



Bachelor of Science (BSc) in

Molecular Biology & Biotechnology

Dr. Karen Yuen

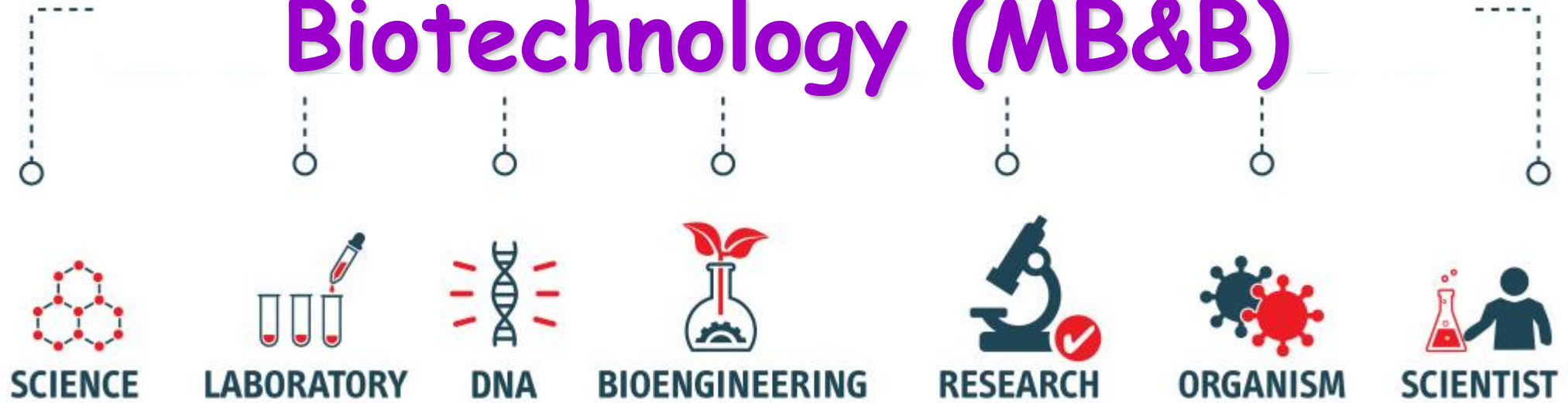
Associate Professor

MB&B Program Coordinator

School of Biological Sciences

The University of Hong Kong

HKU Molecular Biology and Biotechnology (MB&B)



- Specialized training in state-of-the art molecular and cell biology
 - gain an understanding of cutting-edge biotechnological applications
 - hands-on laboratory trainings and experimental based projects
- translation of basic knowledge into modern industrial and medical applications

HKU School of Biological Sciences

Kadoorie Biological Sciences Building

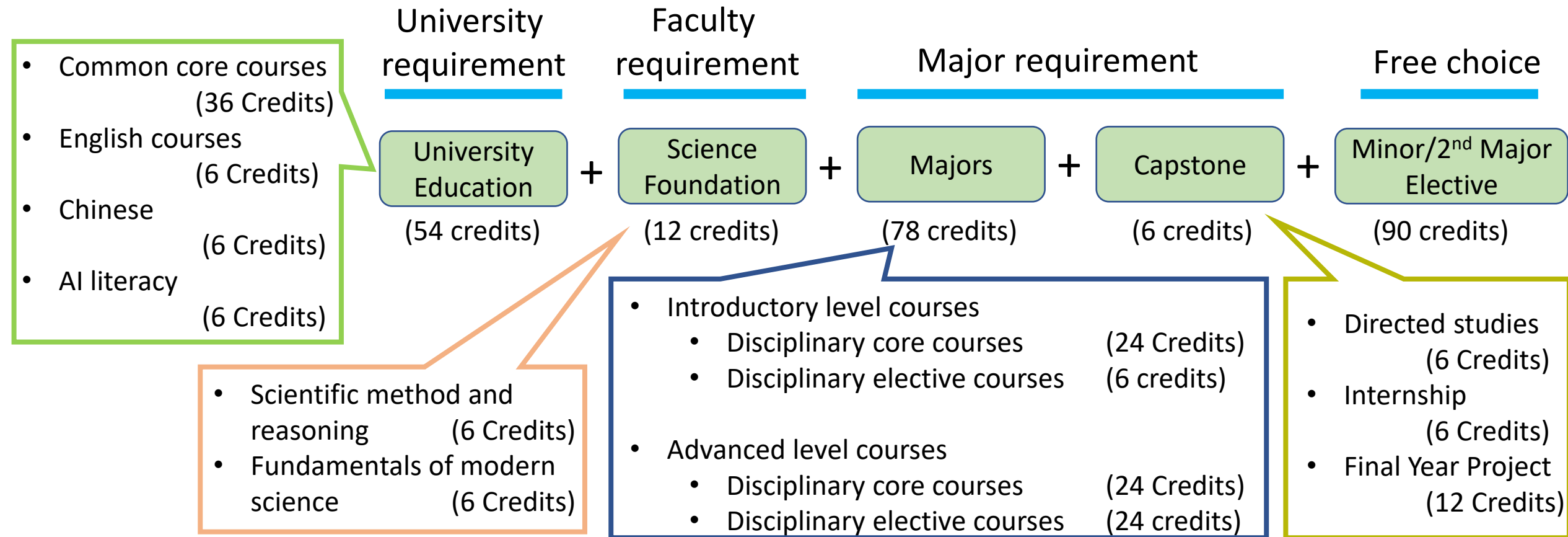


- Under 6901 Bachelor of Science (BSc)
- Four majors
 - Molecular Biology & Biotechnology (MB&B)
 - Biological Sciences (BS)
 - Food & Nutritional Science (FNS)
 - Ecology & Biodiversity
- #11 in QS World University Ranking 2027/ #2 in Asia
 - US News global ranking in Biology:

