

Body size is an important attribute affecting the body functioning. This parameter can be estimated in a simple way, which allows to use it in analyses of body-size trends of organisms over time. Several generalized rules are known, which explain changes in body size in animals. The most important one includes the Cope rule, which is the tendency to increase the body size of representatives of evolutionary lineages. It is believed that large size provides better protection against predators and increases the chances among others for effective food acquisition, copulation, and survival under unfavourable conditions. Trends of increasing size have been observed in many evolutionary lineages. However, in some cases, it has been suggested that such trends result from random factors, and are not related to directional evolution. Particularly interesting are also changes in the body size of evolutionary lineages that survived periods of extinction. Such organisms often display „fingerprints” of environmental stress (such as miniaturization, dwarfing, extinction of large taxa) referred to as the Liliput effect.

The aim of the planned research will be to determine changes in the size of crinoids (Crinoidea) in the Paleozoic. A particular attention will be paid to periods of extinctions (during the Ordovician/Silurian and middle/late Permian). Previous observations carried out on the crinoids from the Frasnian (Devonian) - Viséan (Carboniferous) interval have shown that, in contrast to prevailing opinions based on the studies of other groups of animals (a number of reef organisms), which were subjected to dwarfing or extinction, crinoids experienced radiation and increased their body size. In this project, it is planned to carry out measurements of type species from the entire Paleozoic, on the basis of which it will be possible to calculate their calyx biovolumes. This will allow to create a database and determine body-size trends at a global scale. According to the rule that "no one can predict the future without an in-depth knowledge of the past", newly obtained data, especially those relating to Paleozoic extinctions, will potentially allow to better predict the ongoing changes related to global warming and ocean acidification.