

Report to Biochemical Society

Compiled by Nicky Souter, Senior Lecturer

The University is grateful to the Biochemical Society for supporting this event.

**The programme**

The programme set out to:

- extend biological insights in relation to the Scottish curriculum for biology/science;
- introduce teachers to the opportunities afforded in the BioLab for extending pupil motivation and commitment towards biology/science;
- illustrate the potential to meet Curriculum for Excellence Capacities in their pupils
- To support the aims of the Society to promote the advancement of the science of Biochemistry

**Providers**

Organiser	Mr Nicky Souter	University of Strathclyde
Demonstrator	Mr Graeme MacVicar	University of Strathclyde
Photographs	Mr John Watson	University of Strathclyde
Scientists	Dr Lindsay Welch, Prof Iain Hunter	University of Strathclyde
Qualifications Manager	Mr Jim Stafford	Scottish Qualifications Authority

**The Delegates** (N=17, Schools = 16)

Ayr Academy	Iain McGill
Brechin High	Lil Black
Cleveden Secondary	Melodie Schaschke
Douglas Academy	Rob Brew
Dunbarton Academy	Irvine Johnston
Greenock Academy	Sandra Cunningham
Greenwood Academy	Gina McKee
Hamilton College	Elizabeth Dunn
Hillpark Secondary School	Stacy Jones
Inverness Royal Academy	Sarah Rathbone
Lenzie Academy	Josephine O'Brien
Linwood High School	Norma Lyons
Marr College	Catherine Baxter
Paisley Grammar School	Lisa Hotchkiss
Smithycroft Secondary	Elaine Johnston
St Margaret's School, Edinburgh	Alison McLeod
St Margaret's School, Edinburgh	Lesley Trotter

## Programme

9.00 - 9.30	Registration, Tea and Coffee
9.30 - 9.45	Introduction and Welcome
9.45 - 11.00	PCR lab - extraction and amplification of DNA
11.00 - 11.30	Tea and Coffee
11.30 - 12.00	Professor Iain Hunter – Emerging infections – they are coming to get you!
12.00 - 12.30	Dr Lindsay Welch – PCR in Forensic science
12.30 - 1.45	PCR lab – electrophoresis of samples
1.45 - 2.45	Lunch
2.45 - 3.00	PCR lab concluded
3.00 - 3.30	Mr Jim Stafford, Scottish Qualifications Authority– What molecular biology <i>should</i> be in H Biology?
3.30 - 3.45	Analysis of results
3.45 - 4.00	Helping us to help you. Evaluation

## Photographic consent

This was obtained from all delegates. (Appendix 1) All photographs that are not included in this report are available and have been forwarded to the Biochemical Society.

## Publicity

All secondary schools in Scotland received a flier (Appendix 2) to coincide with the start of the new academic session in August 2009. This was also forwarded electronically to alumni from the previous 3 sessions as well as being placed on the ssercbio yahoo group.

Applications were processed by the demonstrator.

### The practicals

The protocols were delivered by the demonstrator currently employed by the University who has played a major role in the management, maintenance, and organisation of the BioLab since its inception.

Preparation of all biochemical materials and reagents is undertaken by the demonstrator, thus ensuring the quality of delivery of the experimental outcome.



Laboratory safety is the immediate responsibility of this demonstrator.



Scenes from the event

### **The lectures**

The lectures were provided by 2 research scientists from the Strathclyde Institute of Pharmacy and Biomedical Sciences and the Centre for Forensic Science, Pure and Applied Chemistry. The 3<sup>rd</sup> lecture related to curriculum priorities in molecular biology in anticipation of a new Higher Grade Biology to be announced in December 2009.

### **Follow up**

In the few days following the event delegates received a CDROM that included each of the following resources:

Instructional materials for each of the protocols

PowerPoint presentations from each of the speakers

BioLab flier

A photograph of each delegate's electrophoresis gel was forwarded electronically

Delegates were subsequently invited to join the ssercbio yahoo group

## Evaluations

The evaluation proforma is attached as appendix 3. Fifteen evaluations were received.

QUESTION									
1	2	3	4	5	6	7	8	9	10
My expectations for the event have been achieved	The event was well prepared and organized	The pace of the day was acceptable	Support, guidance and resources were effective	Learning and teaching approaches were appropriate	The event provided me with good insight for my future teaching	Lecture 1 was interesting and informative (Iain Hunter)	Lecture 2 was interesting and informative (Lindsay Welch)	Lecture 3 was interesting and informative (Jim Stafford)	The quality of the catering was appropriate
4	4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	4	4	4	3
4	4	4	4	4	4	4	3	3	4
2	3	4	4	4	3	4	4	4	4
4	4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	3	4	4	3
4	4	4	4	4	3	4	4	4	3
4	4	4	4	4	4	4	3	4	4
4	4	4	4	4	4	4	4	4	4
4	4	4	4	4	3	3	3	4	4
4	4	4	4	4	4	4	4	4	4
54	55	56	56	56	53	54	53	55	53
3.8	3.9	4	4	4	3.8	3.8	3.8	3.9	3.8

- Mean evaluation score for all categories = 3.9
- The evaluations indicate an outstandingly positive response to the event across all categories.
- Written comments, listed below support this positive evaluation.



