

(1) Biochemistry 生物化學

生物化學是一門在分子層面上研究和揭示生命現象的科學。課程範圍廣泛，內容包括生物分子代謝及調控、生命程序、分子生物學、蛋白質與酶、腫瘤學、臨床生物化學、內分泌學、免疫學及神經科學。這些研究所累積的知識，已廣泛應用於醫學、生物科技、工業和日常生活之中。我們的課程和實驗課，旨在加強同學研究和實驗技巧之訓練。同學亦可參與本地及海外的暑期研究或實習工作，小組研究項目，並須在畢業前選擇專題實驗研究。

Biochemistry is a branch of science that investigates, at the molecular level, the chemical compounds and processes that occur in living organisms. The curriculum encompasses the study of the metabolism of biomolecules and its regulation, life processes, molecular biology, enzymes and proteins, cancer development, clinical biochemistry, endocrinology, immunology and neuroscience. The knowledge procured from research in these areas has found extensive applications in medicine, the biotechnology industry and our daily lives. The curriculum is also designed to enhance students' research and experimental skills. Students are also given internship and research opportunities, including local and overseas summer research programme and training of team research skills.

(2) Biology 生物學

生物學是廿一世紀經濟及社會發展的主要動力。課程的使命是為社會創造及傳授知識，培育明日科學之星，以及訓練全才的公民。課程以科研及教育並重。我們提供了廣泛的學科項目，涉及生物多樣性、生態學、遺傳學，以及生理學和生物工程。在科研方面，生物課程之「植物及真菌生物科技」科研計劃獲香港大學教育資助委員會確認為卓越學科領域，給予重點資助；且應用嶄新科技，並通過與國內外科研機構合作。這個科研計劃對農業及健康課題進行重點攻關，其中稻米品質的研究獲邀參與國家水稻功能基因組國家重大科研項目。海洋生物科技亦被確認為中大策略性研究項目，李福善海洋科學研究中心有設備完善的教學及研究實驗室，研究重點包括：經濟魚、蝦類之生理、生化及分子生物學，以及浮游生物和珊瑚礁的生態等

Biology is the main engine driving economic and social developments in the 21st Century. The programme's mission is to generate and transfer knowledge, cultivate future star scientists, and train all-round citizens for our society. It places emphasis on both research and education. We provide a wide range of training from biodiversity, genetics, ecology, to biotechnology and physiology. The programme has received major funding support from the University Grants Committee, and is recognised as an Area of Excellence (AoE) in Plant and Fungal Biotechnology. In collaboration with major national and international scientific institutes, the Department's AoE centre tackles major agricultural and health problems using state-of-the-art technologies. Through the AoE centre, the

programme also participates in China's national rice functional genomics programme and is responsible for improving seed quality. At the University level, the Marine Biotechnology research programme is also recognised as one of the strategic research areas of CUHK. The Simon F S Li Marine Science Laboratory is equipped with full-fledged research and teaching laboratories. Current research is focused on the physiology, biochemistry and molecular biology of marine animals, particularly fish and shrimp, in relation to fisheries and agriculture and the biology and ecology of planktonic and coral reef organisms.

(3) Cell and Molecular Biology 細胞及分子生物學

隨著人類及多種不同生物基因組計劃的相繼完成，現代生物學的重點正迅速轉移至功能基因組學，重點在於透過分子、細胞及個體的層面去認識基因的功能。因此，細胞生物學和分子生物學迅速成爲了現代生命科學及生物醫學的兩大關鍵基礎領域。環顧世界，這亦大大增加了學術和產業界對從事這項領域工作的人才需求。作爲本地區唯一專著於細胞生物學和分子生物學的課程，香港中文大學細胞及分子生物學課程自成立開始就立志發展成爲一個得到國際認可的教育和研究中心。我們的課程十分重視當今生命科學和生物醫學領域中最活躍的前沿學科，包括細胞結構及功能、幹細胞生物學、癌細胞生物學、神經細胞生物學、細胞信號傳導、發育生物學以及生物信息學及等。

中大細胞及分子生物學課程的畢業生不僅具備堅實和全面的細胞及分子生物學的知識，而且具有豐富的實驗研究經驗和各種溝通交流技巧，從而可以勝任現代生命科學的各種相關職業。本課程在設計過程中，以大學提出的新教育方針爲準繩，採用有別於傳統學科知識傳授，以學習成果爲本位的教學方法。這樣的教學改革使得畢業生除了擁有與學科有關的專業知識，同時具備各種綜合能力及技巧，從而有助於畢業後在不同領域的工作發展。

With the completion of genome projects in humans and an increasing number of different organisms, the focus of modern biology is quickly shifting to functional genomics which aims at understanding the functions of genes at molecular, cellular, and organism levels. Cell biology and molecular biology thus become the two most critical foundations of contemporary life sciences and biomedicine, and this generates an increasing global demand for personnel in these fields. As the only programme focusing on cell and molecular biology in the region, the Cell and Molecular Biology (CMB) Programme aims to become a regional education centre with international recognition and a premier research hub for cutting-the-edge researches in the areas of cell biology and molecular biology with particular emphasis on the aspects of structural biology, stem cell biology, cancer cell biology, neuronal cell biology, signal transduction, developmental biology, and bioinformatics.

Upon graduation, CMB graduates will have acquired solid and comprehensive knowledge in the fields of cell and molecular biology and have also been well trained in performing scientific research with essential laboratory and communication skills, which are highly applicable to any careers in modern life sciences. With the education focus of the university evolving from traditional subject knowledge-based teaching and learning towards outcome-based approach (OBA), we have designed and developed a unique curriculum with built-in assurance for training our graduates to be broad-minded with a wide range of generic skills and capabilities in addition to the professional knowledge, which assures their success in any professions they pursue after graduation..

