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*Vida no tempo profundo  
a evolução através dos fósseis*



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## EVOLUTIONARY DILEMMAS AND PALEOECOLOGICAL PUZZLES: REFLECTING THE CONTRIBUTION OF BRAZILIAN GEOLOGICAL UNITS TO THE STUDY ON ANIMAL ORIGIN AND DIVERSIFICATION

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The apparently sudden appearance of animals in the fossil record became a dilemma that afflicted Charles Darwin and shook for a long time the Evolutionary Theory. Although molecular evidence points to the emergence of animals back to ca. 800 Ma., the oldest fossils of the group have not been evidenced before the Ediacaran. The recent approaches of Systems Paleobiology and Ecosystem Engineering could have helped Darwin in his dilemma. It has been shown that the first documented ecological relationships among animals (e.g. predation and competition) may have interfered in the structuring of ecosystems that persisted during the Phanerozoic and escalated chains and guilds, triggering events of biological diversification. The Brazilian geological record presents an enormous potential for the investigation of Ediacaran fossils in a variety of facies and localities, such as the Itajaí Basin (Santa Catarina), the Corumbá Group (Mato Grosso do Sul), and the Bambuí Group (Minas Gerais). It is possible that the Itajaí Basin encompasses the oldest record of Ediacara Biota in the world. In the Corumbá and Bambuí groups, it was described metazoans that are among the first capable of synthesizing hard skeletons. These specimens integrated an assemblage paleo-ecologically related to *Nama*, reflecting the last evolutionary moment of the Ediacara Biota. Also in the Corumbá Group were evidenced bilateral activities in the substrate, symbiotic relationships between animals and microorganisms, besides predation marks and mechanisms of avoidance among *Cloudina* specimens, revealing sensorial complexation among the first metazoans. Among *Corumbella* specimens, we have evidenced sexual reproduction and epibiosis. Therefore, through the study of the Brazilian Ediacaran record, integrated to other world

assemblages, it is possible to contribute to a synthesis of knowledge about the evolution of morphospaces, ecosystem structuring and ecological stratification of the first benthic communities. [CNPq, CAPES, FAPESP].

Sessão:  
Biotas e ecossistemas do pré-Cambriano

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