



Chemical & Physical Sciences
UNIVERSITY OF TORONTO
MISSISSAUGA

COLLOQUIUM

TUESDAY, JANUARY 15TH, 2013
12:00 NOON (**SHARP**) – 1:00 P.M.
IB270

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“The End of the Ediacara Biota: Extinction, biotic replacement, or Cheshire Cat?”

The Ediacaran–Cambrian transition signals a drastic change in both diversity and ecosystem construction. The Ediacara biota disappears, and is replaced by more familiar Cambrian and Paleozoic metazoan groups. Although metazoans are present in the Ediacaran, their ecological contribution is dwarfed by Ediacaran-type clades of uncertain phylogenetic affinities, while Ediacaran-type morphologies are virtually non-existent in younger assemblages. Three alternative hypotheses have been advanced to explain this dramatic change at, or near, the Ediacaran–Cambrian boundary: 1) mass extinction of most Ediacaran forms; 2) biotic replacement, with early Cambrian organisms eliminating Ediacaran forms; and 3) a Cheshire Cat model, with Ediacaran forms gradually disappearing from the fossil record (but not necessarily going extinct) as a result of the elimination of unique preservational settings, primarily microbial matgrounds, that dominated the Ediacaran. To evaluate these proposed explanations for the biotic changes observed at the Ediacaran–Cambrian transition, environmental drivers leading to global mass extinction are compared to biological factors such as predation and ecosystem engineering. Ultimately, the combination of studies on ecosystem construction, biostratigraphy, and biogeography showcases the magnitude of the transition at the Ediacaran–Cambrian boundary.