

The Chinese University of Hong Kong  
Faculty of Science  
Science Academy for Young Talent

Autumn Courses 2021  
Course Outline

*CUSA2013 Great Discoveries in Biomedical Sciences (Senior Class)*  
*生物醫學大發現 (高級班)*

**Introduction:**

This course aims at deciphering how the work of some famous scientists in the field of life sciences has affected our daily life and our society. The course first provides students with the general knowledge of some basic processes in life, namely biochemistry, cell biology, and immunology, followed by how the knowledge has helped us to cope with the natural adversities such as diseases. The improvements of our quality of life by the technological advances in life sciences will also be discussed. Finally, how the development in life sciences has brought revolutionizing impacts on our lives, civilization, and modernization will be presented. Through a series of learning activities, students are encouraged to comprehend and to connect the discoveries in life sciences to daily scenarios. This course is particularly suitable for students who want to understand more on how discoveries in life sciences, which have transformed the way we think and live throughout the centuries.

本科旨於探討一些卓越生命科學學家的研究成果及其科學意念如何影響現代人類的生活及社會發展。課程內容首先介紹一些生命運作的基本概念，即生物化學，細胞生物學及免疫學，然後再談及生命科學如何幫助人類抵禦疾病等自然災害。最後，課堂將進一步演繹那些生命科學的理論如何被應用，從而對現今社會作出貢獻。同學可以透過不同的課堂學習活動，增進了解這些當代重要的科學發明如何對人類生活及其對科研工作帶來革命性的影響及反思。本課程是為對生命科學感興趣的同學而設；課程內容讓同學們進一步了解生命科學的發現如何對我們日常生活帶來深遠的影響。

**Medium of Instruction:** Cantonese supplemented with English

**Organising Unit:**

Biochemistry Programme, School of Life Sciences, Faculty of Science, CUHK

**Teacher:**

Dr. LO Fai Hang

School of Life Sciences, CUHK

Rm G83, Science Centre South Block, CUHK

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**Demonstrators:**

Students from Programme of Biochemistry, School of Life Sciences, CUHK

**Course Content:**

<p>13 November 2021 (Saturday)</p> <p>10:00 am – 1:00 pm 2:00 pm – 5:00 pm</p>	<p><b><u>Lecture:</u></b></p> <ul style="list-style-type: none"><li>• Introduction to life sciences and biochemistry</li><li>• Microbes on human civilization</li><li>• Battles between human beings and microbes</li><li>• The discovery of microbes</li><li>• Germ theory of disease</li><li>• Introduction to cell biology</li><li>• Tutorial/discussion/activities</li></ul>
<p>20 November 2021 (Saturday)</p> <p>10:00 am – 1:00 pm 2:00 pm – 5:00 pm</p>	<p><b><u>Lecture:</u></b></p> <ul style="list-style-type: none"><li>• Introduction to cell biology</li><li>• Introduction to immunology</li><li>• The strategy of human beings to cope with microbial infections</li><li>• Cell growth, cell death, and signalling</li><li>• Cancer: the correlation to infections and oncogenes</li><li>• Tutorial/discussion/activities</li></ul>
<p>27 November 2021 (Saturday)</p> <p>10:00 am – 1:00 pm 2:00 pm – 5:00 pm</p>	<p><b><u>Lecture:</u></b></p> <ul style="list-style-type: none"><li>• Cell growth, cell death, and signalling</li><li>• Cancer: the correlation to infections and oncogenes</li><li>• Topics in focus:<ul style="list-style-type: none"><li>▪ Quorum sensing mechanism (Shaw Prize 2015)</li><li>▪ Prion disease (Nobel Prize 1997)</li><li>▪ Induced pluripotent stem cell and other relevant knowledge (Nobel Prize 1935, 1995, 2012 and Shaw Prize 2008)</li><li>▪ Organ transplantation (Nobel Prize 1912, 1960, 1980, and 1990)</li><li>▪ CRISPR/Cas9 genetic scissors (Nobel Prize 2020)</li></ul></li><li>• Tutorial/discussion/activities/revision</li><li>• Quiz</li></ul>
<p>11 December 2021 * (Saturday)</p> <p>10:00 am – 1:00 pm 2:00 pm – 5:00 pm</p>	<p>Make up class</p>

<b>Duration</b>	3 whole day sessions (total 18 contact hours)
<b>Date</b>	13, 20, 27 November, 11* December 2021
<b>Time</b>	10:00 am – 1:00 pm & 2:00 pm – 5:00 pm
<b>Teaching Mode<sup>#</sup></b>	Face to Face (The Chinese University of Hong Kong)
<b>Enrollment</b>	20 – 25
<b>Expected Applicants</b>	Students who promoting to or studying S5-S6 who are interested in biomedical sciences
<b>Tuition Fee<sup>@</sup></b>	HKD 3,180.00 <sup>@</sup> For students who apply with the certificates of CUSA1013 Great Discoveries in Biomedical Sciences, their tuition fee will be HKD\$1,590.
<b>Credit</b>	1.25 Academy Unit Certificates or letters of completion will be awarded to students who attain at least 75% attendance.

\* This date is reserved for make-up classes in case there is any cancellation of classes due to unexpected circumstances.

# This course is offered face-to-face lessons at CUHK campus. It may switch to online teaching in accordance with the pandemic development and the policy of the university.