生物化學課程
Biochemistry Programme

Teaching and Learning Innovation Expo 2010

e-Learning platform for Biochemical Science

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Background of the project

✓ Named "**e-Learning platform for Biochemical Science**"

✓ A continuum of the previous project, "e-platform for Biochemistry courses"

✓ on Moodle

e-platform for Biochemistry courses	e-Learning platform for Biochemical Science
Main focus: Lab techniques	**Emphasis: Integration** of the biochemical knowledge that students acquired in their studies
Style: Tailor-made **videos** of some sophisticated lab techniques with concise description bundled	**Style: Integrated learning** modules with **different elements**

Features of the new e-Learning platform

✓ **In modular form**

Advantages:

- ❑ Better suit the learning content and progress of students' formal classroom study
- ❑ Easier for the eLearning platform to be expanded

✓ **Increased learning elements**

- ❑ Text description on the topic background
- ❑ Case study on different topics
- ❑ Interactive course content, includes games and quizzes
- ❑ Multimedia sources, e.g. videos and animations

✓ **Cross-links between modules for integrative learning**

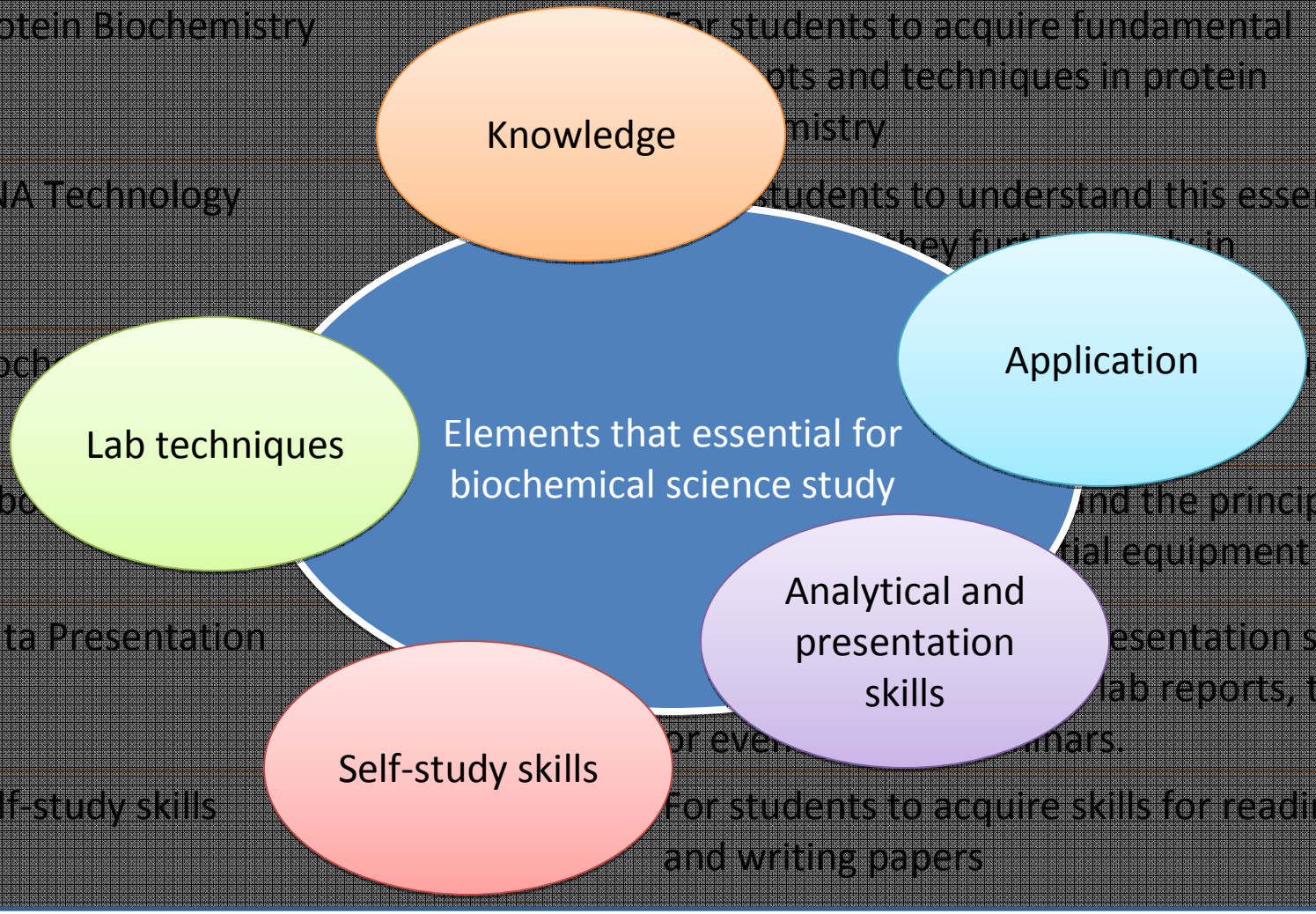
✓ **Indicated with related course codes for students' reference**

