

# 食品暨應用生物科技學系

## 教育目標

本系秉持「食品與傳統，生技創潮流」之核心理念，訂定教育目標為「培育食品加工及工程之人才、培育保健營養與食品化學之人才、培育食品微生物與生物技術之人才」；期能在傳統食品科技基礎上融入現代生物科技，引領風潮，作育英才。

## 課程規劃

本系設有學士班、碩士班、碩士在職專班及博士班，在課程規劃上依教師專長領域提供各班別學生於食品加工工程、保健營養、食品化學、食品微生物及生物技術等相關專業課程。於學士班落實學生具基礎食品專業知識，並注重學生專業技術與獨立操作能力之培養；於碩士（專）班及博士班，除提供學生於專業領域更深入的訓練外，更加強學生邏輯思考與辨正，建立獨立思考及解決問題之能力。

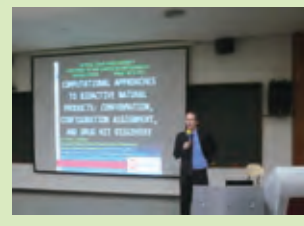
## 主要研究領域

本系共有17位專任教師，依專長分三大研究群。

- ◆**食品加工及工程研究群**：食品乾燥、微膠囊化；食品流變學、食品水合膠、澱粉；穀類加工與產品研發、蔬果加工與產品研發、微膠囊載體技術開發與應用；極微生材加工、生材分離技術、微波加熱、食品工程；食品病原菌與食品過敏原快篩試驗的建立、中草藥微奈米化技術的開發與功能性評估。
- ◆**保健營養與食品化學研究群**：食品活性成分保健機能特性、健康促進效應及疾病預防、食品加工過程中食品衛生安全及品質改進之研究；植化素之抗氧化、抗老化及抗癌作用；食藥用菇類機能性產品製備與生理功能之探討；中草藥抗病原菌及病毒之活性及作用機轉、活性成分之分離及分析；利用食品與營養有效成分改善免疫缺失疾病；保健食品研發、膳食纖維；代謝物分析、食物活性成分對轉甲基代謝路徑之影響、營養與遺傳變異之交互作用。
- ◆**食品微生物與生物技術**：利用微生物生產機能性成分、離子液體及超音波技術於生質分解之應用、乳酸菌新機能研究、保健食品之開發；應用微生物及發酵學、發酵保健食品；乳酸菌益生作用之研究；安全級/食品級微生物蛋白生產平台、基因工程改造酵素及蛋白質；整合生物技術及晶



▲生物化學實習  
Biochemistry Lab.



▲食生講座邀請國外學者專題演講  
Specific Lecture on Food Science and Biotechnology.



▲食品加工學實習  
Food Processing Lab.



▲校外教學參訪泰山企業  
Field Trip to Taisun Enterprise Co., Ltd.

片技術、製作及設計生物晶片；設計蛋白質（酵素）使具有可控制之活性與穩定性、研究藥物或營養等小分子對蛋白質的影響、建立蛋白質體學廣效的功能性分析方法。

## 教研成果

本系教師在學術研究成果上表現優異，近五年（99~103年）共發表研究論文273篇，五年內每位教師平均發表2.9篇SCI論文；研討會論文409篇；國內外專利48件。此外，103年本系共有3位教師之5篇國際期刊論文被列為高引用論文；每年均有多位教師榮獲校內「研究績優獎」。

98~104年本系獲彈性薪資獎勵教師共計26人次，目前共計有1位講座教授、7位特聘教授。近五年本系教師於國際及校外研究表現優異，榮獲許多獎項，其中國際獎項計2人次，包括顏國欽教授榮獲「2015美國食品科技學會會士」及蔣恩沛教授榮獲美國營養學會「年輕學者研究獎項 - E.L.R. Stokstad Award」；校外獎項共計9人次。

於學生學習表現上，近幾年本系學生於公職考試、食品技師及營養師等國家級證照考試均有傑出表現。此外，參與兩岸及國內競賽以及國內外研討會發表論文等亦有許多獲獎紀錄。

本系畢業之系友於產官學領域之發展十分傑出，96年迄今，本系推薦之系友共有14位獲選為傑出校友，表現相當優異。

The educational goal of the department is to combine food processing with biotechnology for innovations in the food industry and scientific research. For this purpose, three main educational fields have been developed: Food Processing and Engineering, Health and Nutrition and Food Chemistry, Food Microbiology and Biotechnology. The faculty is dedicated to guiding students to develop sound knowledge and in training them for their future career.

