Microfossils Produced from Mt. Hikone

Hikone-Higashi High School, Shiga

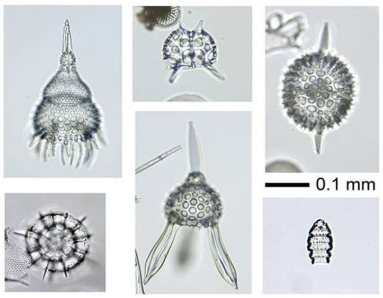
① Motivation

In a geology class, we learned that Mt. Hikone is made up of chert. We were curious to see if radiolarians could be found in chert, and tried to find out if fossils of radiolarians could also be found at Mt. Hikone.

② Background Information

Radiolarian

- Single-celled creature
- Has a shell like glass
- Skeletal form and structure change a lot with the date
  →index fossils



radiolarians

③ Research Objectives

1. Conduct geological survey of Mt. Hikone
2. Collect radiolarian fossils from the chert layer of Mt. Hikone to determine the age at which the chert layers were deposited

④ Hypothesis

"Kyushu University Institutional Repository"
Jurassic radiolarians were produced from Hikone group

⇓

Mt. Hikone chert is from the Middle Jurassic period

⑤ Method #1: Fieldwork

① Examine outcrops along the stone steps
⇒ Select and collect chert that may contain fossils

② Make a route map
Investigations under the guidance of Hikone Cultural Property Division

⑥ Method #2: Prepare Collected Cherts

① Split the collected cherts with a hammer and ultrasonically clean them.

② Polish the flat surface of the chert.
#150→#500 with carborundum
#1000→#2000 with alundum

⑦ Method #3: Identification of radiolarian

① Observe with a stereo microscope at 40x

② Take a picture of the polished surface of the plate by smart phone and look for the roll fossil (Fig. 1)

Fig.1

③ Investigate with documents what form they take (Fig. 2)

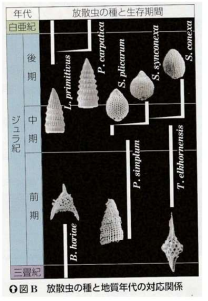
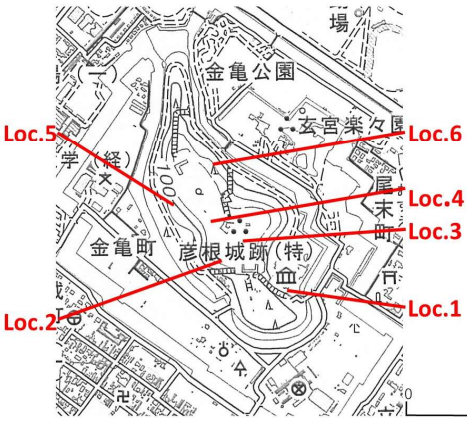


Fig.2

⑧ Results #1: Distribution of chert of Mt. Hikone

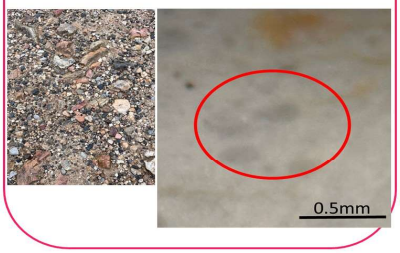


We identified outcrops of Mt. Hikone at the six locations shown in the map.

Also, we collected boulders at each location. Fossils were identified in Loc. 3 and Loc. 6.

⑨ Results #2: Location where radiolarian fossils were found

Loc.3
In front of the castle tower
There were cherts of various colors and sizes.



Loc.6
Around Kuromon Bridge
There was a red chert exposures.

⑩ Future Research

- Identify the species of fossils found
- Find out if the geologic age of Mt. Hikone varies from site to site
- Make comparisons with the geology of Mt. Sawa
- Treat radiolarians with hydrofluoric acid and use Scanning Electron Microscopy (SEM) to further identify variants of radiolarians

⑪ References

鈴鹿山脈、美濃帯彦根層群の泥岩からのジュラ紀放散虫の産出.山縣毅
美濃帯南西部、滋賀県大君ヶ畑地域から産出した放散虫化石.栗本史雄・桑原希世子
https://catalog.lib.kyushu-u.ac.jp/opac_download_md/8562/scs01p067.pdf
https://www.jstage.jst.go.jp/pub/pdfpreview/geosocabst/1997/0_1997_132_1.jpg
https://www.jstage.jst.go.jp/article/geosoc1893/98/7/98_7_665/_pdf/-char/ja