Modular form – Six Learning Modules

- Protein Biochemistry Module
- DNA Technology Module
- Biochemistry and Life Module
- Laboratory Equipment and Techniques Module
- Data Presentation Module
- Self-study skills Module

A comprehensive design of the modules content

Module	Target to be achieved
Protein Biochemistry	For students to acquire fundamental
	pts and techniques in protein
	mistry
DNA Technology	tudents to understand this essential
	hey fur y in
Biochem	dy to
Labo	nd the principles
	tial equipment
Data Presentation	esentation skills
	lab reports, thesis
	or even inars.
Self-study skills	For students to acquire skills for reading and writing papers

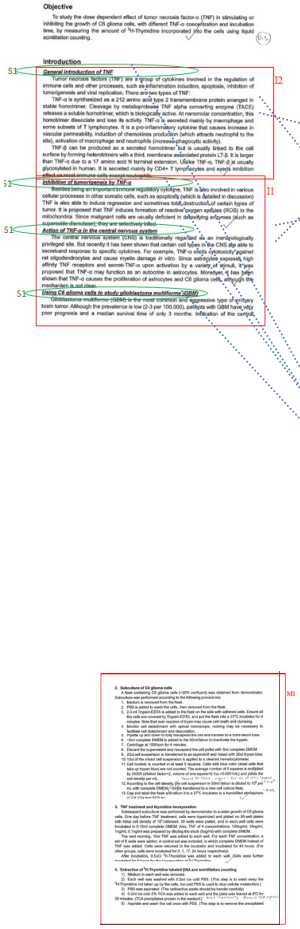


Our Approach

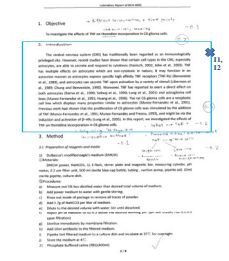
- More interactive
- Clearer illustration on abstract topics
- More emphasis on the daily life applications of the biochemical knowledge
- More integration between different topics

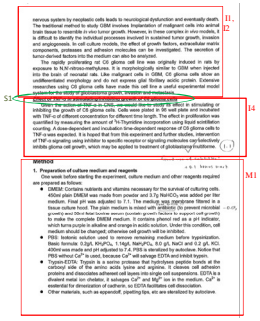
More interactive

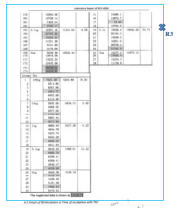
Self- study skills Module – The way to read a scientific paper



Research Writing Skills
Preparation Work(P)
1 . Get clear idea of research question: a. Review articles in the topic area to get an overview of the field b. Read widely and critically 2. Keep record of all the articles reviewed, with bibliographical data for citing and reference at the later stage 3. Keep data well, organize it once after finished some work rather than leaving it till the end. 4. Be focus driven, not data driven. Set a clear plan on how to use the data collected.
Writing
Introduction(I)
Elements should be included in a good introduction: 1. Relevant background information 2. Key terms definition if necessary 3. Identification of contentious issue or problem to be discussed 4. Overall purpose of the research 5. Clear and specific thesis statement 6. Rational of the way studying the research question
Methodology (M)
1. Describe each step clearly and comprehensively 2. Ensure the methodology is valid
Results (R)
1. Point out the major finding 2. Place graphical or tabular data in an appropriate place in the text and clearly to convey the results 3. Present enough of data for the reader to judge how the experiment turned out 4. Emphasize the patterns or trends in the data 5. Point of the significance of the results
Discussion (D)
1. Draw convincing conclusions from the data 2. Factors that could have influenced, or accounted for the results 3. Further planning or experiments to continue the research
Language tips
Style and Tone
Use academic sentence structures and academic vocabulary (e.g. Although X, Y therefore Z.)



