

# Capture and Keep – Virtual Histology Portfolios

Rebecca Donkin, Elizabeth Askew, Michael Vaschina

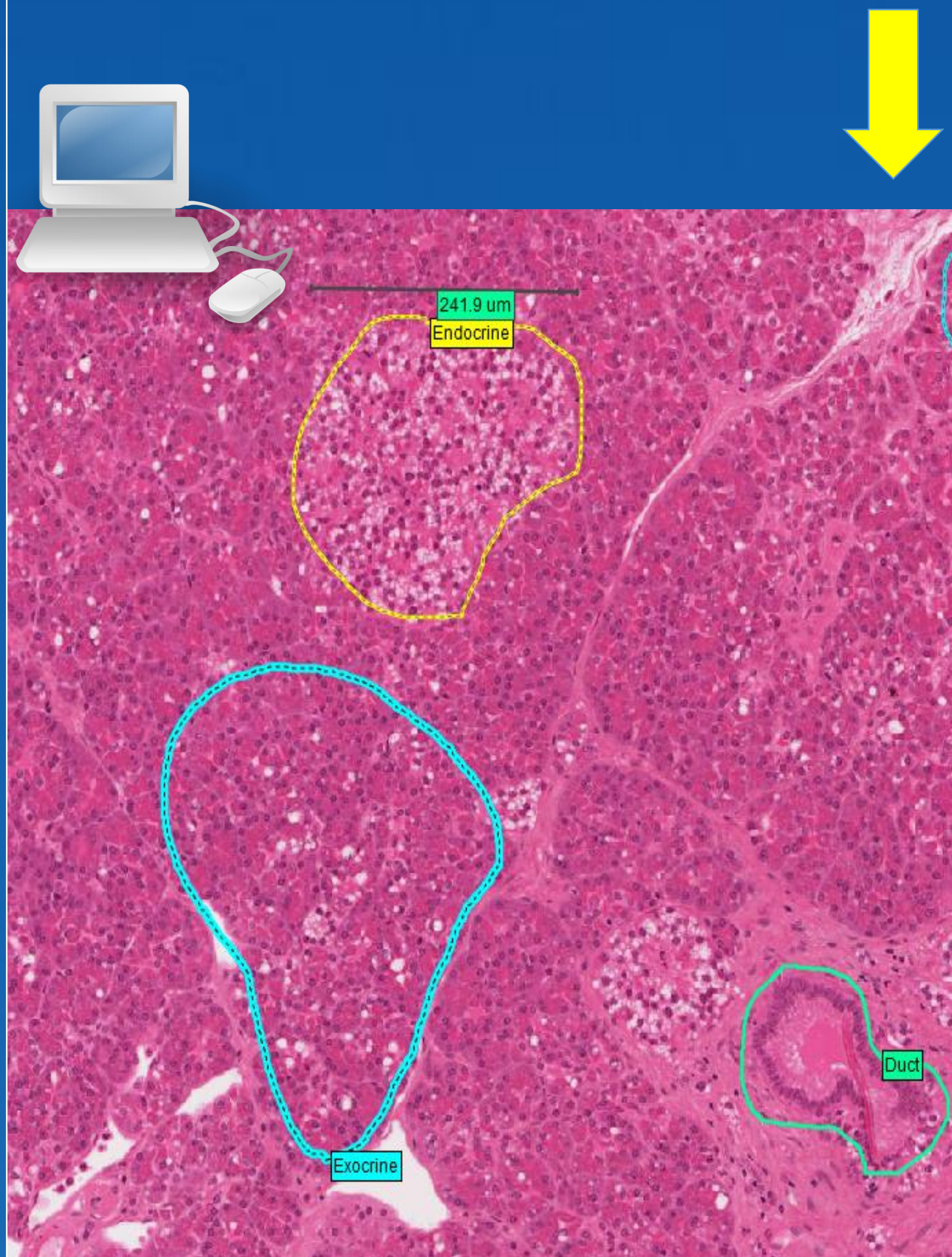
University of the Sunshine Coast, 90 Sippy Downs Drive, Qld, 4556, [rdonkin@usc.edu.au](mailto:rdonkin@usc.edu.au)

## Introduction

Traditional practical components of histology have been taught in a laboratory environment to a group of students, led by an expert in a face-to-face context. Current reduction in face-to-face teaching and increased student enrolment is consistent across biomedical science education, there are reported fewer contact hours and rising costs of traditional methods (associated face-to-face staff contact, demonstration of physical equipment and availability of tissue dissection material). While this restructure in resources has been challenging, it has encouraged advancements in blended learning that includes traditional face-to-face and non-traditional online formats.

Virtual histology lessons were implemented to learn histology outside of the traditional classroom by:

### Virtual Tissue Morphology Slides



**Section of Pancreas – Student Portfolio**

The pancreas is a mixed endocrine-exocrine gland. The **endocrine** portion produces **hormones** from the **Islets of Langerhans** and releases this into the blood stream for blood glucose regulation. The **exocrine** portion secretes **digestive enzymes** (e.g. trypsinogen, lipase, amylase), from the **acinar cells** that empty into the ducts to aid in digestion.

