

TOP 3%

THE  
TIMES  
HIGHER  
EDUCATION  
WORLD  
UNIVERSITY  
RANKINGS



OFFICIALLY RECOGNISED IN THE TOP  
3% OF UNIVERSITIES WORLDWIDE

PROGRAMMES UNDERPINNED BY  
WORLD-LEADING AND INTERNATIONALLY  
EXCELLENT RESEARCH (RESEARCH  
EXCELLENCE FRAMEWORK 2014)

# Biotechnology Summer School

UNIVERSITY OF THE  
WEST of SCOTLAND

UWS

# Biotechnology Summer School

## WHO WE ARE:

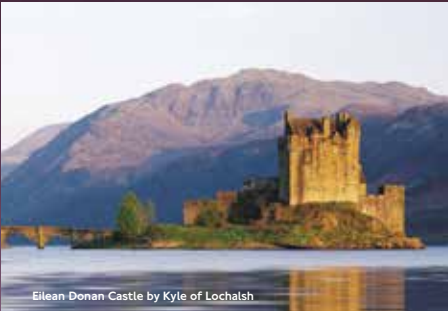
Our research activity encompasses a number of areas spanning medical and environmental and biotechnological applications. These include host-pathogen interactions, identifying unique molecular targets and pathways for development of new medicines for neglected and tropical diseases, diagnostics, reproductive immunology, and medical devices. Staff also undertake interdisciplinary research that interface the environment, human and animal health, infectious diseases and antimicrobial resistance. Many projects include collaborators from both the health service, industry and other universities and are impact driven. For example, research on pathogenic free-living amoebae involves collaboration with ophthalmologists and the eyecare industry to discover new effective medicines for the sight-threatening pathogen,