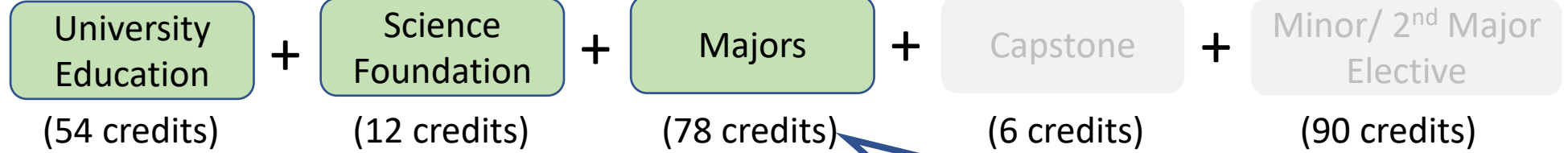
HKU	76
CUHK	104
HKUST	344
- Experts in different areas
- Cutting-edge equipment
- Unique curriculum (knowledge + skills)

MB&B curriculum structure

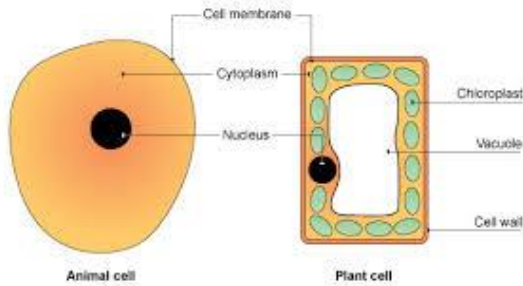
- Take **240 credits** (6 credits per course) for graduation
- Usually **10 courses per year**



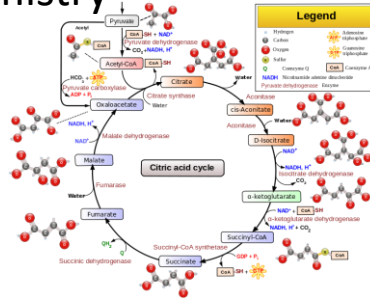
MB&B curriculum structure



Biomolecules



Biochemistry



- Introductory level courses
 - Disciplinary core courses (24 Credits)
 - Disciplinary elective courses (6 credits)
- Advanced level courses
 - Disciplinary core courses (24 Credits)
 - Disciplinary elective courses (24 credits)

Disciplinary Core Courses (24 credits)

BIOL1110	From molecules to cells (6)
BIOL2102	Biostatistics (6)
BIOL2103	Biological sciences laboratory course (6)
BIOL2220	Principles of biochemistry (6)

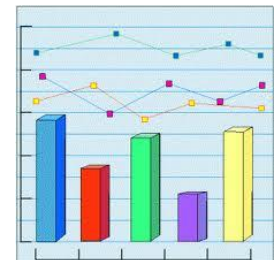
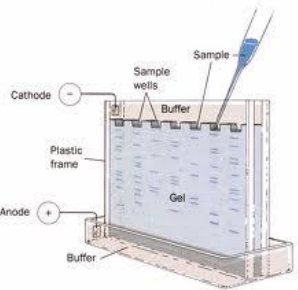
Disciplinary Electives (6 credits)

At least 6 credits selected from the following courses:

BIOL1309	Evolutionary diversity (6)
BIOL2409	Biotechnology industry and entrepreneurship (6)

Entrepreneurship

Laboratory techniques

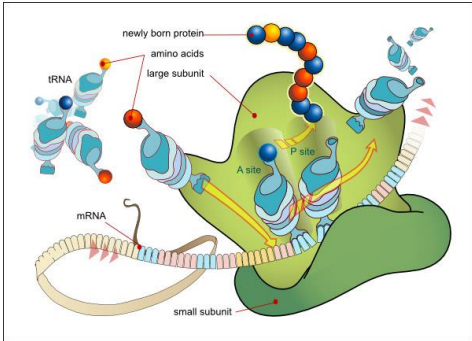


Biostatistics

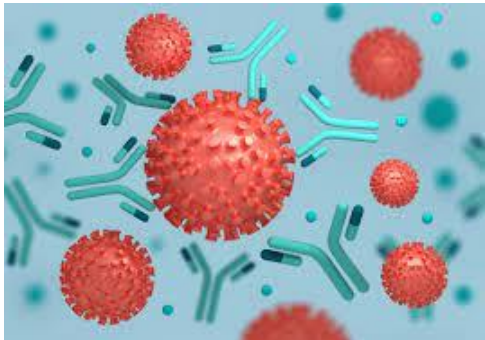


MB&B curriculum structure

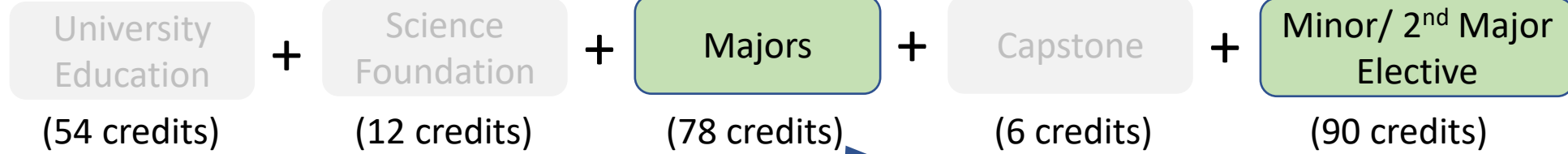
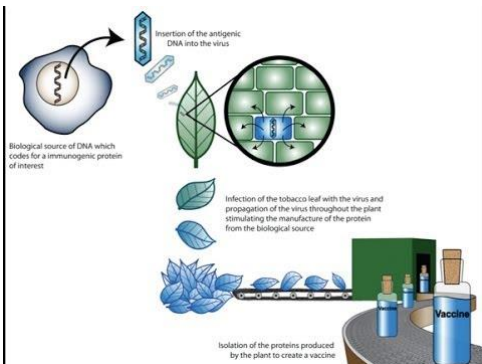
Molecular Biology



Immunology



Plant biotechnology



- Introductory level courses
 - Disciplinary core courses (24 Credits)
 - Disciplinary elective courses (6 credits)
- Advanced level courses
 - Disciplinary core courses (24 Credits)
 - Disciplinary elective courses (24 credits)

Disciplinary Core Courses (24 credits)