## Part B

Please list up to three key points about positive aspects of the event

More understanding of process of PCR. Knowledge about how much PCR is used and where. Practical experience of carrying out PCR.	Increased knowledge about PCR and its uses. Gained knowledge on forensic uses of PCR. Good laboratory practice and hands on experimentation reinforced.
Great hands on experience. Good opportunity to try techniques not readily available elsewhere.	Hands on practical very useful. Excellent catering.
Informative. Intellectually challenging.	The practical/hands on experience of the lab work. The informative guidance from Graeme. The talks by the 3 speakers.
Biotechnology is important for our future. There was excellent clarity in procedures. The wider PCR is important. Jim's talk really shows the way we should be going.	Lectures linking to uses of PCR. Excellent organisation, explanation, and demo. Lunch!
Lecture 2. Lecture 3. Enjoy doing practical and very well organised.	The practical experience. The knowledge gained (especially lectures 2&3) The organisation of the day.
Opportunity to see and use new techniques rarely available. Expertise of leaders evident especially in up to the minute use of techniques. Experiment worked!!	PCR uses in school. PCR uses in disease tracking/planning. PCR uses in forensics - good explanation of DNA profiles.
Informative. Friendly. Organised	The whole day was well organised and it was good to get a more practical insight into PCR. Hearing about the new Higher Biology.

## Part C

If you have graded any item 2 or 1 please provide a comment explaining why:

I was hoping for more links to ACfE. Hoped for more links to higher not Advanced higher.
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## Appendix 1

### Photography Consent Form

I confirm that the University of Strathclyde is permitted to reproduce photographs featuring my image in Prospectuses and other promotional publications. This agreement applies to both printed and electronic media including the Internet.

SIGNATURE \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_

Email \_\_\_\_\_

Date \_\_\_\_\_

## Appendix 2

### CPD for Biology Teachers at the BioLab

#### Building Capacity – Practical Biotechnology for Teachers

The University, and Biochemical Society, invite **Biology teachers** to this **Free CPD** event.

#### BioLab

Strathclyde University offers a range of activities in the 'BioLab' - a dedicated facility, established in 1996 at its Faculty of Education, Jordanhill Campus. BioLab was strongly modelled on the City Lab, a fully equipped biotechnology laboratory located at the Boston University School of Medicine. Both involve training teachers in selected protocols so that they may in turn teach these to their pupils.

Students and teachers explore topics through an enquiry based methodology. The activities are suitable for secondary stage pupils studying biology and science. Practical classes include first-hand experience of protocols in DNA Profiling, ELISA, Protein Profiling and the Polymerase Chain Reaction. Each of these procedures is a contemporary research tool that uses resources that are not readily available in secondary schools. Each protocol is explicitly linked to the Scottish Qualification Authority's (SQA) programmes of study.

Pedagogical approaches relating real life science and explanations to the school curriculum meet the aspirations of "Curriculum for Excellence" and are set in the context of DNA finger printing, identification of drug targets etc. "Curriculum for Excellence" in turn is hallmarked by flexibility and the ambition to establish 4 capacities, "Successful Learners, Confident Individuals, Responsible Citizens and Effective Contributors".

Teachers in biology departments in schools from the region are invited to attend a training session on the available protocols. Presentations will be given by leading researchers on their work involving PCR.

This event, to be held on **Friday 2nd October**, will be open to 20 biology teachers. Places will be allocated on a first-come-first-served basis.

Further information on the BioLab including curriculum links is available at our website <http://www.strath.ac.uk/curricularstudies/mste/biolab/>

#### Programme

9.00 - 9.30	Registration, Tea and Coffee
9.30 - 9.45	Introduction and Welcome
9.45 - 11.00	PCR lab - extraction and amplification of DNA
11.00 - 11.30	Tea and Coffee
11.30 - 12.30	Current research at Strathclyde – 2 presentations
12.30 - 1.45	PCR lab – electrophoresis of samples
1.45 - 2.45	Lunch
2.45 - 3.00	PCR lab concluded





3.00 - 3.30 Jim Stafford, SQA,  
What molecular biology *should* be in H Biology?  
3.30 - 3.45 Analysis of results  
3.45 - 4.00 Helping us to help you. Evaluation

### Application details

To book a place at this event please contact us, details below.

Mr Graeme MacVicar  
Demonstrator  
The BioLab  
University of Strathclyde  
Smith Building  
Jordanhill Campus  
76 Southbrae Drive  
Glasgow  
G13 1PP

Tel – 0141 950 3603

Fax – 0141 950 3405

Email – [g.j.macvicar@strath.ac.uk](mailto:g.j.macvicar@strath.ac.uk)

Successful applicants will be advised by return.

This form is available electronically please email [g.j.macvicar@strath.ac.uk](mailto:g.j.macvicar@strath.ac.uk) for a copy.

The University is grateful to the Biochemical Society of their support.

## Appendix 2 Evaluation Proforma

### Building Capacity – Practical Biotechnology for Teachers

The University is grateful to the Biochemical Society for supporting this event. The purpose of this short questionnaire is to help staff and the University to monitor the quality of In-service provision as well as providing feedback to the Biochemical Society.

Please indicate your views by **ticking** the appropriate box and use the spaces below for comments.

Responses are anonymous. Please be honest and constructive.

<b>Part A</b>	Strongly Agree 4	Agree 3	Disagree 2	Disagree Strongly 1
1. My expectations for the event have been achieved				
2. The event was well prepared and organized				
3. The pace of the day was acceptable				
4. Support, guidance and resources were effective				
5. Learning and teaching approaches were appropriate				
6. The event provided me with good insight for my future teaching				
7. Lecture 1 was interesting and informative (Iain Hunter)				
8. Lecture 2 was interesting and informative (Lindsay Welch)				
9. Lecture 3 was interesting and informative (Jim Stafford)				
10. The quality of the catering was appropriate You				

### Part B

Please list up to three key points about positive aspects of the event

(Continue on reverse if required.)

### Part C

If you have graded any item 2 or 1 please provide a comment explaining why:

(Continue on reverse if required.)