(4) Environmental Science 環境科學

環境科學是一門綜合性科學，內容主要涉及應用生物化學、生物學及化學的知識及技能，來理解、測量、評估及改善各種環境問題。本課程的基礎科目包括環境科學所需的生物化學、生物學及化學基本知識。此外，本課程亦提供環境化學及儀器分析技術、環境影響評估、污染監測、毒理及環境健康和生物保育等課題，以增進同學們對環境科學各方面的認識，進而在專門項目上，例如污染監測防治、毒理學、環境保育、資源運用及廢物處理等，作更深入的鑽研。畢業前，學生亦可以在導師指導下，選擇進行環境科學各專題的研究，包括再生能源、污染控制和監測、等，以加強他們在環境科學研究上的經驗和發表科研報告的能力。此外，課程亦提供暑期實習和很多不同型式的野外考察，以加強同學在課室以外的學習經歷。

Environmental Science is an integrated science that involves the use of the knowledge and skills of applied biochemistry, biology and chemistry to test, assess and resolve environmental problems. The programme's basic courses cover the fundamentals of biochemistry, biology and chemistry. Subjects such as environmental pollution and toxicology, environmental instrumentation techniques, environmental impact assessment, and the principles of environmental management and pollution control are taught in senior years to provide students with an all-round training in environmental science. The curriculum prepares students for further studies and careers in environmental chemistry and instrumentation techniques, environmental impact assessment, pollution monitoring, toxicology and environmental health, and conservation biology in the business, government and green groups. Students can also choose to conduct supervised research in a special environmental science area of their choice, from renewable energy research to pollution control or monitoring study, etc., thereby strengthening both their knowledge in environmental sciences and ability to write research reports. Summer internship and various field trip opportunities are also provided to enrich the outside of the classroom experiences of our major students.

(5) Food and Nutritional Sciences 食物及營養科學

食物及營養科學課程研讀範圍廣泛，包括食品與人類營養及健康之關係、食品安全、食品微生物學、食品保存、研發、成份分析及品質管理等。本課程之內容可概分為食品科學及營養學兩部分，由淺入深，循序漸進地向學生介紹食品科學和營養學的專業知識和實驗技術。學生先修讀食品及營養的導論科目及基礎科目如人體生理學、遺傳學、微生物學、生物化學細胞學、生物化學等課程，以增強修讀食品科學及營養學專修科的能力及興趣；其後，學生選讀與食品科學及營養學有關之專門科目，及可在老師指導下進行有關之「專題研究」，以進一步加強對食品科學及營養學的專業知識。

The curriculum covers food and nutrition, food safety, food microbiology, food preservation, food product development, food analysis and food quality assurance etc. The two integrated components of the programme, food science and nutritional science, systematically familiarise students with professional and practical knowledge of both fields. In addition to introductory food and nutritional science courses, students initially take fundamental courses on human physiology, genetics, microbiology, the cellular basis of biochemistry and the fundamentals of biochemistry etc. in preparation for later more in-depth study of food and nutritional sciences. They can then choose from a range of specialised food and nutritional sciences courses and conduct directed research on a relevant topic under the supervision of a lecturing staff member.

(6) Molecular Biotechnology 分子生物技術學

分子生物技術學是一個跨學科的領域，它在包括醫療、農業、環境和能源等世界重大的問題上，帶來了深遠的影響。分子生物技術學課程的目標是為學生裝備這領域的基礎知識，以及為他們培育一個視野，明白基礎科學的發現如何能轉化為重要的應用。

我們的課程是建基於生物化學、細胞學、遺傳學和遺傳工程學的堅實基礎上。學生通過兩門特定的實驗課，獲得基因和蛋白質技術的操作經驗。核心課程要求學生對動物生物技術學、植物生物技術學和微生物生物技術學有整體的認識，並會討論分子生物技術學在社會及經濟方面的課題。此外，我們為學生提供大量選修課，讓他們可以選擇一些特別的課題深入探討。合資格的學生會有交流和實習的機會。

畢業班的同學需要進行實驗或文獻研究的專題探究。參與實驗專題探究的同學可以在來自生命科學學院、醫學院或生物醫學工程課程的一位教授的實驗室中進行研究。這部份的目標是幫助學生培養自學的能力，檢視所學到的知識並予以應用。

Molecular biotechnology is an interdisciplinary field that has brought profound impacts to global issues of our world, including medicine, agriculture, environment, and energy, etc. Molecular Biotechnology Program aims to equip students with the fundamental knowledge of this field and cultivate a vision on how findings of basic sciences can be translated into important applications.

Our curriculum builds on a solid foundation of biochemistry, cell biology, genetics, and genetic engineering. Hands-on skills in DNA and protein technologies will be acquired via two tailored-made laboratory courses. Our core curriculum requires student to have a holistic view on animal biotechnology, microbial biotechnology, and plant biotechnology. The social and economic aspects of biotechnology will also be discussed. In addition, there will be a large array of elective courses for the students to choose from, which will allow the students to go deep into some special topics of their choice. Exchange and internship programs will be available to qualified students.

An experimental or literature project is set to be a requirement for final year students. Those taken experimental research projects will have a chance to perform research in the laboratory of a professor from School of Life Sciences, Faculty of Medicine, and Program of Biomedical Engineering. This part aims to help the students to develop an ability of independent learning and recap their knowledge and put them to practice.