

# Astrobiology impression survey for public in Japan

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## Abstract:

With the discovery of thousands of exoplanets, Astrobiology research has begun for the life in the universe. This research field is regarded as a very broad range of interdisciplinary topics such as astronomy, planetary science, biology, biochemistry, earth science, and engineering. In Japan, the Astrobiology Center (ABC) was established in 2015 as a collaboration between the National Astronomical Observatory of Japan (NAOJ), an astronomical research institute, and the National Institute for Basic Biology (NIBB), a biological research institute. ABC is not so large center but has about 10 press releases per year.

On the other hand, the term "life in the universe" is often associated with aliens in various science fictions. Therefore, we conducted a survey of 2,000 people in Japan to find out to what extent the new research field of astrobiology is known in Japan and which fields are considered relevant by the term "astrobiology". As a result, we found that about 80% of the respondents had never heard of the term "Astrobiology". We also surveyed the awareness of the word as it is dealt with in science fictions, and of words related to astrobiology. Based on this survey, we will consider ways to further outreach in the field of astrobiology, a new interdisciplinary research field.

## 1. Survey of General Public

An online survey was conducted to general public through Cross Marketing, Inc., which is a research company in Japan, from February 17 to 20, 2023. We got responses from 2,000 people (men =992, women =996, others =12). This survey was conducted with other astronomy related topics. In this poster, It is reported on Astrobiology topics.

Table 1. Questionnaire items

ID	Questionnaire
Q1	"Astrobiology" is a new research field of "Life in the Universe", Do you know the term "Astrobiology"?
Opt.	Never heard, Maybe I heard it, I know the term, I know the research field.
Q2	What of the following areas do you think as relevant to Astrobiology? (Check all that apply.)
Opt.	Astronomy, Biology, Physics, Chemistry, Humanities, Social Sciences, Agriculture, Earth Sciences, Medicine/Pharmacy, Space Sciences, Engineering, Mathematics, Physiology, Molecular Sciences, Life Sciences, Arts, Education, Anthropology, Planetary Sciences, Other
Q3	Please select what you associate with the word "Astrobiology."(Check all that apply.)
Opt.	Alien, UFO (Unidentified Flying Objects), Hayabusa (Asteroid Explorer), Interdisciplinary fields, Medicine in space, Origin of life, Deep-sea hydrothermal vents, Exoplanets, Photosynthesis, Other
Q4	What other "life" do you think there is/isn't at what distance other than Earth? (not exist, inside of our solar-system, outside of our solar-system)
Opt.	Microbe-like life, Insect-like life, animal-like life, plant-like life, fish-like life, bird-like life, intelligent life, unknown life that do not exist on Earth.
Q5	Why did you think that in Q4?
Opt.	[text]
Q6	Which of the following do you think has actually been discovered by current science? Please choose the appropriate option (discovered, think it discovered, don't know discovered or not, think it not discovered, not discovered, don't know the word) for each item.
Opt.	Alien (intelligent life, etc.), Life other than Earth (animals, plants, microbes, etc.), Black hole, White hole, Dark matter, Ether, Multiverse, Exoplanet without sun (free-floating planet), Exoplanet with two suns, Amino acids in other than Earth.

## 2. Results

From Q1, 81% of the responses said "Never heard" the term Astrobiology and 10.5% said "Maybe I heard it" (Fig.1). In total, about 90% of respondents said they knew little or nothing about "Astrobiology". The results of Q2,3,4 and Q6 are shown in figure 2 to 5.