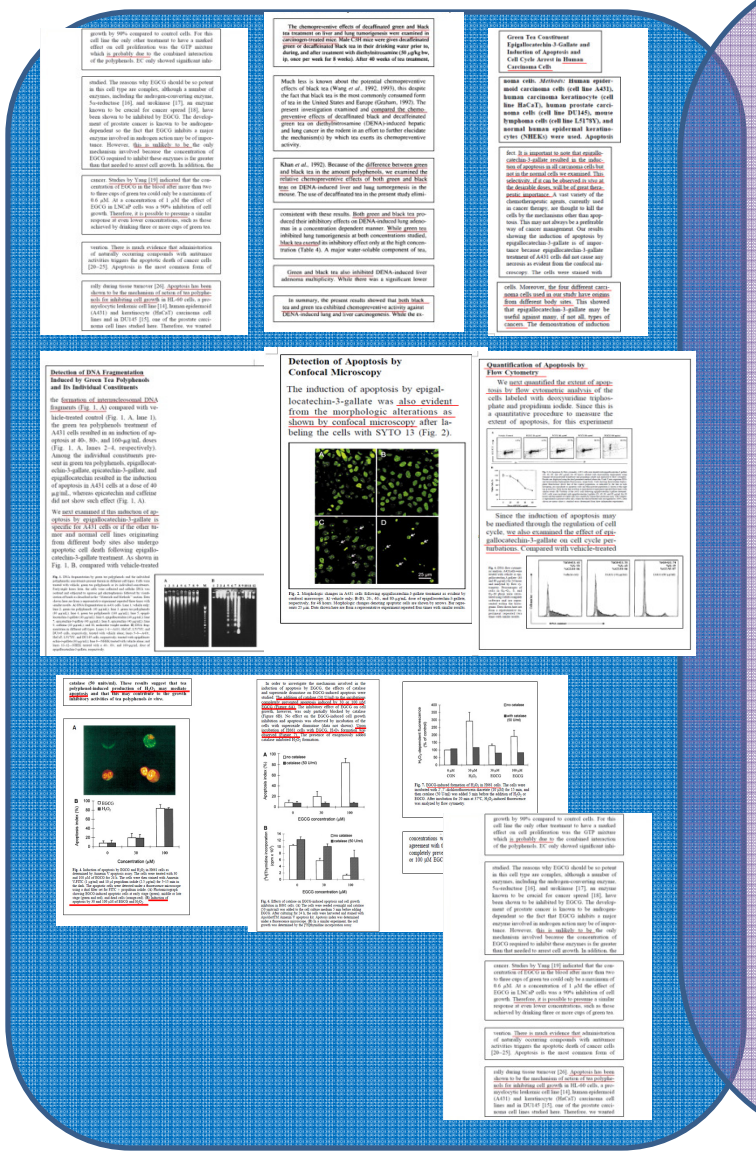




Approach | Interactive | Illustration | Application | Integration

The way to read a scientific paper

- Students can choose the samples that match the criteria



Matching games

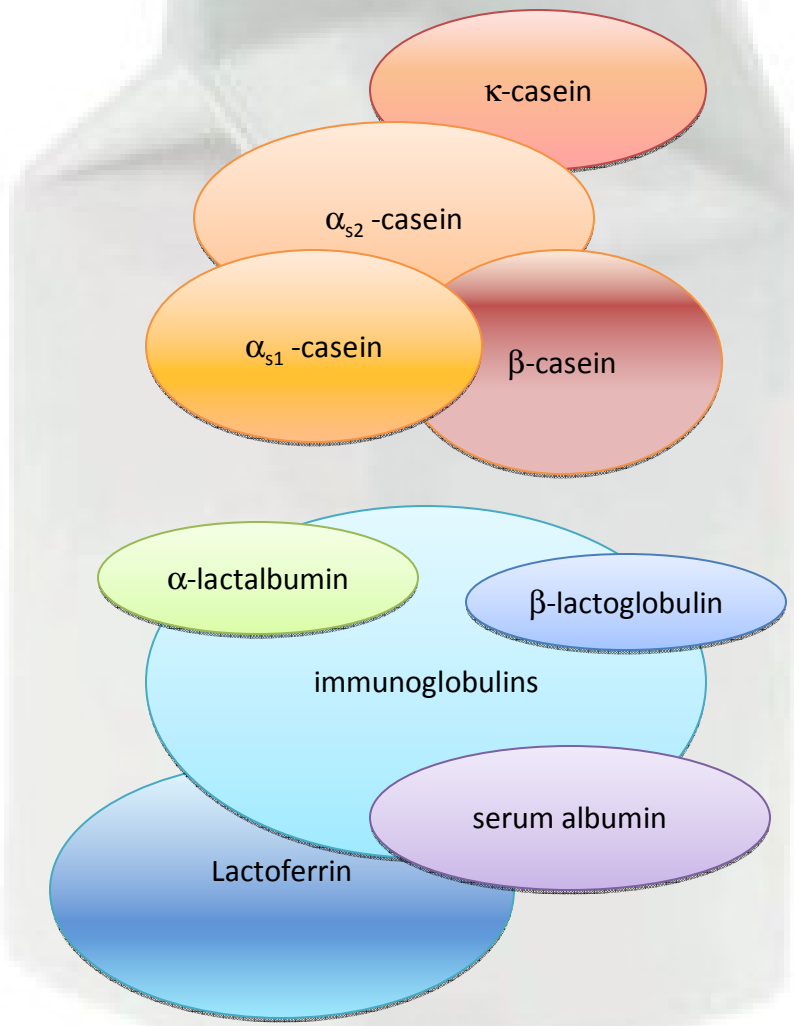
A.	Whether the data actually support the conclusions made by the author
B.	Whether the author take multiple approaches to answering a question. Usually, multiple approaches from different direction to support the conclusion would make it more persuasive.
C.	Be aware of the application of the study in the field
D.	Distinguish between conclusions proven by experimental data and speculations
E.	Whether the paper carry out comparison between similar subjects to provide substitutes

Clearer illustration on abstract topics

Protein Biochemistry Module
Milk protein separation case study

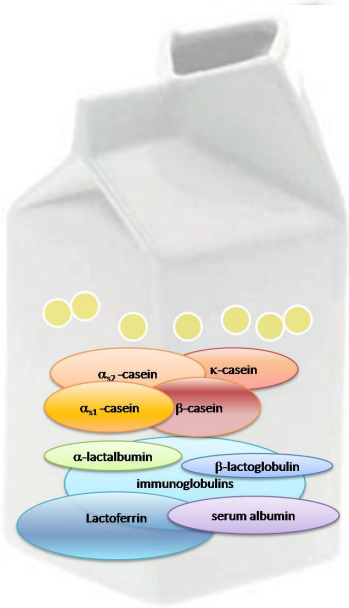
✓ Illustrate the way to separate different proteins and to arrange the proteins according to sizes

(showing the **phenomena** of centrifugation and SDS-PAGE)