Loch Lomond & The Trossachs National Park



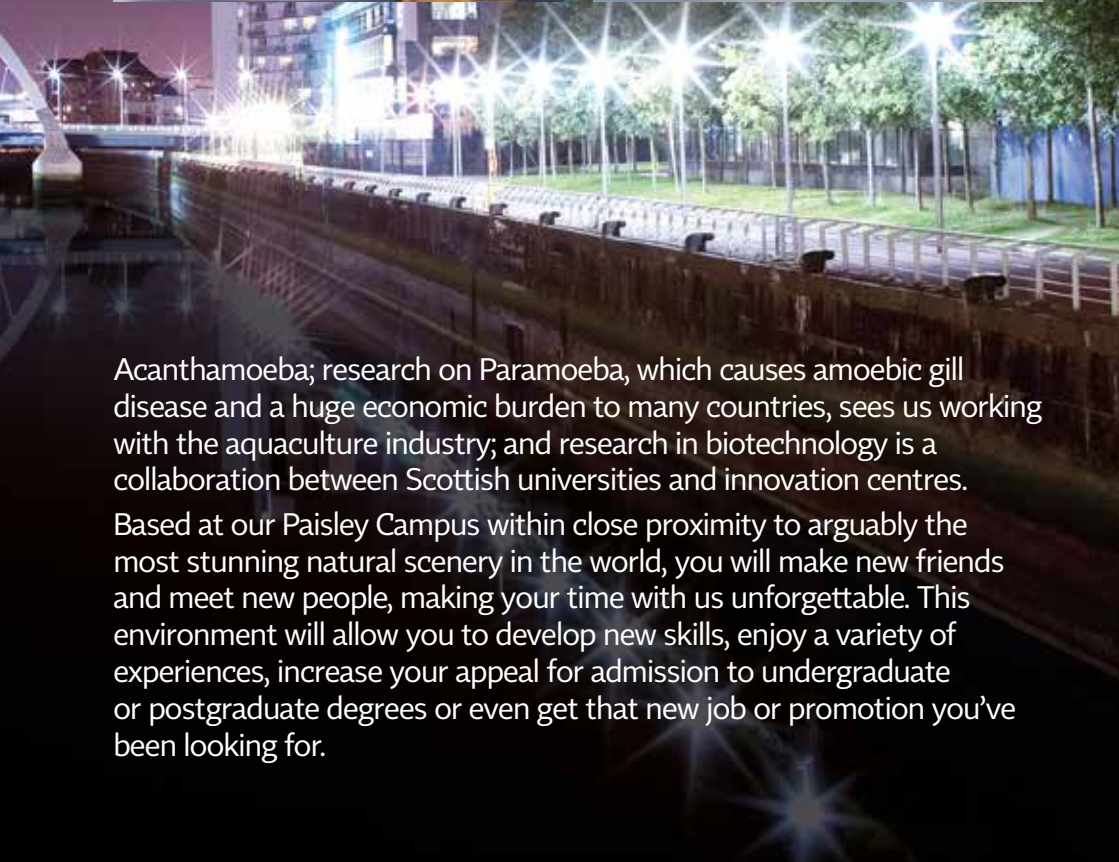
Inveraray on Loch Fyne



Eilean Donan Castle by Kyle of Lochalsh



Isle of Arran in the Firth of Clyde



Acanthamoeba; research on Paramoeba, which causes amoebic gill disease and a huge economic burden to many countries, sees us working with the aquaculture industry; and research in biotechnology is a collaboration between Scottish universities and innovation centres.

Based at our Paisley Campus within close proximity to arguably the most stunning natural scenery in the world, you will make new friends and meet new people, making your time with us unforgettable. This environment will allow you to develop new skills, enjoy a variety of experiences, increase your appeal for admission to undergraduate or postgraduate degrees or even get that new job or promotion you've been looking for.

## Did you know:

Although UWS is a modern enterprising university, its roots span 120 years with a strong tradition of practicality and relevance. Utilising cutting edge facilities, specialist knowledge and world-leading and internationally excellent expertise, our research has real-world impact and we are at the forefront in the search for solutions to some of the world's most pressing problems. Environmental Management at UWS falls under the umbrella of the Institute of Biomedical & Environmental Health Research Group (IBEHR).

The Institute for Biomedical and Environmental Health comprises four key centres/groups. The Centre for Musculoskeletal Science (CMS) focuses on the study of the pathogenic mechanisms of arthritis and the development and evaluation of novel therapies. The Infection and Microbiology Research Group encompasses the study of microbial interactions from host-pathogen relationships during infection to the environmental benefits of bioremediation. The Drug Design, Discovery and Molecular Sciences group undertakes key pharmaceutical, biomedical, environmental and materials science research. The Centre for Environmental Research (CER) focuses on the inextricable link between human health and health of the environment.

## What you will do:

You will take part in practical and applied activities in biotechnology to produce therapeutic recombinant proteins with the potential to target specific diseases using bacteria as a protein factory. You will use bioinformatics tools to identify genes from genome databases and use molecular cloning techniques to prepare a plasmid for expression in bacteria. You will also be introduced to a simple affinity chromatographic protein purification

technique. This will provide you with an excellent opportunity to have in-depth discussions on research with academics who are leading experts in their area that will supplement your knowledge, offer you research skills and expertise in the ever-growing and increasingly important scientific discipline of bioinformatics and biotechnology. The Summer School aims to improve your understanding and practical skills in biotechnology. In the one week course you will participate in a funded research project.

## Outcomes of attending the summer school include:

You will gain the satisfaction of generating a bioactive protein from first principles, whilst enhancing your appeal to potential employers and graduate schools. You will be given guidance on analysis and presentation of your data as scientific posters or reports and an oral presentation. You will be able to make lasting connections and lifelong friendship with students from around the world, studying a range of subjects but sharing your enthusiasm for biotechnology and benefit from a global-renowned academic excellence.

You will also participate in social events, field trips, excursions and other confidence building activities in which you will make new friends, discuss opportunities for future study with students and staff, experience what it is like to study at UWS, and get an insight into Scottish culture.

**Programme Dates:** Sunday 15 July 2018 to Saturday 28 July 2018 (Closing date for applications is 25 May 2018). Places limited so book early

**Fees:** £1600 inclusive of tuition, accommodation, meals and visits

**Early Bird:** £1500 (book before 31 March 2018)

[https://apply.uws.ac.uk:444/BANProd/bwskalog.P\\_DisplLoginNon](https://apply.uws.ac.uk:444/BANProd/bwskalog.P_DisplLoginNon)

# PROGRAMME

The Biotechnology Summer School programme is designed to allow everyone to feel comfortable from the start. Social events, field trips and confidence building activities support the academic work with world-class experts, using some of the most advanced and unique resources, preparing you for the opportunities to learn and apply your new skills and knowledge.