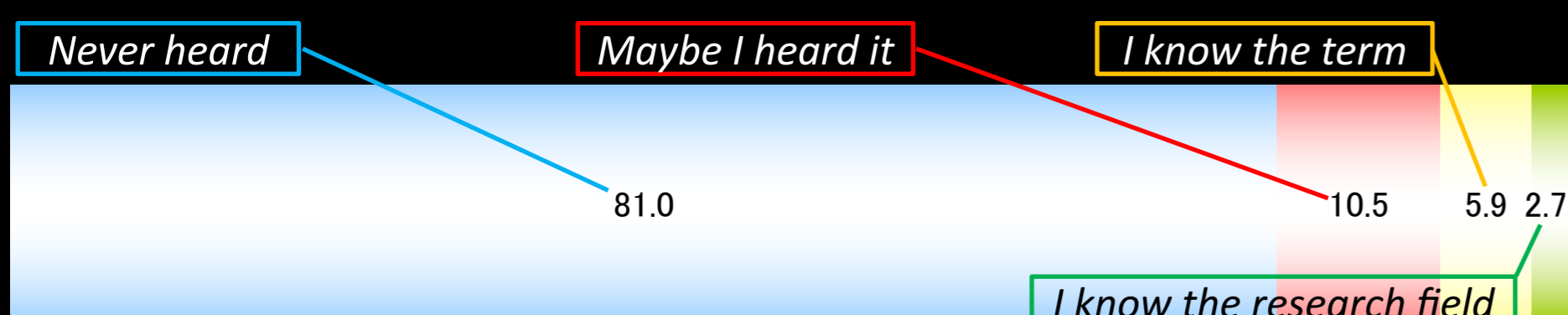


Fig.1. The result of Q1. "Astrobiology is a new research field of Life in the Universe, Do you know the term Astrobiology?"