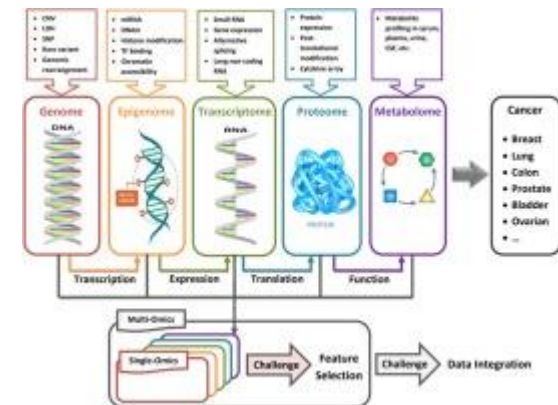
BIOL3401	Molecular biology (6)
BIOL3402	Cell biology and cell technology (6)
BIOL4411	Plant and food biotechnology (6)
BIOL4415	Healthcare biotechnology (6)

Disciplinary Electives (24 credits)

At least 24 credits selected from the following courses:

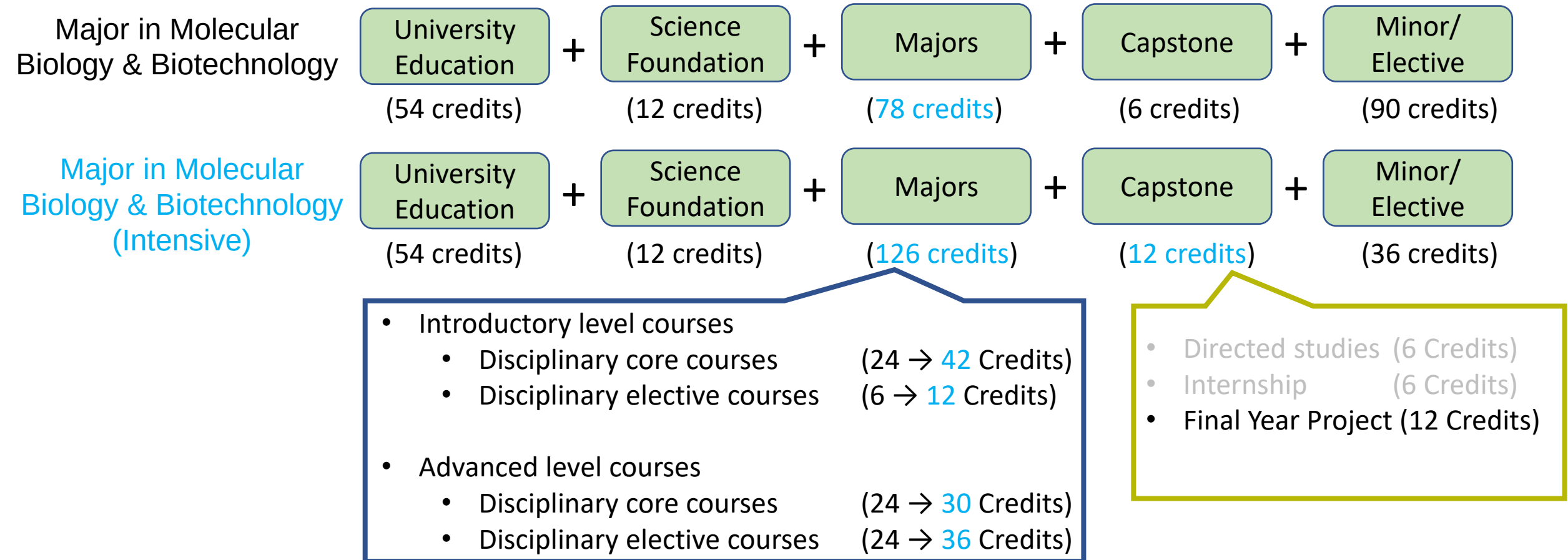
BIOL3403	Immunology (6)
BIOL3404	Protein structure and function (6)
BIOL3408	Genetics (6)
BIOL3416	Developmental Biology (6)
BIOL3508	Microbial physiology and biotechnology (6)
BIOL4401	Medical microbiology and applied immunology (6)
BIOL4409	General virology (6)
BIOL4416	Stem cells and regenerative biology (6)
BIOL4417	'Omics' and systems biology (6)

Omics and big data



MB&B (Intensive) program

- accredited by the Royal Society of Biology (RSB)
- for the Membership and Chartered Biologist (CBiol).



Accreditation of HKU MB&B program

- developed to help bridge the skills gap between undergraduate study and employment in the biosciences
- Two universities in HK contains accredited programs
- Graduates from accredited programmes will receive one year of guest membership (Associate level) of the Royal Society of Biology
- May progress to Chartered Biologist (Cbiol) in UK

HKU Faculty of Science obtains Royal Society of Biology accreditation for two Majors

28 Jan 2018

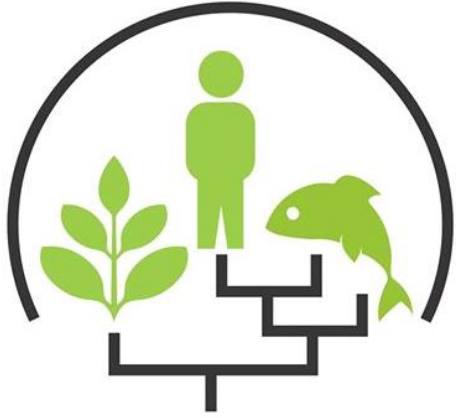
The 6901 Bachelor of Science Programme, offered by the Faculty of Science of the University of Hong Kong (HKU), has been conferred accreditation of its Ecology & Biodiversity and Molecular Biology & Biotechnology Majors by the Royal Society of Biology (RSB), UK, for the purpose of meeting in part the academic and experience requirement for the Membership and Chartered Biologist (CBiol).

The Ecology & Biodiversity Major is the first programme of its type accredited by RSB in Asia. Enhancement of the two Majors will be reflected in the curriculum starting from September 2018, and the intake of cohort 2018-19 will be able to apply for the accredited options of these two Majors.



The Majors of Ecology & Biodiversity and Molecular Biology & Biotechnology at HKU School of Biological Sciences have obtained accreditation from the Royal Society of Biology (RSB), UK.

