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Stem evolution and Crown evolution; Role of atomic bomb magma
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When we see the history of life and its evolution, there are some points to focus as follows. (A) Paleogeographic constraints on the birth of metazoan which occurred on a rift system back to 750 Ma after the Sturtian Snowball Earth and before Marinoan Snowball Earth. (B) Metazoans evolved in the South China block that was isolated in paleo-Pacific Ocean. (C) Rapidly diversified animals suddenly evolved in a rift system on the Gondwana margin. These three-step evolutions can be related to:(1) stem evolution in a rift system within supercontinent Rodinia (ca. 750Ma), (2) migration in a Paleo-Pacific Ocean during Ediacaran radiation (635-560Ma) and (3) crown evolution to diversify the life forms into 35 phyla of metazoans after the collision-amalgamation docking with Gondwana by 540Ma.

For evolution of life, supply of nutrients is necessary. There are 3 kinds of rock types which can be candidates as source of nutrients, e.g. granite, anorthosite (KREEP) and carbonatite. Among them, carbonatite plays unique role, functioning like atomic bomb magma to cause local mass extinction, and resultant promotion of genome mutation by internal radiation through food chains.