

## 【Grant-in-Aid for Specially Promoted Research】

### Biological Sciences



**Title of Project :** Comparative research on *Ardipithecus ramidus* and other fossil evidence: enhancing evolutionary morphological research

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Research Area : Biological Science

Keyword : Anthropology, Evolution

#### 【Purpose and Background of the Research】

Knowledge of the biological origins and early history of humans and apes is crucial to a science-based understanding of humankind. The fossil record provides us with a crucial body of information which accumulates only from new discoveries and enables formulation and testing of evolutionary hypotheses. The aims of the present research project include 1) field research in the Ethiopian rift system, in attempting to contribute new fossil discoveries pertinent to ape-human divergence and their early histories; 2) morphological analysis on new and established collections, such as those of *Chororapithecus* and *Ardipithecus*, including analysis based on 3-dimensional scan data with a scope for testing key evolutionary hypotheses; 3) paleoanthropology activities related to the early Pleistocene Konso sites, including advancing research documentation of the existing collections; 4) strengthening the research basis for macroscopic evolutionary studies by enhancing 3 dimensional morphological archives.

#### 【Research Methods】

Annual paleoanthropological field research will be planned with regards to the Chorora Formation area. In 2006/2007 we discovered a new species of ape, *Chororapithecus abyssinnicus*, and since then have continued field work there. As a part of the present project, we aim to conduct field survey and excavations as may become required, with an eye towards further ape/hominid discoveries. The time period is ill-represented, so that acquisition of new fossils and establishing accurate chronologies are of prime importance. We will therefore conduct the necessary geological and geochronological field work and laboratory analyses.

We will conduct focused morphological analyses on *Chororapithecus*, *Ardipithecus ramidus*, later *Australopithecus* and early *Homo* species, as well as analytical research on the associated faunal, environmental and prehistoric evidence. Research directly involving fossils are primarily conducted at the paleoanthropological laboratory facilities,

Addis Ababa, while fossil and modern collections at other locations will be accessed as appropriate for comparison.

Scanner devices will be combined to form a 3-dimensional morphological data source system that can be used in comparative analyses of fossils including those of *Chororapithecus* and *Ardipithecus ramidus*.

#### 【Expected Research Achievements and Scientific Significance】

The gorilla clade hypothesis for *Chororapithecus* will be tested, enabling new insights into ape-human divergence. The evolutionary significance of the *Ar. ramidus* and other early hominid morphologies will be evaluated, and the respective hypotheses tested. A 3-dimensional morphological data source system will be established.

#### 【Publications Relevant to the Project】

- Suwa G, RT Kono, Katoh S, Asfaw B, and Beyene Y (2007) A new species of great ape from the late Miocene epoch in Ethiopia. *Nature* 448: 921-924.
- Suwa G, Kono RT, Simpson S, Asfaw B, Lovejoy CO, White TD (2009) Paleobiological implications of the *Ardipithecus ramidus* dentition. *Science* 326: 94-99.
- Suwa G, Asfaw B, Kono RT, Kubo D, Lovejoy CO, White TD (2009) The *Ardipithecus ramidus* skull and its implications for hominid origins. *Science* 326: 68e1-e7.

【Term of Project】 FY2012–2016

【Budget Allocation】 376,500 Thousand Yen

#### 【Homepage Address and Other Contact Information】

[http://www.um.u-tokyo.ac.jp/people/faculty\\_suwa.htm](http://www.um.u-tokyo.ac.jp/people/faculty_suwa.htm)