Our teaching team



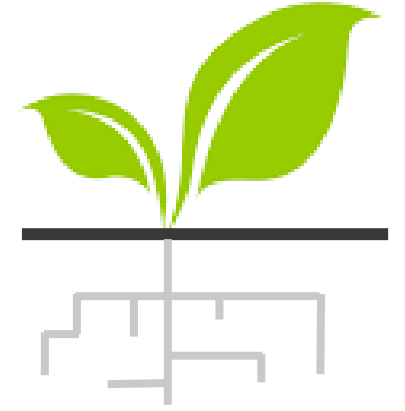
Ecology and Biodiversity



Molecular & Cell Biology



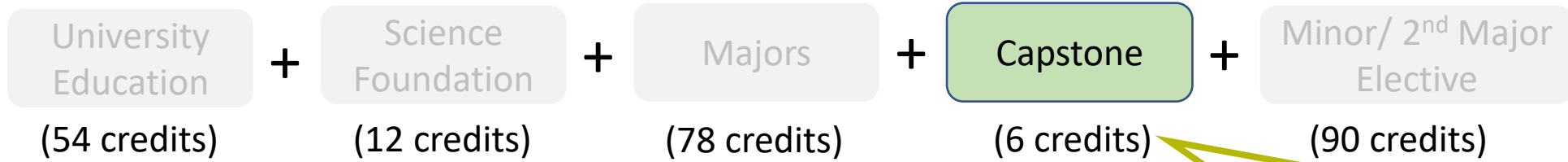
Food and Nutritional Sciences



Plant Sciences



Experiential learning

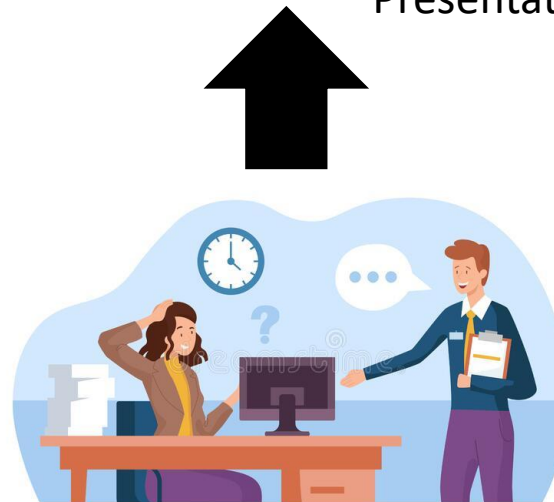


Presentation

- Directed studies (6 Credits)
- Internship (6 Credits)
- Final Year Project (12 Credits)



Dissertation



Company internship

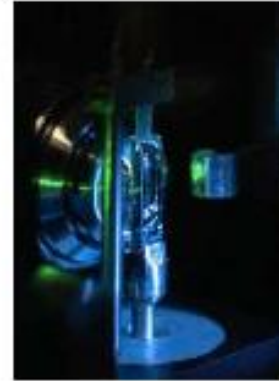
Final year project: Supervised research (year-long)

Directed study: Supervised literature review

School of Biological Science facilities



ICP-OES, PE Optima 8300



Flow cytometer



LC/MS/MS



Microcalorimeter,
GE Micro ITC 200



GC /MS



Confocal
microscope



Real-Time PCR



Atomic Absorption
Spectrometer



HPLC



Genetic Analyzer



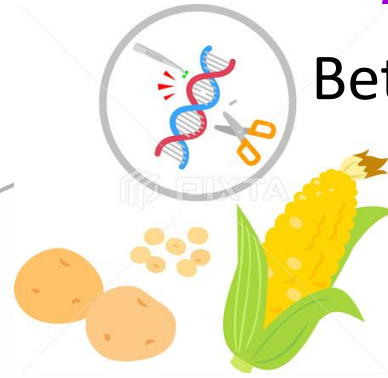
What does biotechnology mean to you?



New energy



Engineered organisms



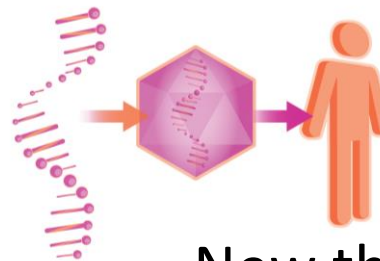
Better plants

New drugs



Biotechnology

New therapy



Advanced diagnostics



Life expectancy



Health

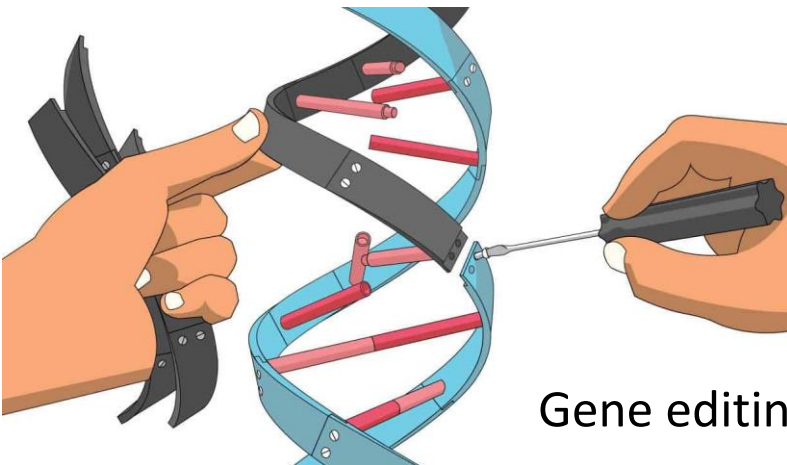


What is biotechnology?