Sun 15 July	Mon 16 July	Tue 17 July	Wed 18 July	Thu 19 July	Fri 20 July	Sat 21 July
<b>Arrival</b>	<b>AM</b> Welcome, induction to UWS, and campus tour <b>PM</b> Introduction to the School of Science and Sport and the programmes of study.	<b>AM</b> Introduction to Bioinformatics-gene identification and validation <b>PM</b> Extraction of genomic DNA for cells	<b>AM</b> PCR amplification of gene of interest from genomic DNA <b>PM</b> Excursion	<b>AM</b> Resolving PCR product by DNA gel electrophoresis and cloning to expression vector <b>PM</b> Self-study	<b>AM</b> Making bacteria competent <b>PM</b> Transforming bacteria	<b>Excursion</b>
Sun 22 July	Mon 23 July	Tue 24 July	Wed 25 July	Thu 26 July	Fri 27 July	Sat 28 July
<b>Day off</b>	<b>All day</b> Expression of recombinant protein	<b>AM</b> Protein and purification <b>PM</b> Self-study	<b>AM</b> Expression validation by SDS-PAGE electrophoresis <b>PM</b> Excursion	<b>AM</b> Presentation preparation <b>PM</b> Presentations	<b>AM</b> Wrap up <b>PM</b> Farewell lunch, presentation of certificate	<b>Departure</b>

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## Eligibility

The Summer School is particularly suitable for home and international students and industry professionals with an interest in biotechnology.

In order to be eligible for our Biotechnology Summer School you should meet minimum language requirements. It is preferred, but not essential, that international students should have an IELTS score of 6.5 or above (with no less than 6.0 in each skill). For more information visit [www.uws.ac.uk/international/english-language-requirements/](http://www.uws.ac.uk/international/english-language-requirements/)

## Visas

If you are from outside the European Economic Area (EEA) and Switzerland, you can apply for a short-term study visa. Make sure you check the immigration requirements before applying.

Visit [www.gov.uk/study-visit-visa](http://www.gov.uk/study-visit-visa) for more details.

# FAQS

## Where will the Summer School take place?

University of the West of Scotland's Paisley Campus is the main location of the Summer School with activities at our and Hamilton Campus as appropriate (inter-campus travel will be provided). Field trips and events will take place across Scotland but all travel and accommodation will be provided.

## What is included in the price?

The fee includes the tuition fees, accommodation at the University halls of residence, meals (full-board), and all organised travel.

## Do I need a visa?

Yes, if you are from outside the European Economic Area (EEA) and Switzerland, you can apply for a short-term study visa. Make sure you check the immigration requirements before applying (visit [www.gov.uk/study-visit-visa](http://www.gov.uk/study-visit-visa) for more details). You will receive a confirmation of booking and you should carry this confirmation with you when travelling. You can apply for a visa up to 3 months before your date of travel to the UK. You should get a decision on your visa within 3 weeks.

## Do I need a confirmation letter to obtain my visa?

You will need to attach an offer letter to your visa application. The offer letter is a 'Booking Complete' email, which is sent to you once you have booked and made full payment for the Summer School.

## What countries do UWS students come from?

UWS is an international university with students from more than 70 countries worldwide and we make every effort students feel comfortable with us at every stage.

## How do I get to Paisley?

University of the West of Scotland's Paisley Campus is located in the centre of Paisley town, and just a 10 minute train journey from Glasgow city centre. It is well served by public transport links and cycle paths. UWS supports and encourages students to make sustainable travel choices for their journey to Paisley Campus wherever possible. Glasgow International Airport is only a 30-minute walk away (10 minutes by car). More transport details visit [www.uws.ac.uk/paisley](http://www.uws.ac.uk/paisley)

## Who should I contact for further information about the Summer School?

For further information please contact:  
Jan Miller -  
[Jan.Miller@uws.ac.uk](mailto:Jan.Miller@uws.ac.uk)

## Will I receive a certificate of completion?

Yes, you will receive a Certificate of Attendance that will be issued on completion of the Summer School.



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# APPLY

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