PhD Thesis Opportunity: Structural Characterization of the Patterson Lake Corridor

Dr. Kathryn Bethune, University of Regina (in collaboration with Geological Survey of Canada and Saskatchewan Geological Survey)

We seek a talented, motivated Ph.D. candidate to undertake a detailed lithostructural study of the Patterson Lake Corridor of Athabasca Basin. In collaboration with industry and provincial geologists, this fully-funded project has the goal of characterizing the geological framework of the Patterson Lake Corridor (PLC). This >14 km long corridor in the west-central Athabasca Basin has been the site of intense exploration in the past five years and hosts the recently discovered, structurally-controlled, Triple R and Arrow deposits, as well as other significant U occurrences (e.g., Harpoon, Spitfire, Bow). The Arrow deposit was recently rated (PDAC, 2017) as one of the four most significant discoveries in Canada this past year. Preliminary studies by the Saskatchewan Geological Survey indicate that the geological setting of these deposits is significantly different from those in the better known eastern part of the basin, suggesting a different, and possibly unique set of underlying controls.

Through characterization of the geological setting and structures of basement rocks and the sandstone cover, the research aims to develop a conceptual model for ore genesis, and related structural controls, to inform future exploration elsewhere in the Athabasca Basin and in other Proterozoic basins in Canada and abroad. The research will interface with other proposed research on characterization of the alteration assemblages, timing of fault reactivation-alteration (paleomagnetism, geochronology), coupled with isotopic (B, U-Th, Mg, Fe) and geophysical analysis of the fault corridor plus on-going activities by the Saskatchewan Geological Survey and University of Saskatchewan.

The investigation will involve a combination of drill-core and field-based mapping along the length of the corridor with logistical support from related companies. The ideal candidate should have a strong understanding of structural geology obtained through their education (e.g., B.Sc. and/or M.Sc. degree programs), and/or employment history, including some knowledge of fault rocks and related structures/microstructures and deformation mechanisms, coupled with field mapping and drill core logging experience. Previous experience in digital mapping (Arc-GIS) and 3D modelling software (e.g., Geosoft, GoCAD) would be an asset. Candidates must be highly motivated with a strong commitment to collaborative research, and the ability to work with minimum of supervision in remote locations.

The prospective student will receive scholarship/bursary funding of $**23-26 K/year over three years** through the Research Affiliate Program (RAP) of the Geological Survey of Canada ($21K/year), under the Targeted Geoscience Initiative (TGI) project, combined with funding ($2-5K/year) from the University of Regina (Dr. Bethune's research grant). The student is also entitled to hold other internal or external scholarship funding while receiving the RAP bursary. Field and analytical expenses will be provided by the Geological Survey of Canada. The project will involve collaboration with several companies, including AREVA Resources, Cameco Corp. Denison Mines Corp., Fission Uranium Corp., Forum Uranium Corp., NexGen Energy Ltd., and Purepoint Uranium Group. Initial fieldwork will take place in **July – August 2017** with tentative plans for follow-up study in the summer of 2018.

Interested students should send, via e-mail, an **expression of interest along with copies of their Curriculum Vitae and unofficial academic transcripts** to Dr. K. Bethune (Kathryn.Bethune@uregina.ca), University of Regina, by the end of this month (April, 2017).