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Profile Feature as seen in *Nature* 25 July 2019

# GENOMICS ONLINE: COURSES THAT REACH MORE PEOPLE, INCREASE IMPACT AND IMPROVE CAREERS

A conversation with **DR PAMELA BLACK**, Education Lead, Advanced Courses and Scientific Conferences, Wellcome Genome Campus.



The Advanced Courses and Scientific Conferences (ACSC) programme has been delivering cutting-edge biomedical training and conferences for more than 30 years. The programme recently launched a series of free online courses to complement its popular face-to-face events and to meet the growing demand for more flexible and accessible genomics-led training.

## What prompted you to launch online courses?

As a leading provider of lab, computational and discussion-based courses that span basic research, cutting-edge biomedicine, and the application of genomics in healthcare, we were keen to enable as many researchers as possible to access training in genomics and bioinformatics.

## Why did you feel there was a need for online courses?

We were unhappy at having to turn away so many applicants because our residential courses are oversubscribed. So, we developed ten free, online courses, open to all, with the aim to broaden global reach, and expand the diversity of our programme.

## What is the appeal of online courses?

One of the most exciting things to have happened in terms of accessibility and diversity in continuing education is the rise of online professional development and social learning opportunities. Technology has opened the options for delivering advanced training, and there is growing recognition that online courses can boost education access for busy professionals, minority groups and researchers in resourced-limited regions. Learners are no longer restricted by timing, professional or other

commitments, or, importantly, finance. We were keen to make online genomics training available to researchers and others who cannot travel to the Wellcome Genome Campus in Hinxton, UK. Since its launch in April 2018, our online programme has benefitted 11,000 learners from more than 140 countries.

## How did you develop the online programme?

We worked with many leading scientists from the Wellcome Sanger Institute, and other UK and overseas biomedical research and health organisations to develop courses on a range of topics, such as bacterial genomes, antimicrobial resistance, and computational tools for genome data analyses.

## How does the online platform foster social learning?

We decided to partner with FutureLearn, UK-based digital learning experts, to present the courses. They have expertise in creating a social environment to support learning and encourage effective discussion throughout the learning process, which is tailored to individual needs. The course platform is excellent at providing a forum to talk through ideas, learn collectively and consolidate and enhance learning.

## Are these courses new or based on existing ACSC programmes?

Our bacterial genomes series of online courses is based around our very popular face-to-face course 'Working with Pathogen Genomes'. We designed the courses with Professor Nicholas Thomson from the Wellcome Sanger Institute to form a suite of training materials ranging from introductory concepts to advanced tools. Learners can choose some or all of the courses to meet their needs and to fit their career or project stage. We're developing online courses with Health Education England and the University of Cambridge to help train the healthcare workforce in genomics and to increase provision of educational materials to those based in low-and-middle income countries.

## What can learners expect from a typical course?

The courses are sponsored by us so they are free to everyone to enjoy ongoing access to all the material as well as a free certificate on satisfactory completion. Each course takes place twice a year, providing several opportunities to start, or return and complete the training. Content is delivered via a mix of videos, featuring scientists from leading international research institutes, articles, and tests and quizzes to check and

validate learning. Some courses also include practical exercises and peer review activities, which reinforce learning and support course completion by the participants.

## Is there a typical online course learner?

The courses reach a wide audience including biomedical researchers, healthcare professionals, undergraduates and even senior secondary school students. Our introductory course, 'Bacterial Genomes: Disease Outbreaks and Antimicrobial Resistance,' attracted researchers and clinical staff, as you might expect, but also undergraduates and interested members of the public who are keen to learn more about this topic. More advanced courses, developed with Dr. Anna Protasio from the University of Cambridge and her colleagues, are aimed at scientists and healthcare professionals needing to analyse bacterial genome data for research projects and diagnostic use.

These courses are valuable tools for Continuing Professional Development and have received professional accreditation.



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# ADVANCED COURSES + SCIENTIFIC CONFERENCES

# 2019/20

## CONFERENCES

CRISPR and Beyond: perturbations at scale to understand genomes **NEW**

2-4 September

RNA Informatics

9-11 September

Optimising Multistudy Integrative Research **NEW**

18-20 September

Mechanisms and Evolution of Intergenerational Change **NEW**

24-26 September

World Congress on Genetic Counselling

2-4 October

Plant Genomes in a Changing Environment

16-18 October

Exploring Human Host-Microbiome Interactions in Health and Disease

23-25 October

Human Evolution

30 October-1 November

Epigenomics of Common Diseases

6-8 November

Mitochondrial Medicine

11-13 December

Evolutionary Systems Biology

12-14 February

Optimmunize: Improving the beneficial effects of vaccines **NEW**

19-21 February

Single Cell Biology

11-13 March

Genomics of Brain Disorders

18-20 March

Genomics of Rare Diseases

25-27 March

Longitudinal Studies

20-22 April

Nursing, Genomics and Healthcare **NEW**

27-29 April

Proteomics in Cell Biology and Disease Mechanisms

30 March-1 April

Antimicrobial Resistance – Genomes, Big Data and Emerging Technologies

6-8 May

Curating the Clinical Genome

20-22 May

Healthy Ageing

27-29 May

## COURSES

### LABORATORY COURSES

Train the Trainer: Capacity building for genomic surveillance of AMR in low- and middle-income countries **NEW**

6-11 October

Molecular Pathology and Diagnosis of Cancer

17-22 November

Derivation and Culture of Human Induced Pluripotent Stem Cells

9-13 December

Genomics and Clinical Microbiology

19-24 January

Genomics and Clinical Virology

23-28 February

Genetic Engineering of Mammalian Stem Cells

15-27 March

Next Generation Sequencing

20-27 April

Low Input Epigenomics **NEW**

8-15 May

### COMPUTATIONAL COURSES

Genetic Analysis of Population-based Association Studies

23-27 September

Next Generation Sequencing Bioinformatics

1-7 December

Mathematical Models for Infectious Disease Dynamics

21 February-6 March

Fungal Pathogen Genomics

10-15 May

### LECTURE/DISCUSSION COURSES

Science Policy: Improving the Uptake of Research into UK Policy

19-21 August

Molecular Neurodegeneration

2-6 December

Clinical Genomics: Scientific Fundamentals and Future Directions

29-31 January

Genomic Practice for Genetic Counselling

3-5 February

Practical Aspects of Small Molecule Drug Discovery

21-26 June

## OVERSEAS COURSES

NGS Analysis for Genetic Diseases

5-6 November (Philippines)

Working with Protozoan Parasite Database Resources

10-15 November (Uruguay)

Next Generation Sequencing Bioinformatics

19-24 January (Chile)

Next Generation Sequencing Bioinformatics

9-14 February (Malaysia)

Molecular Approaches to Clinical Microbiology in Africa

21-27 March (The Gambia)

## ONLINE COURSES

Bacterial Genomes: Disease Outbreaks and Antimicrobial Resistance

Bacterial Genomes: From DNA to Protein Function Using Bioinformatics

Bacterial Genomes: Accessing and Analysing Microbial Genome Data

Bacterial Genomes: Comparative Genomics using Artemis Comparison Tool (ACT) **NEW**

What is Genetic Counselling? **NEW**

Please see our website for more details and scheduling of online courses

