Microbially-enhanced vanadium mining and bioremediation under micro- and Mars gravity on the International Space Station

Cockell, Santomartino et al., 2021

**Supplementary Material**

Supplementary Table 1. Bioleaching and control leaching of vanadium from basalt on the International Space Station (ISS) and on Earth. Total quantity (ng in bulk fluid) of vanadium in each of the experimental flight and ground control samples at the end of the experiment for each of the three organisms examined and sterile samples. The numbers of the experimental units are also shown. ‘Cont.’ means contamination and sample was discarded.

| Organism               | Gravity      | Sample 1 | Unit No. | Sample 2 | Unit No. | Sample 3 | Unit No. | Mean  | sd   |
|------------------------|--------------|----------|----------|----------|----------|----------|----------|-------|------|
| **S. desiccabilis**    | Microgravity | 22.211   | 133/1    | 19.668   | 130/1    | 17.631   | 130/2    | 19.837| 2.295|
|                        | Mars gravity | 20.815   | 143/1    | 26.213   | 142/1    | 23.325   | 142/2    | 23.451| 2.701|
|                        | Earth gravity| 23.291   | 137/1    | 20.931   | 118/1    | 20.271   | 118/2    | 21.497| 1.588|
| **B. subtilis**        | Microgravity | 34.062   | 131/1    | 30.780   | 134/1    | 26.300   | 134/2    | 30.381| 3.897|
|                        | Mars gravity | 18.890   | 145/1    | 28.444   | 144/1    | 24.145   | 144/2    | 23.826| 4.785|
|                        | Earth gravity| 24.907   | 121/1    | 19.595   | 138/1    | 23.974   | 138/1    | 22.825| 2.836|
| **C. metallidurans**   | Microgravity | 12.371   | 117/1    | 12.249   | 132/1    | 14.953   | 132/2    | 13.191| 1.527|
|                        | Mars gravity | 10.278   | 148/1    | 12.204   | 147/1    | 11.193   | 147/2    | 11.225| 0.964|
|                        | Earth gravity| 16.511   | 141/1    | 9.0560   | 140/1    | 14.053   | 140/2    | 13.297| 3.799|
| **Non-biological control** | Microgravity | 13.690   | 133/2    | 7.7642   | 117/2    | Cont.    | 131/2    | 10.727| 4.190|
|                        | Mars gravity | 14.394   | 143/2    | 9.9212   | 145/2    | 8.2076   | 148/2    | 10.841| 3.194|
|                        | Earth gravity| 13.344   | 137/2    | 9.0497   | 121/2    | 8.5081   | 13412   | 10.301| 2.649|
| **Ground 1 x g experiment** | S. desiccabilis | 26.909   | 154/1    | 21.283   | 153/1    | 19.889   | 153/2    | 22.694| 3.717|
|                        | B. subtilis  | 21.589   | 156/1    | 25.477   | 155/1    | 21.363   | 155/2    | 22.810| 2.313|
|                        | C. metallidurans | 9.5152   | 158/1    | 12.367   | 157/1    | 8.9014   | 157/2    | 10.261| 1.849|
|                        | Control (non-biology) | 17.632   | 154/2    | 5.7486   | 158/2    | Cont.    | 156/2    | 11.690| 8.402|
