



Course List

課程列表

1. DNA and Genetics (Molecular Biology)					
DNA 與遺傳學 (分子生物學)					
<p>Through a series of well-developed courses focusing on DNA, our genetic material, participants can stimulate their interest and increase their knowledge on the latest advancements in molecular biology. Students learn the DNA structure by making a paper model, genetic defects, and diseases with a candy model, and DNA fingerprinting by running and analyzing agarose gel electrophoresis.</p> <p>透過一系列完善的 DNA (遺傳物質) 主題課程, 參與者能夠極大增加對這一課題的興趣, 並能更加認識該領域最新的發展。</p> <p>學生可透過製作摺紙 DNA 模型來學習 DNA 結構, 透過製作糖果模型來學習遺傳缺陷與疾病, 透過運行與分析瓊脂凝膠電泳學習 DNA 指紋分析。</p>					
Course Code 課程編號	Course Title 課程名稱	Primary 小學	Secondary 中學	Duration (hr) 時長(小時)	
D01#	Paper DNA Model 摺紙 DNA 模型	4-6	1-3	0.5	
D02#	Bitter Genes 吃苦的基因	4-6	1-3	0.5	
D03	Candy DNA 美食 DNA	4-6	1-3	1.5	
D04	Extraction of Bacterial DNA 抽取細菌 DNA	4-6	1-6	1	
D05	Restriction Digestion Analysis 限制內切酶分析	/	4-6	2	
D06A	Simulated DNA Fingerprinting 模擬 DNA 指紋分析	/	1-6	1.5	
D06B*	DNA Fingerprinting DNA 指紋分析	/	4-6	1.5	
D07*@	Recombinant DNA Technology - Transformation of a Green Fluorescent Protein Gene DNA 重組技術 - 轉移螢光基因	/	4-6	5	Day 2 第二日 : 2
D08*	Effects of UV Light Exposure on DNA Damage 紫外光線對 DNA 受損的影響	/	4-6	2.5	
D09*	Simulated CRISPR to treat Cystic Fibrosis 模擬 CRISPR 技術—治療囊性纖維化	/	4-6	1.5	
D10*	DNA Fingerprinting - Amplification of DNA Samples by Polymerase Chain Reaction (PCR) DNA 指紋分析—通過聚合酶鏈反應(PCR)擴增 DNA 樣本	/	4-6	4	

Not a standalone course and must be combined with other courses. 非獨立課程, 須與其他課程組合。

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2. Microbiology Exploration 探索微生物世界					
Students learn about germs and microbes by asking “WHERE are the germs?”, and personal health and hygienic issues by studying household chemicals and antibiotics on bacterial growth.					
學生透過問「何處覓細菌？」這一問題，學習病菌與微生物的相關知識。而透過探索家居化學與抗生素對細菌生長的影響，學生亦能加深對個人健康與衛生的了解。					
Course Code 課程編號	Course Title 課程名稱	Primary 小學	Secondary 中學	Duration (hr) 時長(小時)	
M01	“Glo” Hands – Illustration of Effectiveness of Hand-wash by Fluorescent Gel 「螢」之手—利用發光顯影劑測試洗手效能	4-6	1-3	0.75	
M02	Where are the Germs? – Grow Germs from Hands and Environment 何處覓細菌?—培養手指與環境中的微生物	4-6	1-3	1.5	Day 2 第二日 :0.5
M03	Effects of Temperature on Bacterial Growth 溫度對細菌生長的影響	/	1-3	1	Day 2 第二日 :0.5
M04	Effects of Household Chemicals on Bacterial Growth 家居化學物質對細菌生長的影響	/	1-3	1	Day 2 第二日 :0.5
M05	Effects of Antibiotics on Bacterial Growth 抗生素對細菌生長的影響	/	1-6	1	Day 2 第二日 :0.5
M06	Determination of Bacterial Cell Number by Serial Dilution and Spreading 利用連續稀釋法及塗抹法量度細菌數量	/	4-6	1	Day 2 第二日 :1
M07	Determination of Turbidity by Spectrophotometry 利用光譜測定法量度細菌樣本的混濁度	/	4-6	4	
M08*	Water Quality Test – Chromogenic Analysis of Water Contaminants 水質測試：水污染物顯色分析	/	4-6	1	Day 2 第二日 :0.5
M09@	Effects of pH on Bacterial Growth 酸鹼對細菌生長的影響	/	4-6	5	

