Gaining research skills and generating knowledge

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Background

Degree: Bachelor of Animal and Veterinary Bioscience (BAnVetBioSc).

Degree Focus: This is an applied science degree in the areas of animal production, genetics, disease and wildlife.

Unit of Study (UoS): Wildlife and Evolutionary Genetics taught in 4th year.

Graduate attribute addressed: to engage students in research in a scientifically rigorous manner with regard to experimental design, technical limitations and statistical analysis of results to further expand the body of knowledge in their field of interest.

Developing this graduate attribute through lectures and practical class

Activity type: Laboratory and bioinformatic practical classes.

General description: Students are involved in a real research activity on wildlife genetics through group (GA, 14 hours) and individual (IA, 3 hours) activities.

Aim: to investigate the relationships of Australian saltwater crocodiles using DNA (topic is changed every 3 years).

Step by step description:

- Lectures on wildlife genetics including laboratory and bioinformatic aspects.
- Presentation and discussion of the activity including a detailed protocol for the experiments (GA).
- Genetic experiments: DNA extraction, polymerase chain reaction and sample preparation for DNA sequencing (GA, IA).
- Data analyses: Generation of a DNA sequence alignment and phylogenetic analyses (GA, IA).
- Data interpretation: Use of results and published literature to address the questions of the study (GA).
- Communicating of results: Preparation of poster to be submitted to a national or international conference.

Outcomes

- Student’s comments point out that this activity has:
  
  Enhanced their research skills, showed them how research applies to practical questions, provided them with better understanding of the process of finding a gap in the literature and how to conduct research, showed them how to apply methods to research questions and how to perform whole projects and obtain real data.

- The research outcomes:

  The results of this study have been presented as posters/abstracts at the International Congress of Genetics 2008 in Germany (see companion poster) and the Crocodile Specialist Group workshop 2008 in Bolivia, meaning that all of the students involved have conference publications in their name.

- UoS evaluation:

  Student overall satisfaction in regards to whether this UoS is developing valuable graduate attributes including research inquiry skills and communication skills (4.43±0.49 and 4.13±0.60 out of 5.00 in 2007 and 2008 respectively) shows that they recognise the importance of this practical activity.

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