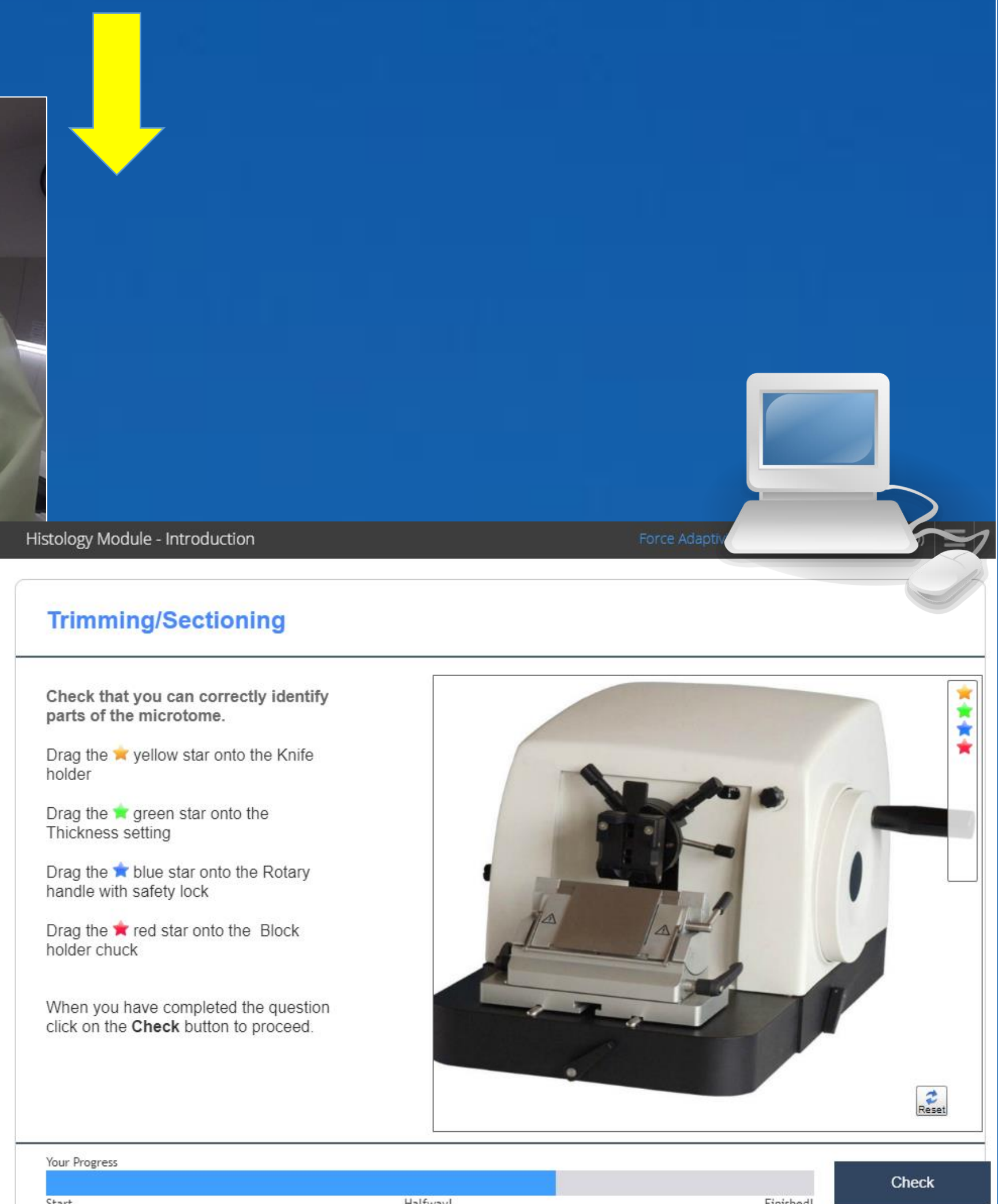

**Exocrine pancreas**  
Pancreatic acinar cells have a single nucleus at the base and basophilic cytoplasm due to increased rough endoplasmic reticulum. At the apex of the cell there are numerous secretory (zymogen) granules staining eosinophilic.

**Endocrine pancreas**  
The islets of Langerhans comprise about 1% of the entire pancreas. Cells are arranged into cords or clusters and with special stains at least 4 different types can be identified.