- Biology + Technology = Biotechnology
 - Technology that utilizes biological systems, living organism or parts of this to develop or create different products
- Long been used in human history
- Breakthrough after the development of Molecular Biology



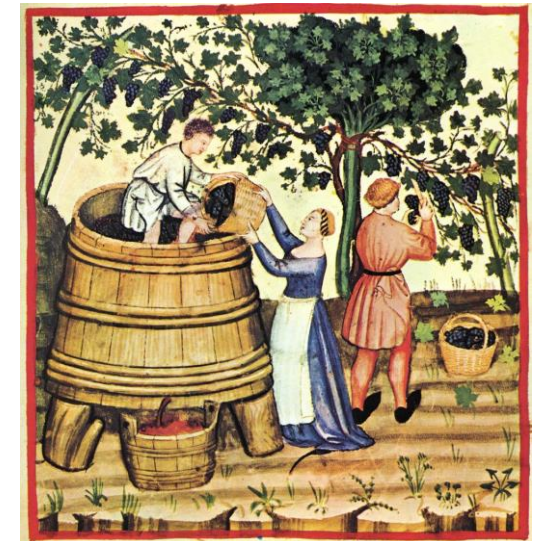
Plant breeding



Gene editing



Bakery

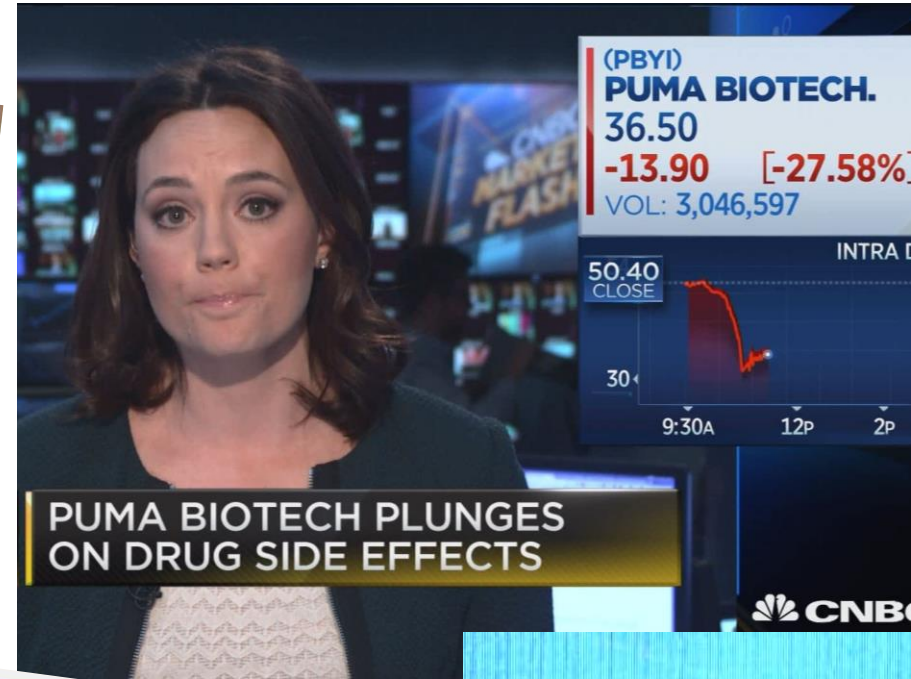
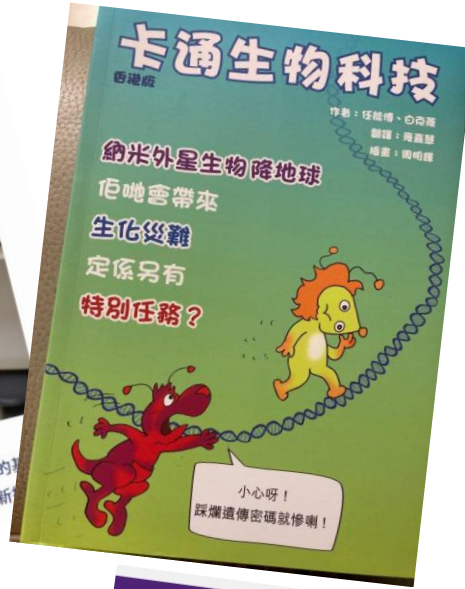


Winemaking

What is biotechnology?



(信報2021年12月31日) — 香港背靠內地，面向世界，又擁有國際化的營商環境及世界級的科學研究能力，如能善用自身優勢，以一個樞紐的角色，匯聚所有專業人才，投資者和新...





Four Nobel prizes of *C. elegans*



The Nobel Prize in Physiology or Medicine 2002



Sydney Brenner
Prize share: 1/3



H. Robert Horvitz
Prize share: 1/3



John E. Sulston
Prize share: 1/3

The Nobel Prize in Physiology or Medicine 2006



Photo: L. Cicero
Andrew Z. Fire
Prize share: 1/2



Photo: J. Mottern
Craig C. Mello
Prize share: 1/2

The Nobel Prize in Physiology or Medicine 2006 was awarded jointly to Andrew Z. Fire and Craig C. Mello *"for their discovery of RNA interference - gene silencing by double-stranded RNA"*

The Nobel Prize in Chemistry 2008



Photo: U. Montan
Osamu Shimomura
Prize share: 1/3



Photo: U. Montan
Martin Chalfie
Prize share: 1/3



Photo: U. Montan
Roger Y. Tsien
Prize share: 1/3

The Nobel Prize in Chemistry 2008 was awarded jointly to Osamu Shimomura, Martin Chalfie and Roger Y. Tsien *"for the discovery and development of the green fluorescent protein, GFP"*.

