The reconstruction and dating of early life processes is a great challenge and necessitate the interdisciplinary dialogue between scientists of different disciplines such as geobiology, mineralogy, molecular biology, bio-geochemistry, and astronomy/astrophysics. A better understanding of how early life evolved and made Earth a habitable place requires the combination of a wide range of approaches, ranging from analyses of early Precambrian rocks (e.g. radiometric clocks, biosignatures and biomarkers, *bona fide* microbial fossils) to the application of molecular clocks. The respective findings are, amongst others, also from great importance for the ongoing discussion on the origin of life and the potential habitability of other planets and moons in the solar system.

The geological record of the first 500 million years of the Earth's history (Hadean) is very poor; only few minerals are preserved which provide sparse information on geological processes during this time. The reason is that the upper surface of the earth was constantly destroyed by impacts of large cosmic boulders (asteroids, meteorites, comets) and heavy volcanic eruptions. However, a first window for the transition from prebiotic organic geochemical processes to cellular life may did open in the last part of the Hadean (4.2-4.0 billion years ago). Molecular clock data indicate that the beginning of cellular life possibly culminated in the development of a mesophilic last universal common ancestor (LUCA). Most of these early life forms, however, were subsequently wiped out during the Last Heavy Bombardment (LHB) ca. 3.9 Ga billion years ago. Phylogenetic analyses suggest that surviving hyperthermophilic clades of Bacteria and Archaea were then the starting point for the post-LHB microbial evolution. While it is clear that early life benefited from the end of the LHB, its impact on the stabilization of ecological conditions in the Archean Eon remains elusive.

Research activities of the Geobiology Group (Geoscience Centre, University of Göttingen) and the working group "Origin of Life" (Göttingen Academy of Sciences and Humanities) are focused on the origin and diversification of early Life on Earth as well as the reconstruction of Archaean environments. Particular emphasis is laid on the reconstruction of early microbial life processes and their impact on the Earth system. Research activities include scientific co-operations with, amongst others, the Max Planck Institute for Solar System Research (Göttingen) and the Australian Centre for Astrobiology (University of New South Wales, Sydney, Australia).