FIVE MINUTES WITH...

"Society needs mineral deposits to develop"

→ DR SHANE WEBB is an economic geologist and postdoctoral research fellow at Université Laval, Canada

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What are you working on?

I research the processes that form gold, silver, iron, and lead deposits, with a focus on gold deposits hosted in quartz veins. These are typically associated with faults, hosted in metamorphic rocks, and sometimes referred to as orogenic gold deposits. With a better understanding of the processes that form these deposits, we can improve our exploration models and strategies for discovering new orogenic gold deposits. My PhD focussed on the Grampian Terrain, central Scotland. Now, I'm looking at the Abitibi Belt in Canada, a 250-km-long, almost continental-scale structure called the Larder Lake-Cadillac Break that hosts many of the world's largest gold resources.

Tell us about your research

My research is multi-pronged. One of the main approaches I use is geochronology, which is the science of dating rocks and geological events, such as the age of mineralisation. The main method I use is Uranium-Lead (U-Pb) geochronology, which I conduct in-situ using a laser that targets dateable minerals within quartz veins. I also use stable isotope geochemistry, which gives a handle on the nature of the fluids that were involved in the mineralisation process. I'm currently using multiple sulphur isotopes and will also use oxygen isotopes to characterise the temperature and origin of the fluids that were present when the gold deposits formed. These two methods are underpinned by a large amount of geological fieldwork, which involves collecting rock samples and then analysing them in a laboratory.

What's your favourite thing about your research?

I like the variety and integrated nature of economic geology. When I was an undergraduate, I specialised in economic geology because I could combine all the different aspects of the degree I enjoyed. I also feel like my work has a real-world impact – for society to develop it needs to continue using mineral deposits.

What's a typical day for you?

Economic geology – as an academic field and career – is fundamentally diverse; each month is unique. During summer, I mostly conduct fieldwork, which I particularly enjoy. In winter, I do lab work, which involves preparing samples, making thin sections, and analysing samples using a microscope. I also attend conferences and workshops in other cities or countries.

What advice would you give to someone interested in pursuing economic geology?

Get a driving licence! Where I work in Canada, the places I need to reach are only accessible by car. For those still at school, getting involved in any society or activity that encourages you to spend large amounts of time outdoors is good. For example, the Duke of Edinburgh's Award, mountaineering, or caving, can prepare you with skills that are transferable to economic geology. For undergraduate students, I recommend joining an academic society related to mineral deposits, such as a chapter of the Society of Economic Geologists. Even though I work in academia, the field of economic geology is fundamentally applied research. Therefore, getting industry experience (for example, an internship with an exploration company) can be invaluable because it can help you place what you're doing in academia within an applied context.