

ELISA Masterclass: Flu Fighters



THE UNIVERSITY of EDINBURGH
Easter Bush
Science Outreach Centre

In this enzyme-linked immunosorbent assay (ELISA) masterclass, pupils diagnose the disease status of chickens to identify which are infected with the influenza virus.

Learning Level: S6 Advanced Higher

Availability: On demand

Cost: £8 per pupil

Learning objectives

- Understand the structure, lifecycle and modes of transmission of avian flu
- Understand how ELISA can be used to detect influenza infection
- Will do a quantitative ELISA of flu antibody levels to detect signs of infection
- Make a dilution series and create a standard curve of known antigen concentrations
- Use micropipettes and microplate reader
- Interpretation of experimental results
- To reveal the world of work in scientific research

Techniques used

- ELISA- working with proteins and antibodies
- Quantification of protein concentrations- using a microplate reader
- Centrifugation
- Micro-pipetting

Workshop outline

- ELISA jigsaw activity to teach/reinforce ELISA technique
- Introduction to influenza virus and avian flu
- Introduction to micropipettes
- Serial dilution to generate dilutions of known antigen concentration.
- Quantitative ELISA to assay infection status of several chickens
- Analysis and interpretation of results
- Discussion with scientists from The Roslin Institute



Get hands-on
with real-life
science

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Curriculum links

| Cells and Proteins | Organisms and Evolution | Investigative Biology |
|---|---|---|
| 1 Laboratory Techniques: (a) Health and Safety (b) Liquids and Solutions (d) Antibody Techniques (e) Microscopy | 5 Parasitism: (a) The parasite niche (b) Transmission and virulence (c) Immune response to parasites (d) Parasitic life cycles (e) Challenges in treatment and control | 1 Scientific principles and process: (c) Scientific ethics 2 Experimentation: (d) Controls (f) Ensuring reliability |

Developing the Young Workforce – “I can” statements

The following statements are supported through EBSOC’s workshops:

- ‘I can identify the skills I have learnt across the curriculum, how these relate to the world of work and can apply these appropriately during work placements and other work-related learning.’
- ‘I can confidently access and interpret the information I need to make well informed choices about my learning options, pathways and how these relate to possible future careers.’
- ‘I can work towards achieving qualifications which support me to achieve my future career aspirations.’