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3. Forensic Science 鑑證科學				
<p>Forensic science is the study of crime-related subjects with the application of science and biotechnology during investigation. This is a broad field including DNA analysis, fingerprint analysis, hair/fibre analysis, footwear analysis, paint analysis, etc. We set up a simulated crime scene in school hall and classroom. It will take about two hours to set up the simulated crime scene at your school hall and/or on stage. Students will become the detectives to collect, preserve and analyze the scientific evidence to solve the case.</p> <p>鑑證科學是研究罪案的科學，在調查中會大量應用科學與生物科技知識。該領域涵蓋 DNA 分析、指紋分析、毛髮與纖維分析、鞋印分析、油漆分析等範疇。我們會在學校禮堂或教室中設置一個模擬犯罪現場，大約需要兩個小時。學生將扮演偵探，入場搜集、保存並且分析各類證據，以求破解案情。</p>				
Course Code 課程編號	Course Title 課程名稱	Primary 小學	Secondary 中學	Duration (hr) 時長(小時)
F01	Shoeprint Analysis 鞋印分析	4-6	1-6	0.5
F02	Fibre Analysis 衣物纖維分析	4-6	1-6	1
F03	Fingerprint Analysis 指紋分析	4-6	1-6	0.5
F04	Blood Splatter 血跡形態分析	4-6	1-6	1.5
F05	Paper Chromatography Analysis 過濾紙色層分析法	4-6	1-6	0.5
F06	DNA Analysis (Simulated) DNA 分析 (模擬)	4-6	1-6	1.5
F07*	DNA Analysis DNA 分析	/	4-6	1.5
F08*	Blood Type Analysis (Simulated) 血型分析 (模擬)	/	4-6	1.5

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4. Biochemistry 生物化學				
<p>Biochemistry is the study of chemical process in the living organism including structural biology and metabolism. We use protein quantification in milk and blood typing to correlate the biological concepts to daily life experience. Biochemistry is not a distanced subject, but instead can be applied to everyday activities.</p> <p>生物化學研究的是生物體內的化學反應，其中包括結構生物學與新陳代謝相關知識。我們會用牛奶去做蛋白質定量測試，又或者進行血型分析。這些活動都與日常生活息息相關。生物化學並非遙不可及，在生活中有廣泛的應用。</p>				
Course Code 課程編號	Course Title 課程名稱	Primary 小學	Secondary 中學	Duration (hr) 時長(小時)
B01	Determination of Protein Amount 量度蛋白質含量	/	4-6	2
B02*	Gel Filtration Chromatography 凝膠過濾色層分析法	/	4-6	2
B03*	Simulated Blood Typing 模擬血型鑒定	/	4-6	1.5
B04A*	Simulated Diagnosis of Diabetes 模擬糖尿病診斷	/	4-6	1.5
B04B*	Simulated Diagnosis of Diabetes (with glucometer) 模擬糖尿病診斷(血糖機)		4-6	1.5
B05*	Simulated Diagnosis of COVID-19 (ELISA test) 模擬2019冠狀病毒病診斷(酶聯免疫吸附測試)		4-6	1.5

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5. Science@YourSchool 趣「至」科學				
<p>We picked the developed small science projects along the themes of “Facets of Water”, “The Science in Food”, and “Electric Prowess”. In each theme, there are several science experiments that are fun, easy to understand, easy to operate, and certainly successfully attainable. We name this science exploration as “Science@YourSchool” and offer these experiments at each school onboard the MobileLab. In each workshop, we offer 2-3 experiments with a short introduction on the theory and hands-on practical work, all completed within 10-15 minutes.</p> <p>我們在三個主題下進行科學小實驗——「水之百態」、「食物與科學」與「電『道』」。每個主題下的實驗都有趣易明，操作簡潔，結果可觀。我們將活動命名為「趣『至』科學」，帶到邀請流動實驗室的各間學校之中。每個工作坊都有 2-3 個小實驗，包括簡短講解與親身操作，每個小實驗都能在 10-15 分鐘內完成。</p>				
Course Code 課程編號	Course Title 課程名稱	Primary 小學	Secondary 中學	Duration (hr) 時長(小時)
S01	Facets of Water 水之百態	4-6	1-3	0.5
S02	The Science in Food 食物與科學	4-6	1-3	0.5
S03	Electric Prowess 電「道」	4-6	1-3	0.5

6. Biotech Challenge - The MobileLab 挑戰生物科技—流動實驗室				
Course Code 課程編號	Course Title 課程名稱	Primary 小學	Secondary 中學	Duration (hr) 時長(小時)
I01	Biotech Challenge - The MobileLab 挑戰生物科技 - 流動實驗室	1-6	1-6	0.5

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