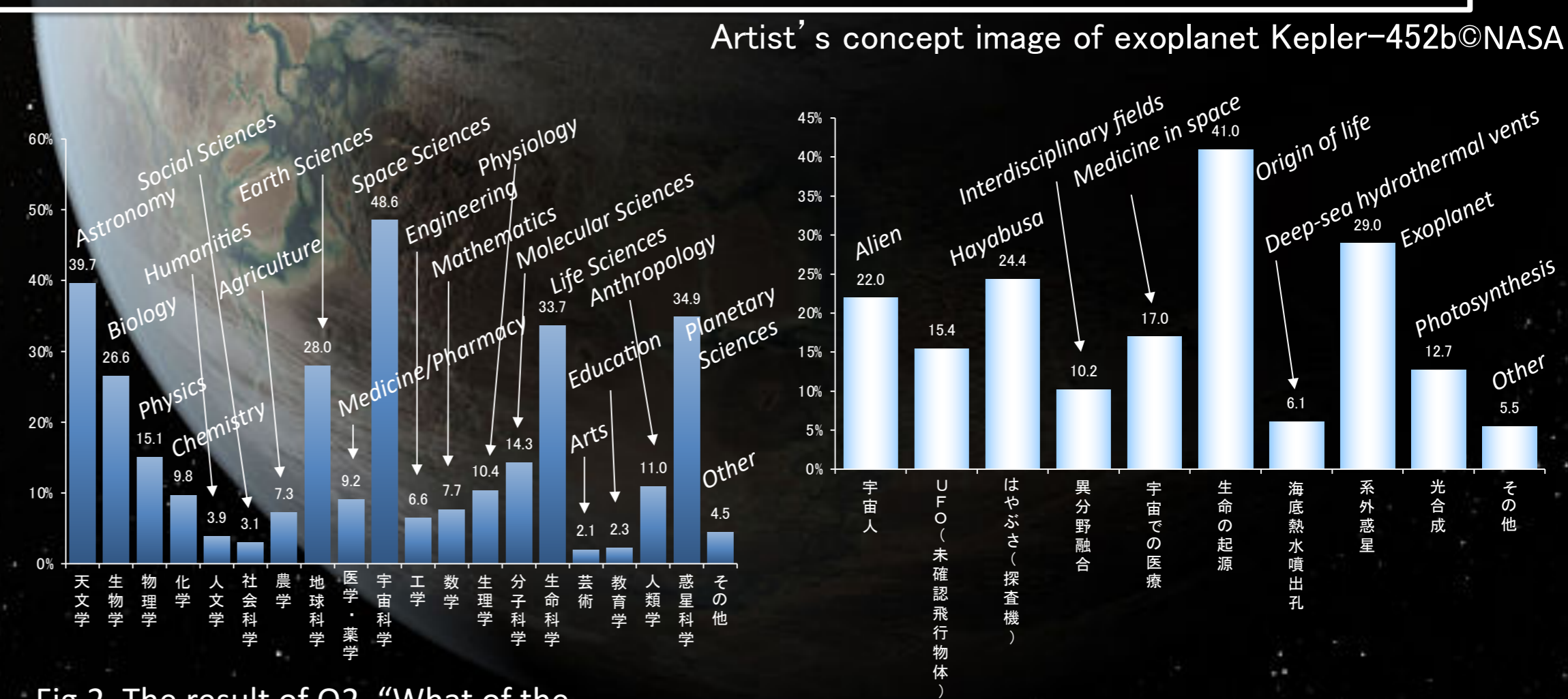


Fig.2. The result of Q2. "What of the following areas do you think as relevant to Astrobiology?"

Fig.3. The result of Q3. "Please select what you associate with the word Astrobiology."

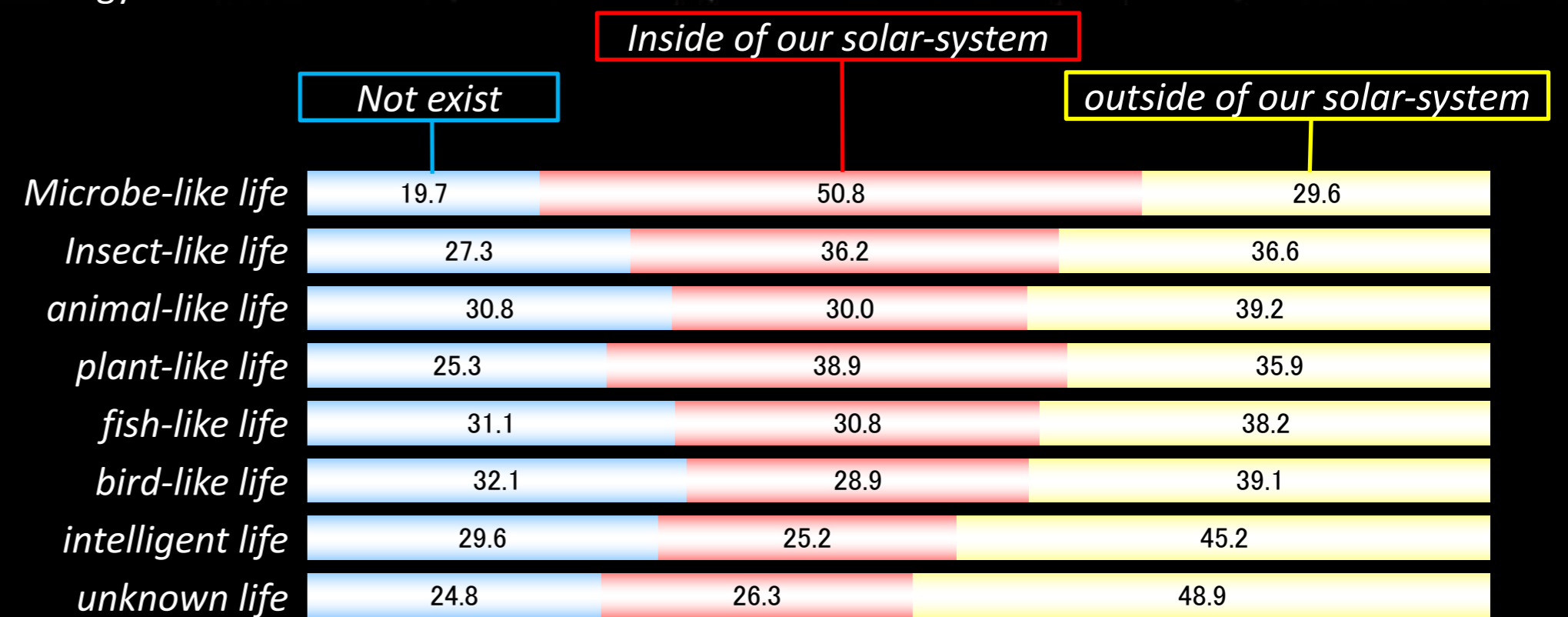


Fig.4. The result of Q4. "What other "life" do you think there is/isn't at what distance other than Earth? (not exist, inside of our solar-system, outside of our solar-system)"