Games

Organize the position of molecules after centrifugation

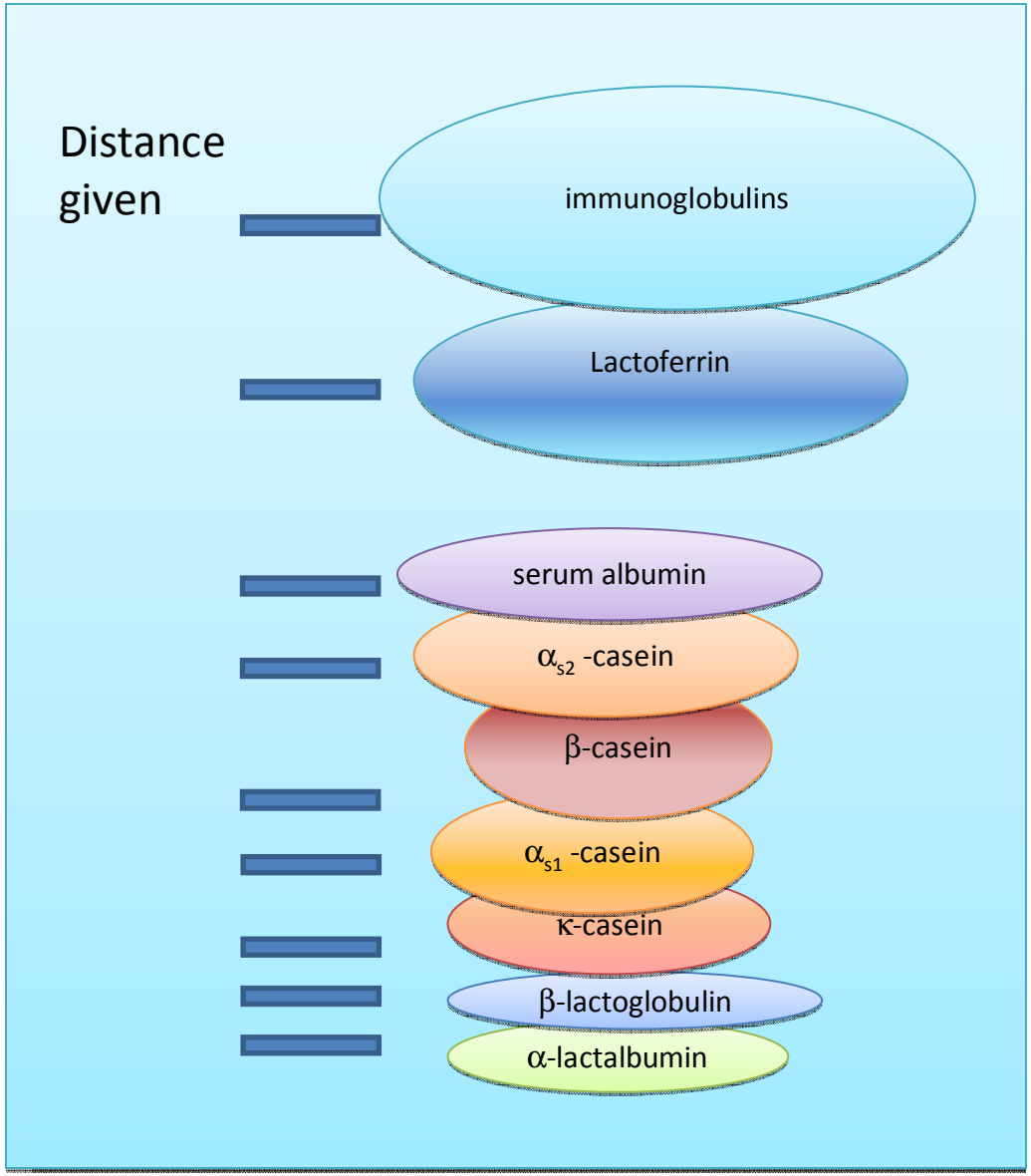


Removal of fat from the sample

SDS-PAGE

Approach | Interactive | Illustration | Application | Integration

Label the bands of corresponding milk proteins after SDS-PAGE experiment



More emphasis on the daily life applications of the biochemical knowledge

Biochemistry and Life Module

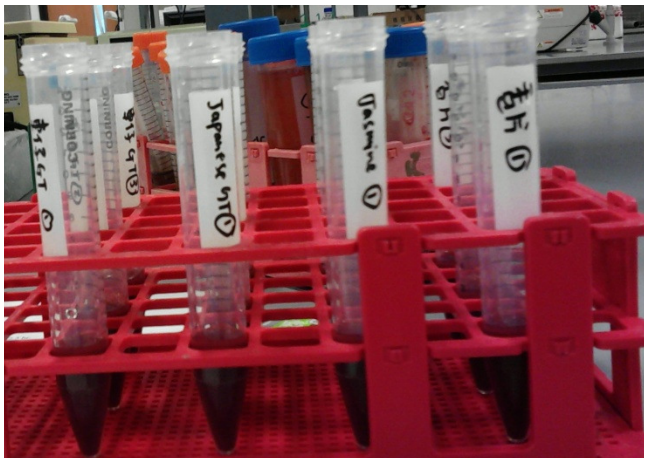
Effect of tea antioxidants on lipid oxidation in red blood cell membrane