Virtual morphology lessons using annotated moveable virtual slides, allowed students to:

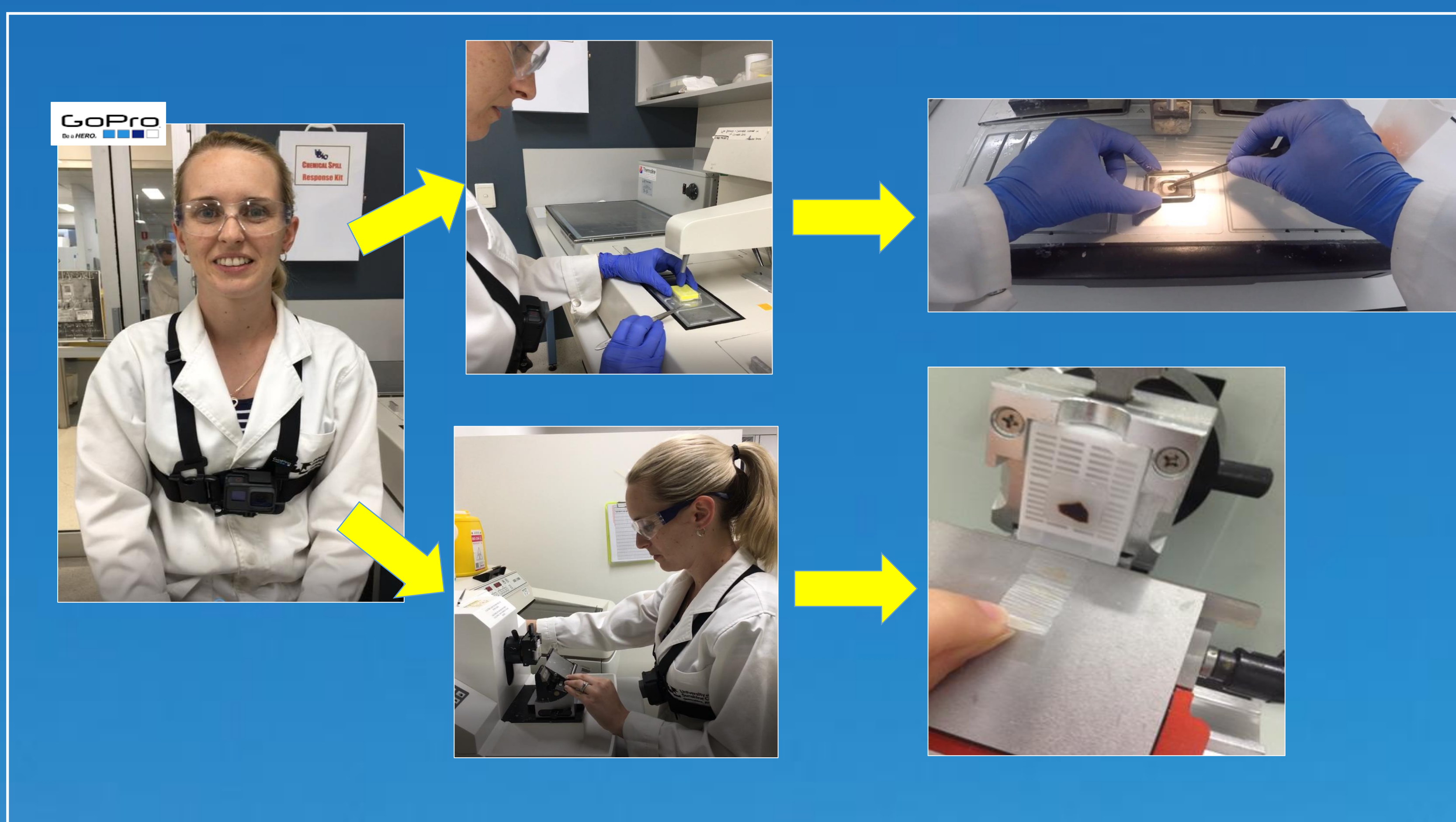
- learn online at any time in a self or group environment
- upload their annotations to a portfolio
- receive online feedback without ever stepping into a laboratory.

### Virtual Technical Skills



Virtual technical lessons created through an interactive software platform that allows the user to choose the level of engagement and interactive feedback included:

- expert led video demonstrations in the histology laboratory
- multiple choice/short answer questions
- drop and drag morphology and/or histology equipment simulation



An example of a chest mounted GoPro® and tri-pod recording to capture first person 'point of view' technical skills.

## Observations

After completing the virtual histology lessons and capturing their learning in a portfolio, students demonstrated their practical skills in the laboratory. Their hands-on technical skills were captured through first person 'point of view' recordings. Students could visually review their skills, receive captured feedback and have a visual copy of their learning. The video recordings were uploaded into their virtual histology portfolio for further review of learning and progress. After completing the practical assessment, students were surveyed on their experience and assessment results were analysed.

## Results

Whilst students felt 'nervous' being filmed, the recording provided feedback that could be viewed multiple times, allowing self-reflection and assistance in exam preparation. Students who participated in the virtual histology portfolios, 'study group' (N=14) and those who did not, 'control group' (N=26) completed a summative histology practical assessment. Students in the portfolio group had an average assessment grade of 82.5% compared to 71.5% in the control group.

## Conclusion

Findings suggest students are engaged in learning histology in a blended learning format and respond positively to the use of virtual histology portfolios. For the academic, by developing a histology program that has a significant blended learning approach which includes: annotated virtual microscopy; video demonstration; and online interactive learning activities, a sustainable approach to learning histology can be achieved.

Acknowledgements: Hollie Stevenson, USC Laboratory Technician.

This project had human ethics approval by the University of the Sunshine Coast's Human Research Ethics Committee A17982.