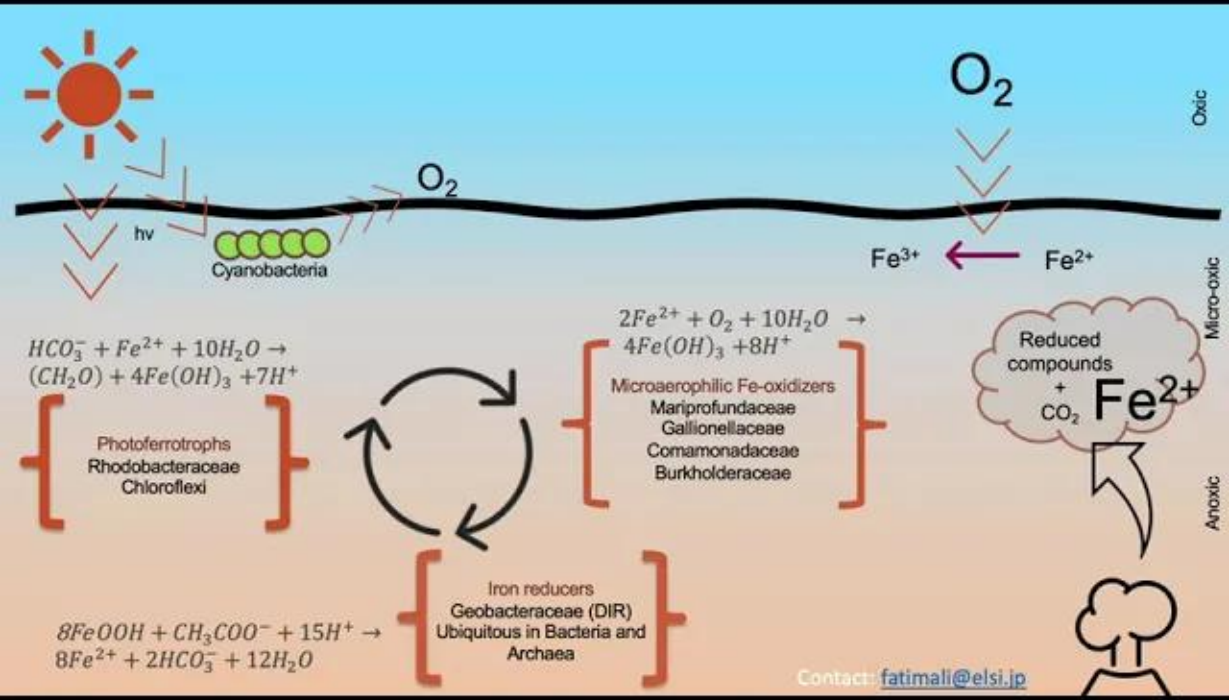
O_2
Oxic
O_2
hv
Cyanobacteria
Fe^{3+}
Fe^{2+}
Micro-oxic
$HCO_3^- + Fe^{2+} + 10H_2O \rightarrow (CH_2O) + 4Fe(OH)_3 + 7H^+$
Photoferrotrophs
Rhodobacteraceae
Chloroflexi
$2Fe^{2+} + O_2 + 10H_2O \rightarrow 4Fe(OH)_3 + 8H^+$
Microaerophilic Fe-oxidizers
Mariprofundaceae
Gallionellaceae
Comamonadaceae
Burkholderiaceae
Reduced compounds + CO_2
Fe^{2+}
Anoxic
Iron reducers
Geobacteraceae (DIR)
Ubiquitous in Bacteria and Archaea
$8FeOOH + CH_3COO^- + 15H^+ \rightarrow 8Fe^{2+} + 2HCO_3^- + 12H_2O$
Contact: fatimali@elsi.jp

1
00:00:05,030 --> 00:00:03,189
hello my name is fatima and my work here

2
00:00:07,349 --> 00:00:05,040
at lc and tokyo tech focuses on

3
00:00:09,430 --> 00:00:07,359
carbonate and rich hot springs

4
00:00:11,350 --> 00:00:09,440
i conducted a series of geochemical and

5
00:00:13,430 --> 00:00:11,360
microbial community structures surveys

6
00:00:15,669 --> 00:00:13,440
in ireland hot springs across japan as

7
00:00:17,590 --> 00:00:15,679
analogs to precambrian oceans

8
00:00:19,349 --> 00:00:17,600
my focus is on the iron cycling in these

9
00:00:21,510 --> 00:00:19,359
hot springs and the groups driving it

10
00:00:23,590 --> 00:00:21,520
including microphilic iron oxidizers

11
00:00:25,509 --> 00:00:23,600
photoferrotrophs and the simulatory iron

12
00:00:27,349 --> 00:00:25,519
reducers

13
00:00:28,870 --> 00:00:27,359

the study revealed a complete iron

14
00:00:31,269 --> 00:00:28,880
cycling present in all of the hot

15
00:00:33,830 --> 00:00:31,279
springs but with interesting trends in

16
00:00:35,910 --> 00:00:33,840
the groups driving it

17
00:00:37,830 --> 00:00:35,920
by combining the geochemistry and the

18
00:00:39,670 --> 00:00:37,840
microbial community structure we were

19
00:00:42,709 --> 00:00:39,680
able to discern two main types of

20
00:00:44,709 --> 00:00:42,719
springs low temperature and low salinity

21
00:00:47,750 --> 00:00:44,719
f-type and high temperature and high

22
00:00:50,069 --> 00:00:47,760
salinity m-type in f-type springs

23
00:00:52,549 --> 00:00:50,079
gallium acetype-iron oxidizers were more

24
00:00:53,990 --> 00:00:52,559
abundant whereas m-type springs present

25
00:00:56,150 --> 00:00:54,000
in higher abundances of set of

26
00:00:57,830 --> 00:00:56,160
protobacteria the implications for

27
00:00:59,670 --> 00:00:57,840
precambrian notions productivity and

28
00:01:01,029 --> 00:00:59,680
biosignatures will be the focus of my

29
00:01:02,310 --> 00:01:01,039
future work