基因研究證實綠茶抗癌說法

時間：2010-08-19 10:44　　來源：文匯報

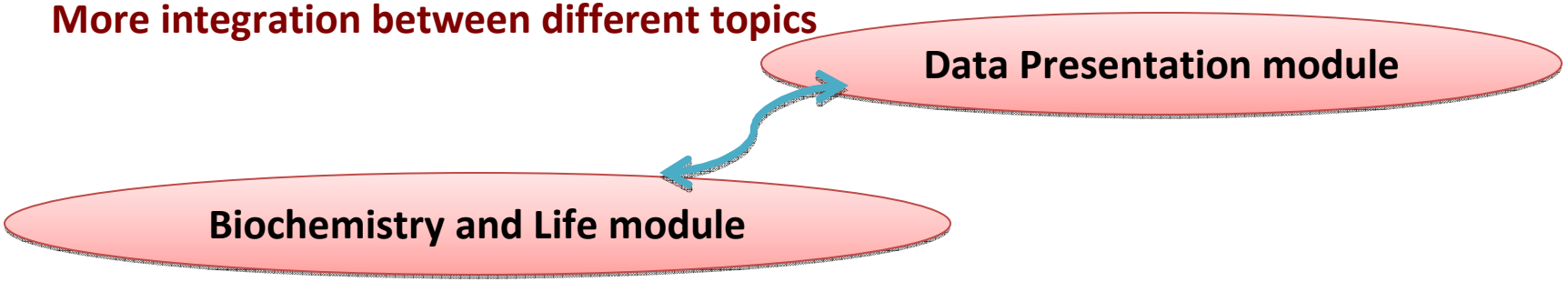
Case study:

- Test effect green tea on red blood cell membrane lipid oxidation
- Compare effect of green tea with black tea
- Compare different brands of green tea



➢ **Embedded with videos of all the related experiments**

More integration between different topics



Case study:

- Test effect green tea on red blood cell membrane lipid oxidation
- Compare effect of green tea with black tea
- Compare different brands of green tea

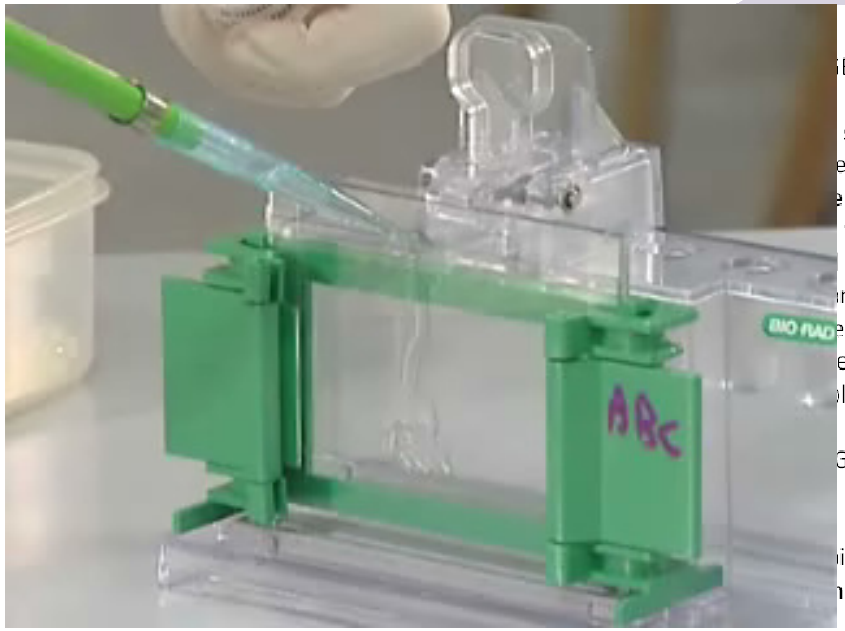
More integration between different topics

Laboratory Equipment and Technique module

Protein Biochemistry module

Determination of protein concentration in milk

Bradford



E technique can

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negatively
the proteins by
charge are
me the
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GE:

ility (distance
s separated.

Separation of proteins

Determination of proteins molecular weight

*Video: SDS-PAGE

Future Developments

- To expand the platform to include more course topics
- To develop a generalized platform for life science students in CUHK
- To promote the system to other departments or faculties in CUHK
- To develop a generalized platform used by life science students in other local tertiary institutions

Acknowledgement

Teaching Development Grants (2009-2012)