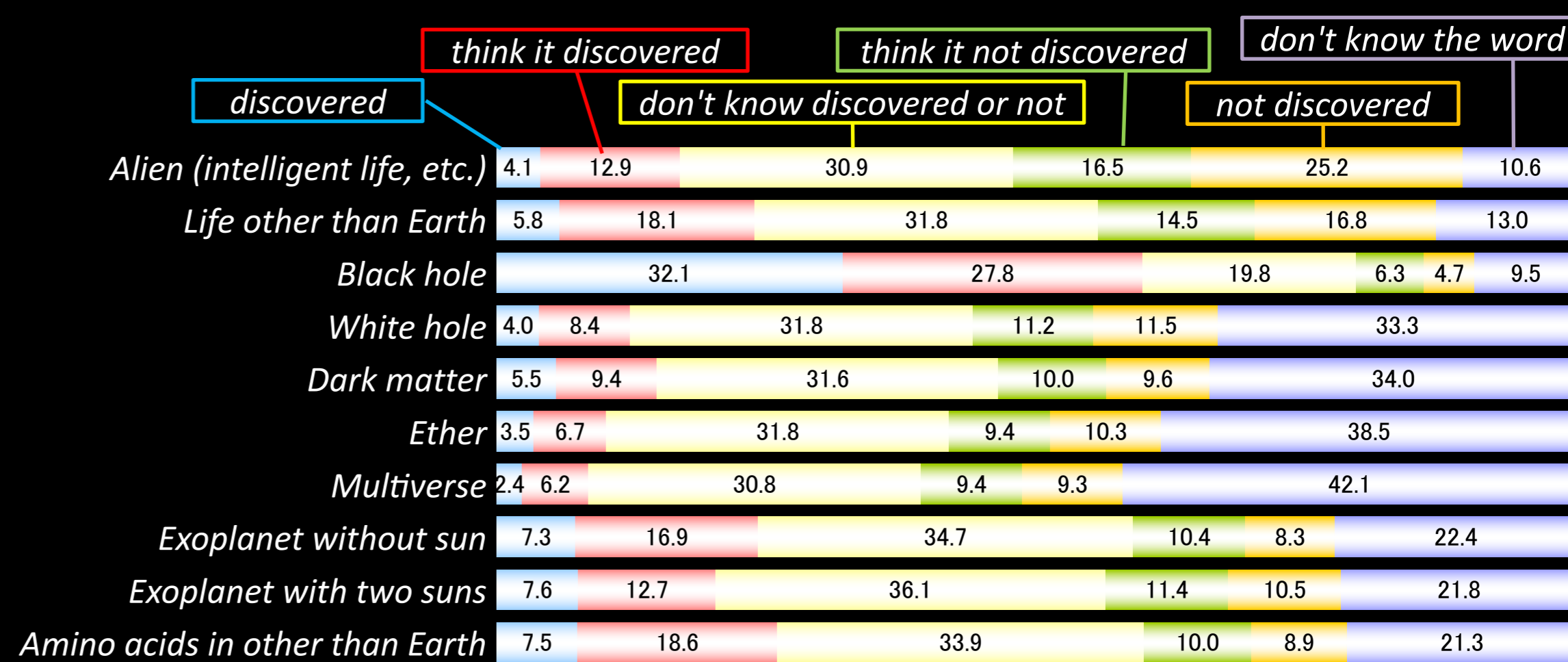


Fig.5. The result of Q6. "Which of the following do you think has actually been discovered by current science? Please choose the appropriate option (discovered, think it discovered, don't know discovered or not, think it not discovered, not discovered, don't know the word) for each item."

