

BDIAP Elective Report: Developing quality control methods in digital pathology.

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As part of my elective period, I carried out a six-week research project in digital pathology at the University of Leeds. The digital pathology project was originally founded in 2003 and now hosts over 350,000 digital slide images for use in research, in addition to other applications such as undergraduate and postgraduate teaching (1). I initially became interested in digital pathology through the research component of the MBChB course at Leeds, where I worked with the same team with whom I carried out my elective. I began to appreciate the vast potential of digital pathology during this work and wanted to expand on the research carried out further for which the elective period provided the perfect opportunity.

A key area of research in digital pathology is the development of good quality control methods to ensure the accuracy and reproducibility of diagnoses made using digital pathology methods. This is especially important, as one of the key aims of digital pathology is to automate aspects of clinical diagnoses made using histopathology slides – which requires robust underlying quality control checks to ensure the automated methods are safe in for clinical use (2). For my elective project, I undertook a project looking at improving quality control methods for histopathology sections, which was part of a bigger project looking at quality assurance in digital pathology.

I feel I gained a great deal from the experience of my elective, including learning and developing a number of skills and laboratory methods, such as:

- The standard processing of histopathology slides in the research setting.
- Use of white-light interferometry equipment at Swansea University (Figure 1).
- Gained an understanding of the basic principles underlying tissue culture.

- Improved my IT skills, becoming more confident with digital pathology software packages, including ImageScope, QUPath and ImageJ.
- Improved my data processing skills, gaining further experience using statistical software packages and MatLab.

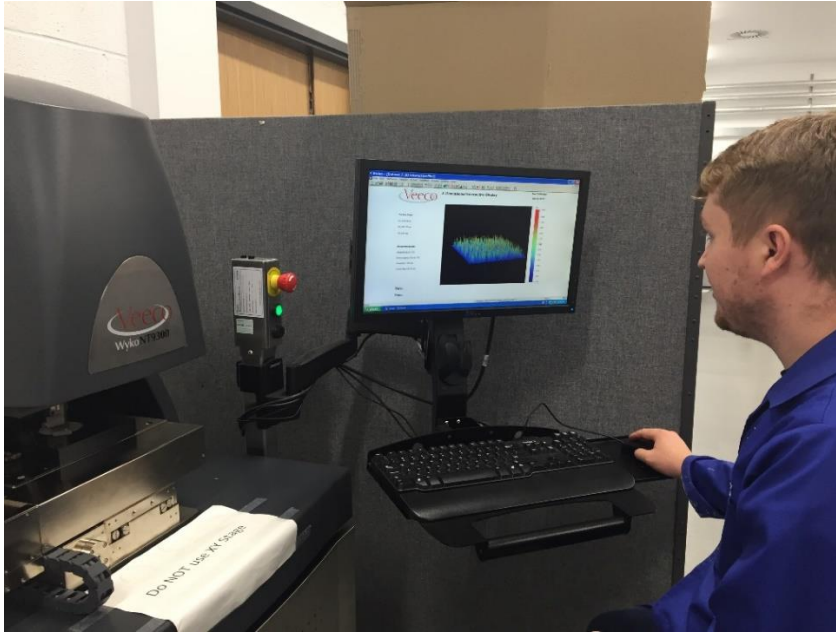


Figure 1 Using the white-light interferometer at Swansea University.

My supervisors were very supportive throughout the elective project and allowed me a great deal of independence with respect to study design aspects of the research I carried out. As such, I feel much more confident in my ability to design a study and have a greater understanding of the processes involved in doing so. I also feel I have greatly improved my inter-professional communication skills, as my project required support from personnel in various departments of the university in order to be successful. I also had regular meetings with Dr Darren Treanor, lead of the digital pathology project and Dr David Brettle, head of medical physics at Leeds Teaching Hospitals, to discuss the progress of the project, which helped to further develop my inter-professional communication skills. I also reported daily to Miss Catriona Dunn, one of digital pathology researchers who supervised me day-to-day throughout the elective period. As a result of these experiences, I have made a number of contacts within the medical school which I have no doubt will be invaluable in the future, should I decide to pursue a career in academic pathology.

Overall, this project has given me excellent insight into a career in academic pathology. While I had some experience from the research module of the MBChB

course, I feel I gained much more in terms of career insight from the elective experience, as I worked in the same office as the rest of the team day-in day-out, which allowed me to develop a much greater understanding of what a career in research entails day-to-day. I also developed much stronger working relationships with the team as a result of the experience. I also feel that, regardless of the type of career I decide to pursue, many of the skills I have developed are transferable to any medical specialty and will greatly enhance my future career development.

Acknowledgements

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