

LIFS 4200 Concepts and Issues in Contemporary Biotechnology (18/19)

Lecturer:	Prof. Karl Tsim (Course Director)	Rm 5455	X-7332
	Prof. SC Ng	Rm 5470	X 8677
Tutor	Dr. Wing Leung (lkwing@ust.hk)	Rm 6145	X-7338
Time:	Wednesday	13:30 – 14:50	Rm 4619
	Friday	13:30 – 14:50	Rm 4619

Web site at <http://lmes2.ust.hk/portal#>

Course Description:

This course will survey contemporary concepts and issues of biotechnology, especially as it related to human health and the environment. The technical, legal and bioethical consequences of developments in this area will be examined, with emphasis on the aroused great public interest and increasing demand for the informed debate. Pre-requisite: LIFS 2040 or CENG 1600

Textbook: Reading materials from current biotech development will be provided.

Intended Learning Outcome:

1. Gain familiarity with basic approaches to biotechnology research and development, and the wide range of biotechnology applications
2. Apply functional knowledge to solve problems in the wide range of Industrial biotechnology applications.
3. Evaluate/analyze the information relevant to contemporary biotechnological innovations, with a global perspective by reviewing international journals.
4. Demonstrate self-reflective thinking for consequences of development in the field of biotechnology
5. Communicate effectively to lay audiences about the concepts and issues of current biotechnology and the types of contributions that can be offered to the society.
6. Recognize the importance of ethics and social responsibilities relevant to controversial applications of biotechnology.

Assessment:

- | | | |
|----|----------------------|-----|
| 1. | Mid-term examination | 30% |
| 2. | Project | 30% |
| 3. | Final Examination | 40% |

Course Outline:

Date	Subject	Lecturer
5/9; 7/9; 12/9	Dawn of biotech century and key players; Golden State killer and his capture years later; Insulin and diabetes : from dog pancreas to nasal delivery of insulin (Exubera and Afrezza);	NG
14/9; 19/9	Cancer immunotherapy and human monoclonal antibodies: Keytruda, Yervoy, Opdivo	NG
21/9; 26/9	Autoimmune diseases and anti-TNF. Humira: the world's best selling drug. Competing anti-TNFs: Remicade and Enbrel	NG
28/9;3/10;	Herceptin for breast cancer therapy and the concept of personalized medicine	NG
5/10; 10/10	Turning concepts into products: Angiogenesis and Avastin; Drug Repurposing: Avastin, Lucentis and Age-related Macular Degeneration(AMD)	NG
12/10	Mid-term Examination	NG
17/10, 19/10,	The US Supreme Court case on whether genes can be patentable; emerging consumer genomics industry;	NG
24/10; 26/10	From Dolly to CRISPR : germline modifications and bioethics	NG
31/10; 2/11	Contemporary TCM developments Exact time TBD	Tsim
7/11; 9/11; 14/11, 16/11;21/11; 23/11	Student project presentations	NG
28/11;30/11	Provenge: the first approved cell based therapy for prostate cancer and its bankruptcy (good science but bad business). Tutorial for final exam	NG
Dec	Final Examination (2 hours)	NG