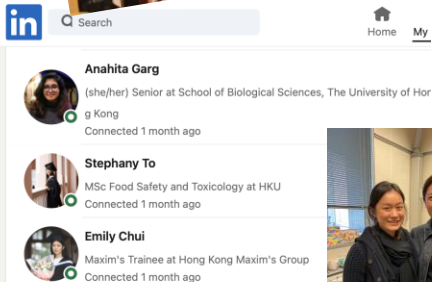
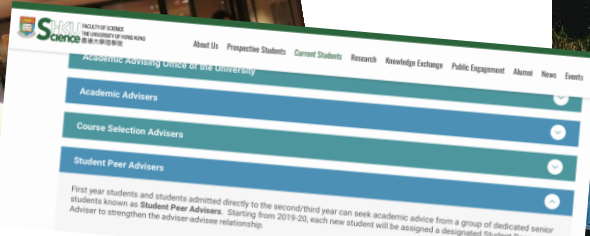
**Experiential Learning**



# Undergraduates of FNS Students: We CONNECT

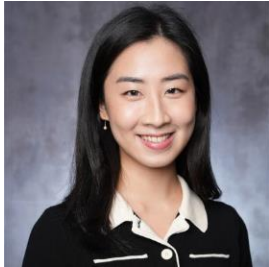


>650 group members  
since 2015 (current  
and former students)





# FNS Alumni



Marlie Hung  
Class of 2022  
2022 Accepted PgD  
(Dietetics)  
HKUSPACE



Tiffany Fong  
Class of 2022  
2022 Accepted PgD  
(Dietetics)  
HKUSPACE



Max Chuen  
Class of 2022  
2022 Accepted MSc  
(Dietetics) UCL



Everest Tsang  
2021 HKU BSc in FNS  
and Doctor of  
Veterinary Medicine  
University of Melbourne



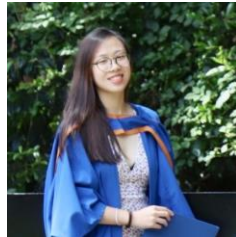
Lotte Lee  
Class of 2021  
Corporate  
Management Trainee  
at Jardine Restaurant  
Group



Anahita Garg  
Class of 2021  
PG, Master of Food  
Science, Cornell  
University



Dorothy Yeung  
Class of 2020  
Labcorp Drug Development  
Nutrition Blogger



Vivien Cheung  
Class of 2019  
Dietitian  
Eating Disorder Research  
Officer Australia



Lysander Yuen  
Class of 2019  
Marketing Manager at Cathay  
Pacific Catering Services



Miu Miu Lam  
Class of 2018  
Nutrition Education



Yi Lun Leung  
Class of 2017  
Plant Research,  
Farmacy HK



Harry Yau  
Class of 2017  
PhD Scholar  
National University of  
Singapore



Samuel Chan  
Class of 2016  
3M Account Manager (Medical  
Solutions Division)



Chaucer Ma  
Class of 2015  
Mills Fabrica  
Digital Marketing



Amy Lau  
Class of 2013  
New Product and  
Process Development  
Specialist at Nestlé



Dr Victoria Wong  
Class of 2010  
Genetic Technologist  
NHS, UK



Dr Jimmy Louie PhD  
AdvAPD FRSPH  
Class of 2004  
Associate Professor  
Australia

thank  
you



**Dr. Jetty C. Y. Lee**

*Email: [jettylee@hku.hk](mailto:jettylee@hku.hk)*