

# 09920LS 110301 Introduction to Life Science

## 生命科學導論

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Time: W7、W8、W9 (15:20-18:10)

Room: LSII R105 生命科學二館 105 教室

Week	Date	Topic	Instructor	Note
1	2/23	Regulation Tsing Hua Story Magic Biotech( I ): From DNA to cloning	Pan, R.L.	
2	3/02	Magic Biotech ( II ) : Cloning、Molecular farm	Pan, R.L.	
3	3/09	Sweet story: Glycolysis、Diabetics	Pan, R.L.	
4	3/16	Examination I		
5	3/23	Infectious diseases: the past, present and future	Chang, H.Y.	
6	3/30	Molecular diagnosis of human diseases: the future trend	Chang, H.Y.	
7	4/06	Class suspended (Meichu game)		
8	4/13	How to build organs?	Chang, H.Y.	
9	4/20	Genomics and drug discovery	Chang, H.Y.	
10	4/27	Examination II		
11	5/04	Current progress in structural biology and biophysics	Hsu, S.T.	Offered in English
12	5/11	Current progress in chemical biology	Hsu, S.T.	Offered in English
13	5/18	Engineering Aspects of the Cell	Wagner, O.I.	Offered in English
14	5/25	Protein folding, misfolding and diseases	Hsu, S.T.	Offered in English
15	6/01	Biological Machine, Cell Mechanics and Nanotechnology	Wagner, O.I.	Offered in English
16	6/08	Non-biological Machines and Bio-Nanotechnology	Wagner, O.I.	Offered in English
17	6/15	Examination III		
18	6/22	Class suspended		

## 參考資料 (References)

### *PART I Prof. Pan, R.L.*

#### 清華的故事

“Medicine’s 10 Greatest Discoveries”(By Meyer Friedman and Gerald W.

Friedman “怪才、偶然,與醫學大發現”，商周出版社，趙三賢譯)  
科學人(2007), 64, 72-75, 從果蠅之小，見生命之大  
科學人(2004),29 13, 中國化石重寫動物演化史

#### 生技魔幻的故事

科學人(2007), 69, 76-82, 台灣如何成為蝴蝶蘭王國  
科學人(2003), 14, 44-49, 專訪華生  
科學人(2002), 4, 41-48, 神奇的 DNA 晶片  
科學人(2004), 27, 76-84, 遺傳密碼的演化  
科學人(2006), 52, 64-71, 用 DNA 做電腦  
科學人(2006), 53, 31-37, DNA 元件，組裝未來生命  
科學人(2010), 102, 73-77, DNA 也能當藥物  
科學人(2007), 68, 88-94, 人類扮演上帝-基因轉殖  
科學人(2009), 90, 36-43, 以草煉油  
科學人(2009), 90, 44-47, 把稻稈變能源  
科學人(2009), 90, 48-51, 重出生質柴油  
科學人(2006), 54, 18, 科學界的不端行為  
科學人(2006), 47, 20, 黃禹錫造假事件  
科學人(2006), 54, 48-54, CSI 真實現場  
科學人(2008), 75, 29-31, 光合作用，發現外星生命的新指標  
科學人(2002), 1, 36-44, 第一個複製人  
科學人(2008), 82, 90-92, 照亮細胞的綠色螢光蛋白  
科學人(2007), 68, 80-87, 播下基因革命的種子  
科學人(2004), 31, 38-45, 一粒米養活全世界  
科學人(2004), 31, 35-37, 野生稻的綠色奇蹟  
科學人 試刊紀念版 基因改造食物安全嗎  
科學人 試刊紀念版 台灣基因改造作物的現況  
科學人 試刊紀念版 世界需要基因改造食物嗎

#### 甜蜜的故事-Diabetes

科學人(2004), 30, 26, 從β細胞製造β細胞  
科學人(2006), 47, 14, 自給自足胰島素  
科學人(2010), 95, 20-21, 糖尿病的三角關係

## ***PART II Prof. Chang, H.Y.***

### ***PART III Prof. Hsu, S.T.***

#### **Structural biology and biophysics**

Sali et al., From words to literature in structural proteomics (2003) *Nature*, 422:216

*Robinson et al.*, The molecular sociology of the cell (2007) *Nature*, 450:973

Grzesiek & Sass, From biomolecular structure to functional understanding: new NMR developments narrow the gap (2009) *Current Opinion of Structural Biology*, 19:585

#### **Chemical Biology**

A decade of chemical biology (2010) *Nature Chemical Biology*, 6:847

Goodey & Benkovic, Allosteric regulation and catalysis emerge via a common route (2008) *Nature Chemical Biology*, 4:474

Boehr et. al., The role of dynamic conformational ensembles in biomolecular recognition (2009) *Nature Chemical Biology*

#### **Protein folding, misfolding and diseases**

Fersht, From the first protein structures to our current knowledge of protein folding: delights and skepticisms (2008) *Nature Review of Molecular and Cellular Biology*, 9:650

Dobson, Protein folding and misfolding (2003) *Nature*, 426:884

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Knowles et al., Role of Intermolecular Forces in Defining Material Properties of Protein Nanofibrils (2007) *Science*, 318:1900

### ***PART IV Prof. Wagner, O.I.***

Kasza K.E. et al., The cell as a material. *Curr Opin Cell Biol.* 2007. 19:101-7

van den Heuvel MG, Dekker C., Motor proteins at work for nanotechnology. *Science.* 2007. 317:333-6