## Curriculum

The department offers competitive programs with degrees of the Bachelor of Science (BS), Master of Science (MS), and Doctor of Philosophy (PhD) in food science and biotechnology. Based on the faculty's expertise, the department provides a broad curriculum that includes food processing and engineering, health and nutrition, food chemistry, food microbiology, and biotechnology. For undergraduate students, we focus on training students with fundamental knowledge in food science. We also help students develop professional skills and a solid ability for problem solving. For graduate students, the department offers advanced knowledge and training, and assists with logical thinking and discrimination to develop skills for students to conduct independent research.

## Research Fields

The department has 17 permanent faculty members in three research groups based on their respective expertise.

### ◆ Food Processing and Engineering Group :

Food dehydration, Microencapsulation, Food rheology, Food hydrocolloids, Starch, Cereal processing and product research and development (R&D), Fruit and vegetable processing and product R&D, Development and application of the microencapsulation carrier technique, Minimal bioresources processing, Bioseparation technology, Microwave heating, Food engineering, Rapid assays for detecting food pathogens and allergens, and Microfabrication and nanofabrication of Chinese medicines with functional evaluation.

### ◆ Health and Nutrition and Food Chemistry Group :

Functional characteristics, Health promotion and disease prevention of food bioactives, in vitro and in vivo antioxidants, Anti-aging agents, Anticancer research on phytochemicals, Study on the preparation of functional products with edible and medicinal mushrooms and their physiological functions, Bioactivity and mechanisms of medicinal

plants against pathogens and viruses, Active compound isolation and analysis, Improvement of immunodeficiency diseases by effective components in foods and nutrition, Functional food development, Dietary fiber, one-carbon metabolism, Metabolite analyses, and Transmethylation kinetics.

### ◆ Food Microbiology and Biotechnology Group:

Functional ingredients from microorganisms, Application of ionic liquid and ultrasound technology to biomass degradation, New functionality of lactic acid bacteria, Development of health foods, Fermentation, Functional fermented foods, Probiotic effect of lactic acid bacteria, Generally Recognized as Safe grade/Food grade protein expression systems, Genetic and protein engineering of enzymes and proteins, Integration of a microfluidic platform and biotechnology for developing biochips, Design of proteins (or enzymes) with controllable activity and stability, Study of the interactions between proteins and ligands (including drugs or nutrients), Development of proteomic wild analysis methods on protein functions.

## Achievements

Our faculty members have demonstrated excellent performance in scientific research. In the last 5 years, 273 research publications, 409 conference articles, and 48 national and international patents have been published. In 2014, three members published five highly cited papers in international journals. Each year, several teachers have earned the award for outstanding research performance from NCHU.

Between 2009 and 2015, our department received awards for flexible salary credits 26 times. At present, the department has one Chair Professor and seven Distinguished Professors. In the last 5 years, two faculty members have earned international awards: Dr. Yen Gow-Chin won the IFT Fellow, and Dr. Chiang En-Pei won the ELR Stokstad Award. In addition, nine more professional awards from other universities were won by our faculty members.

Students from the department have also performed well in these years. They performed outstandingly in national exams, including public examinations for government positions, food technician certification, and dietitian examination. Students have also displayed remarkable abilities by winning professional recognitions in both national and international conferences. Finally, our alumni have prominent achievements in academia and industry and government services. From 2007 to date, 14 alumni have been elected as outstanding alumni from NCHU.