



Apr 14th, 11:00 AM - 12:00 PM

New Species and New Directions in Tardigrade Research

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Oral Presentation O12.1

NEW SPECIES AND NEW DIRECTIONS IN TARDIGRADE RESEARCH

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Tardigrades, also known as water bears, are small (~1mm in length) microorganisms that inhabit mosses and lichens as well as aquatic habitats. Tardigrades are a sister group to the phylum Arthropoda in Ecdysozoa, sharing multiple characteristics with the arthropods including the ability to molt and the possession of excretory malpighian tubules. Tardigrades, like roundworms and rotifers, have the ability to enter a quiescent state known as cryptobiosis in which the tardigrade replaces body fluids with sugar and can remain in this state for hundreds of years until favorable conditions arise again. Recent results have been successful in classifying an undocumented species of Milnesium based on morphological characteristics including size, claw patterns, and buccal structure. As an extension of describing this new species, the developmental pattern of the new species was compared to that of the known species *Milnesium tardigradum*. Due to inability to maintain single juvenile tardigrades for an extended period in culture, direct comparison is not possible at this time. However, differences in reproductive characteristics were noted. This study also highlights the inherent problems of culturing these animals and provides new directions and insight into relatively unknown areas of tardigrade research. These directions include the effect of temperature, ion concentration, molting stage, and length of time in an active state on entering cryptobiosis as well as fertility.