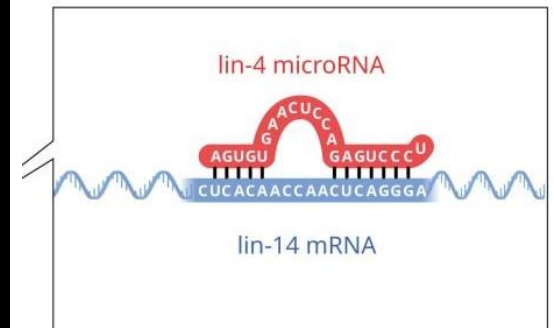
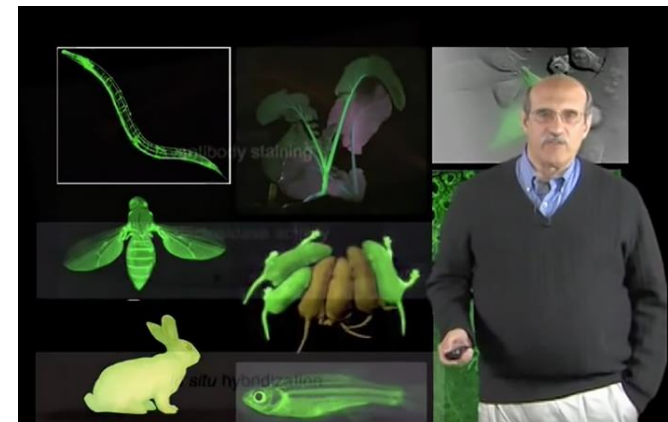
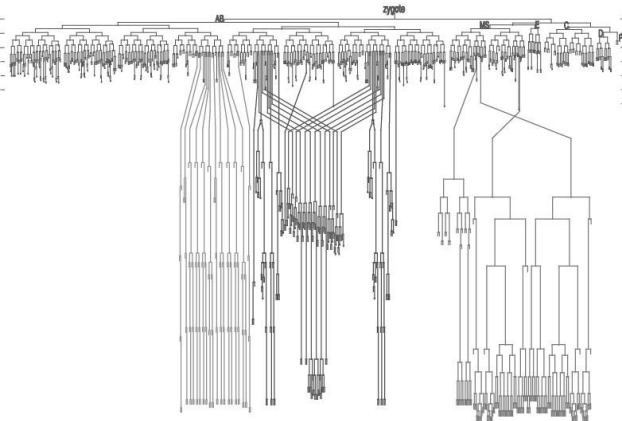
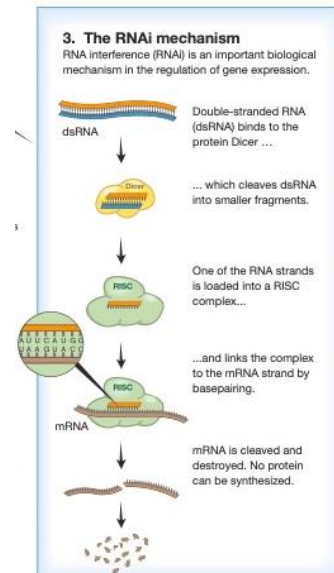
The Nobel Prize in Physiology or Medicine 2024



Photo: U. Montan
Victor Ambros
Prize share: 1/3



Photo: U. Montan
Gary Ruvkun
Prize share: 1/3



Biotechnology in daily life

GM tomato



Disease markers



Biofuel transportation



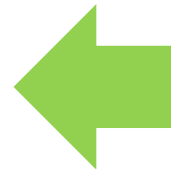
Rapid antigen test



Recombinant insulin



Enzyme washing



Biodegradable plastic



Biotechnology industry development



Global Biotechnology Market

Market forecast to grow at a CAGR of 13.9%
(Compound Annual growth rate)

USD 3,879.51 Billion

USD 1,372.06 Billion



2022

2030

Hong Kong gives biotech a chance

After difficult years, new policies are helping a biotech sector bloom in the trading and banking hub

by Jean-François Tremblay, special to C&EN
June 1, 2019 | A version of this story appeared in Volume 97, Issue 22



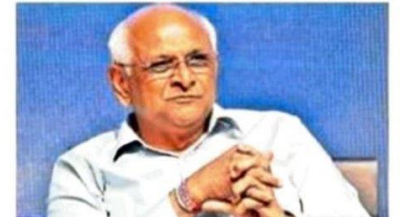
Gujarat CM announces new biotechnology policy

The policy for 2022-27 aims to make Gujarat competitive in the biotechnology sector

Ahmedabad Mirror Bureau
feedback@ahmedabadmirror.com

TWEETS @ahmedabadmirror

Chief Minister Bhupendra Patel on Thursday unveiled the new 'Gujarat Biotechnology Policy 2022-27' at Science



presents

**Industrial Biotechnology:
Research and Development
Partnership Opportunities
in Singapore**



Administration Priorities COVID Plan

SEPTEMBER 12, 2022

Executive Order on Advancing
Biotechnology and Biomanufacturing
Innovation for a Sustainable, Safe, and
Secure American Bioeconomy

BIOL2409 Biotechnology and entrepreneurship



- Overview of the biotech industry, case studies, and startup
 - Intellectual property rights and licencing
 - Fund raising for startup
 - Business status
 - Company visits
- Professors at the Faculty of Science and guest lecturers from companies

Teachers	Topics	Basic concepts	Companies
Lecture 1 Lim	Introduction 4P in Biotechnology IP rights – Major assets	Business model IP rights PE/PEG/Pipeline	Assignment 1 Team Building
Lecture 2 Lim	Licensing Technology Transfer Office How to raise fund?	Patents & Licensing Business plan	Assignment 2
Lecture 3 Lim	Agrobiotech Business Green Technologies	Plant Biotech Biofuels	Monsanto Syngenta
Lecture 4 Law	How to prepare your business venture -1	Design Thinking Lean Startup	
Lecture 5 Law	How to prepare your business venture -2	Business Model Generation	
Lecture 6 Lim	Diagnostics business T-CAR, Cancer Therapy, Quiz 1	NGS	BGI, GRAIL Quest Diagnostics Kite Pharma
Lecture 7 Dr. Ng	Pharmaceutical Industry Drug Development	Clinical trials	GILEAD Sciences
Lecture 8 Dr. Ng	Clinical Research Organization		WuXi App Tech
Lecture 9 KYK	Stem Cell Biotechnology Quiz 2	Stem Cell	
Lecture 10 BLL	Company Visit to Science Park	Stem Cell Molecular diagnostics	Science Park
Lecture 11 BLL	Company Visit to Diagcor	Molecular diagnostics	Diagcor/BGI
Lecture 12/13	Company Presentation		

