

Overview:

- Students will be introduced to applications of next-generation sequencing (NGS) to human and non-human forensic evidence, along with steps for implementation into casework
- Students will gain hands-on experience in analyzing NGS data from mock-forensic cases



Lecture Topics:

1. Introduction to forensic science and evidence collection
2. Current DNA analysis approaches used in human & non-human DNA casework
3. Benefits of NGS to the analysis of forensic evidence
4. Current and novel applications of NGS to the analysis of human and non-human DNA evidence
5. Steps for validating NGS for casework
6. Ethics and legal implications of NGS in forensic science

Labs:

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| 1. <u>Mock case:</u> Fish metabarcoding – assessing seafood fraud/mis-labelling | 1 week |
| 2. Identifying variable mitochondrial regions for discrimination of wolves | 1 week |
| 3. <u>Mock case:</u> Ancestry prediction for human investigative leads | 1 week |
| 4. Design a protocol to transition a traditional analysis to an NGS-based workflow | 1 week |
| 5. Research and present on a commercially available forensic NGS assay | 1 week |
| 6. Analysis of human NGS data with open-source and commercial software | 1 week |
| 7. Case report discussion on ethics and legal implications of genetic genealogy | 1 week |