GEOL360 Homework 5: Life on Mars?

This homework consists of three parts.

(1) Reading

Please read the set of four papers (McKay et al. 1996 and three commentaries), that provide an overview of the whole issue of Life on Mars (we will cover some of these in class). Then read the specialized paper which you have chosen, with a further background paper where appropriate (see the list below).

(2) Writing

Please prepare a one-page typed summary of your assigned paper, and give it to me by the end of class on Tuesday April 16th. I will make suggestions, and will accept revised summaries in class on Tuesday April 23rd. You are very strongly advised to give me a first draft; it will improve your grade.

In the summary, you should include paragraphs on:

(i) the aim of the paper (what feature were they investigating, and / or what hypothesis were they testing?)
(ii) the technique(s) used by the authors,
(iii) the results they obtained,
(iv) the interpretation they placed on the results,
(v) implications for life on Mars

Please follow this outline!

If you have any questions on the paper, I suggest that you (i) use our excellent library to find reference material, (ii) confer with each other, where several papers cover the same topics, and (iii) ask me for help if you still feel that you need it. These papers are all short, but therefore very intense: you will probably need to read them several times each.

(3) Talking

On Tuesday April 23rd we will devote the entire class to five-minute presentations by each of you on the paper that you read. I suggest that you follow the format used in your summary. You should bear in mind when your assigned paper was written with respect to the paper that triggered all the recent interest (McKay et al., 1996) and the subsequent ebb and flow of enthusiasm for Life on Mars (e.g. Kerr, 1998).

One or two simple overhead transparencies may help with your presentation – please see me if you need transparencies or photocopying.

Please note: This assignment will require concentration in class and careful preparation beforehand, therefore:
Late submission of the one-page summary, or late arrival in class on April 23rd, will result in disqualification for this homework.
Key papers: EVERYONE to read these (distributed in class)


(v) Kerr, R. A., 1998. Requiem for life on Mars? Support for microbes fades. Science, v. 282, p. 1398-1400. [A sober look back on two years of intense research, which had led to no firm conclusions one way or the other, but with excitement waning]

We will also be reading:

[Suggests that life in the Solar System originated on Mars, not Earth; you can see a webcast of Kirschvink’s address to the American Geophysical Union in December 2001 at: http://jupiter.agu.org/webcast/kirsh.html]

Thematic sets: (choose one paper to write a report on; make sure I know which one you have chosen, to avoid duplication)
* indicates the paper directly concerns data from meteorite ALH84001.

Early life on Earth:

Papers:


Review articles and other background information:


**The Martian atmosphere**

Papers:


Review articles and other background information:


**Biominalrization**
Papers:


Review articles and other background information:


Mars - High temperature geochemistry

Papers:


Diffusion experiments suggest low T carbonate


Organic geochemistry

Papers:


Review articles and other background information:


**Mars – paleomagnetism**

Papers:


**Mars – stable isotope geochemistry**

Papers:


Review articles and other background information:


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