Teaching emphasizing new research

東網 on.cc

2023年10月27日 (五)
27°C

繁體 簡體

爆料

東呼即應

視頻

電子報·刊物

即時新聞

美軍空襲敘利亞東部 打擊伊朗革命衛隊設施 中國疾控中心流行病學首屆
港澳版 > 新聞 > 港澳

港大學者確定單細胞類型進化年齡 有助研究動物發育機制

新聞觀看次數: 2.5k

04月07日(五) 04:00

推介 3 分享 Tweet 分享



內地 台灣 國際 評論 經濟 文化 旅遊 體育 娛樂 宗教 國學

首頁 > 新聞 > 正文

港大研口服天然黃酮治肥胖

時間: 2021-11-25 04:27:25 來源: 大公報

... f t g

下一篇: 學校合併惹關注 校長會促進



hket 付碼區 趨勢 投資 報章 專欄 知識 地產站 TOPick iMoney

Topick hket.com

27°C 香港時間: 2023年10月27日 (五) 17:27

熱門關鍵字: 中一面試 名校毒區 羅家欣與祝英台 區區有好校 香港人在北京 新手爸媽 香港: 破陣心運行GC

話題 健康 親子 娛樂 新聞 休閒消費 TOPick TV Band 1學堂 醫·健

【大學研究】港大中大揭胰泌素受體能調控飲水 有望為水鹽失衡症提供治療新方案

社會 17:15 2023/02/13

關注文章 儲存文章

分享: f t g

熱門 中一面試 名校毒區 羅家欣與祝英台 區區有好校 香港人在北京 新手爸媽 白目之下 新美女王 東張西望



23歲「溜冰女神」旅行大解放 超低胸背心疑似「露暈」 車C

港澳版 > 新聞 > 港澳

港大發現新型蛋白有效減少肝臟脂肪積聚 可緩解脂肪肝病徵

2022年04月15日(五) 02:30

推介 13 分享 Tweet 分享

2023年10月27日 (五)
27°C

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MEDICAL INSPIRE

醫 · 思維

搜尋醫生 醫生博客 專科資訊 醫療頭條 醫學新知 醫療科技 健康生活 · AI POWER

解決困擾20多年的生物學問題

港大研究 基因科研重大突破!

拆解基因調控 抗癌新藥現曙光

抗癌新曙光 | 港大發表基因科研重大突破! 拆解基因調控、抗癌新藥現曙光!