## 3. Text analysis

From Q5, 2000 text were collected. Based on these comments, a morphological analysis was conducted using "KH coder" text analysis software. The co-occurrence network analysis (fig.6) shows that the high relevant words are "think", "Earth", "life", "existence", "creature", etc. On the other hands, we can find other relation such as, "denial"- "possibility", "world"- "unknown". It seems to come from that "I cannot deny the possibility of the unknown worlds".

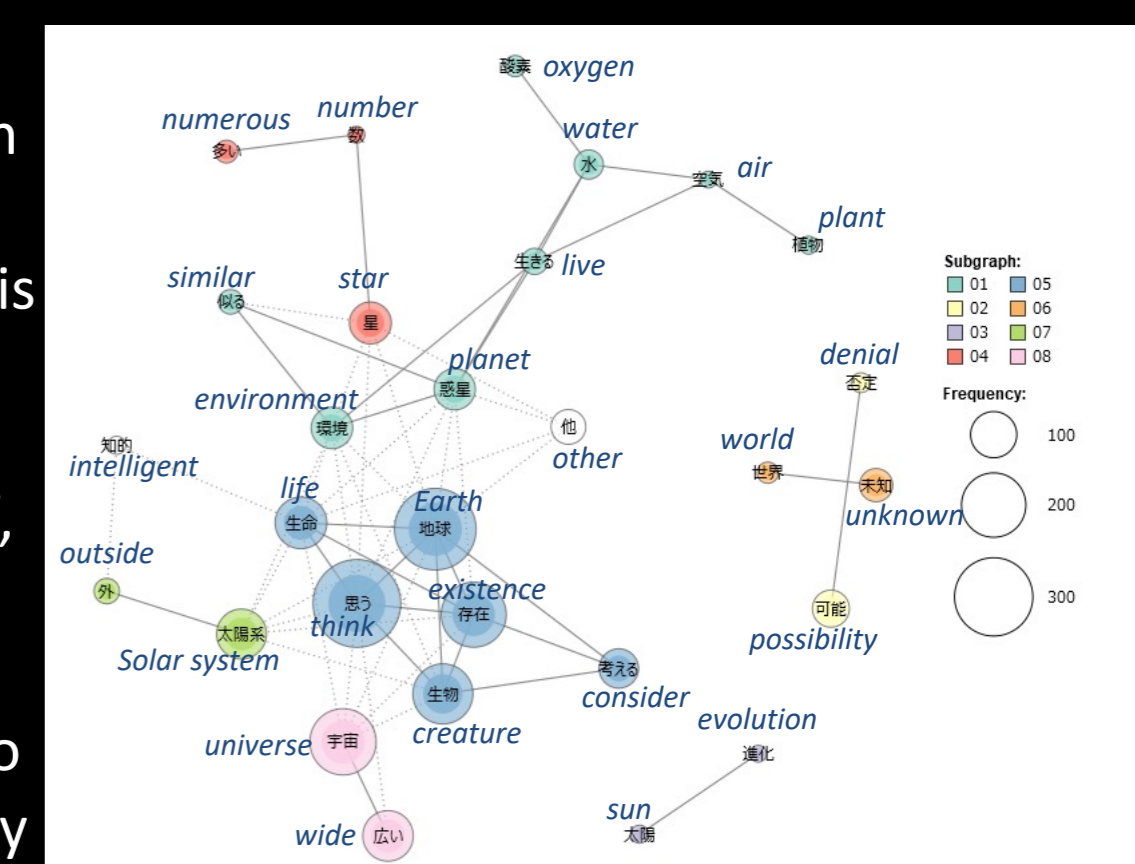


Fig. 6. Results of co-occurrence network analysis of Q5, "Why did you think that in Q4?"

## 4. Summary

As a result of this survey, it is revealed the term "Astrobiology" has not yet widespread in Japan. However, we got public impression/attitudes toward Astrobiology in Japan. We will examine these results carefully and consider ways to future outreach.