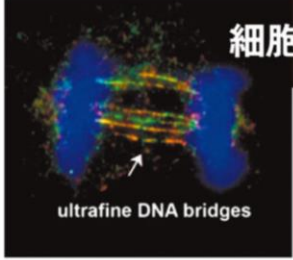
文匯網 2023年10月27日 星期五香港 28°C 東風 文以載道 滬劇興邦

首頁 時事 評論 視頻 圖集 灣區人 專題 專欄

港大揭防DNA受損機制 助開發抗癌新藥

2023-03-03 04:42:59 香港

細胞分裂途中的「DNA橋」

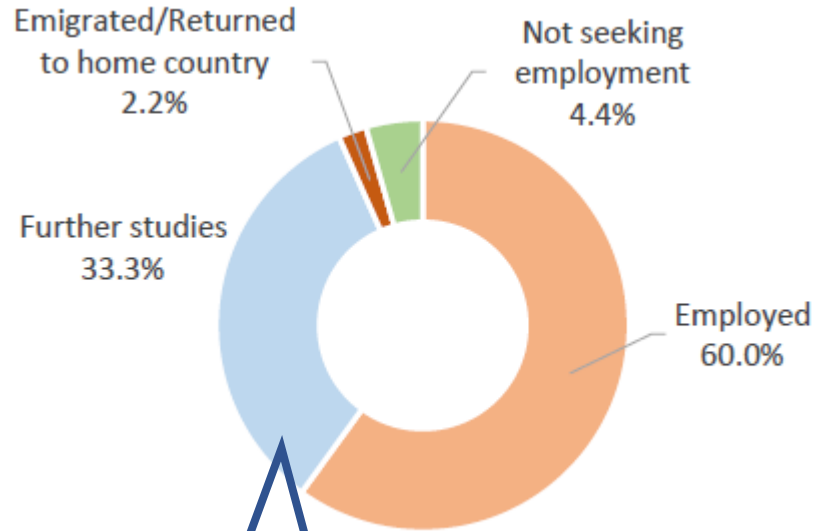


ultrafine DNA bridges

RIF1 抑制 DNA 橋斷裂, 保護細胞免受DNA損傷的侵害

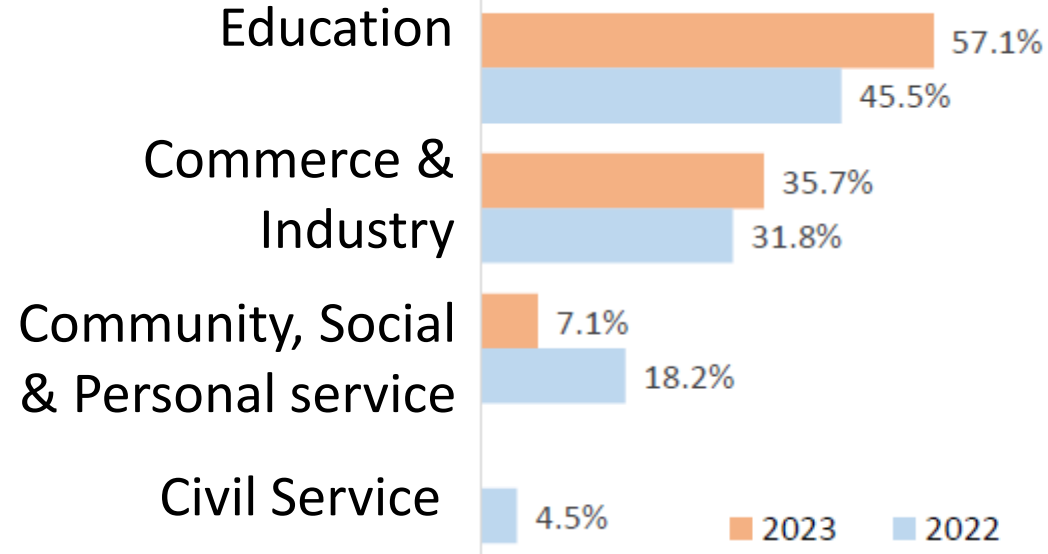
Career prospects

53 Graduates in 2023

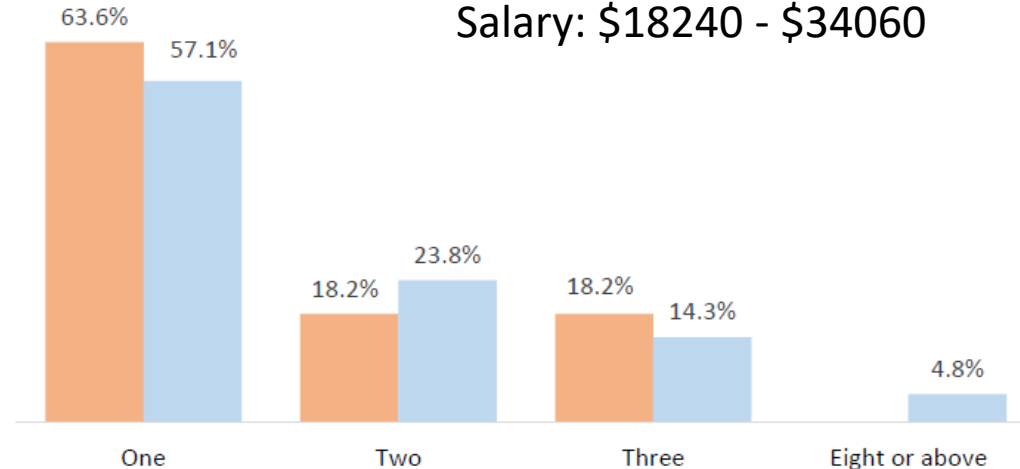


Further studies

- Ph.D./ M.Phil. studies in HK, USA, Canada, Australia, others



Salary: \$18240 - \$34060



Education

- Teacher
- Teaching Assistant
- University Research Assistant

Commerce

- Analyst
- Research Assistance
- Marketing trainee

Community

- Research Assistant



Articulation Pathways



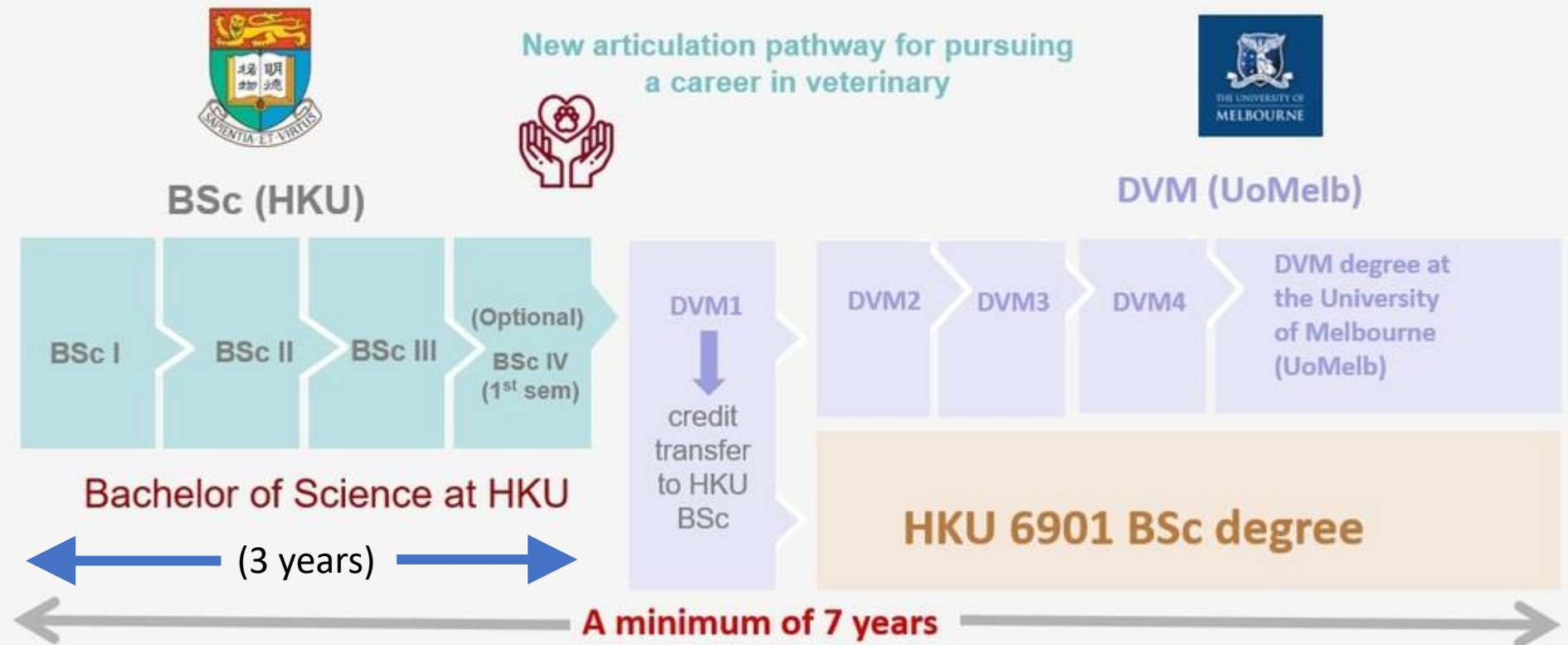
Jason WONG

- Fourth-year student at HKU School of Biological Sciences, majoring in Molecular Biology and Biotechnology
- First-year student in Doctor of Veterinary Medicine (DVM) programme at the University of Melbourne, Australia

HKU BSc + UoMelb DVM

(Articulation pathway to the Doctor of Veterinary Medicine (DVM) at the University of Melbourne)

#26 in QS University Ranking 2024 (Veterinary Medicine)



Questions?



Program admission

Faculty of Science

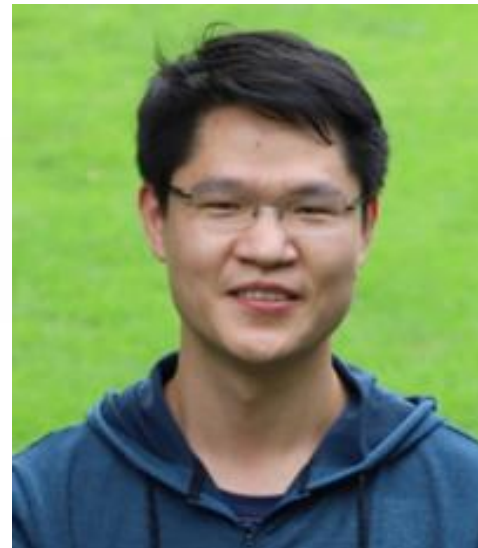
Sci.ug.admission@hku.hk



Prof. Karen Yuen

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MB&B Program Coordinator
KSBS 4S-15

kwyyuen@hku.hk



Prof. Nan Liu

Assistant Professor
Deputy MB&B Program
Coordinator

KBSB 5S-14

nanliu@hku.hk