## Supplementary information

**Figure S1.** Geographical location of the study sites. Isoclines on the map showing aridity index (P/PET). The pictures show the sparsely vegetated rocky slopes at the arid site (Sede Boqer) and the bare rocky slopes at the hyperarid site (Uvda Valley).

**Figure S2.** Detection of differentially abundant OTUs between each sample-type pair using ALDEx2. Each circle denotes a single OTU and its size is its average relative abundance across all samples. X-axis shows the classification of each OUT while the Y-axis shows the effect size in terms of log2 fold difference in relative abundance between each sample-type pair. Red circles are OTUs that show significant differential abundance at P < 0.05.

**Table S1.** Characteristics of the two sampling sites (below).

**Table S2.** Bacterial richness and diversity estimates of the samples (Excel table).

**Table S3.** Variance partitioning and testing of the differences in the bacterial communities between the samples (Excel table).

**Table S4.** Differences in phyla and order composition between the sample types tested (Excel table).

**Table S1. Characteristics of the two sampling sites**

| **Parameter** | **Arid site**  **(Sede-Boqer)** | **Hyperarid site**  **(Uvda Valley)** | **Reference** |
| --- | --- | --- | --- |
| Elevation(m.a.s.l) | 400-700 | 400-500 |  |
| Annual rain precipitation(P; mm yr-1) | 80-120 | 10-20 | (Goldreich, 2013) |
| Potential evaporation (PET; mm) | 2000 | 4000 | (Bruins, 2012) |
| Aridity Index (P/PET) | Arid (0.05) | Hyperarid (0.005) |  |
| Bedrock units | Late Cretaceous to Tertiary age; composed of marine sediments, mainly limestone, dolomite, chalk, marl and chert | | (Wieler et al., 2016) |
| Distance to nearest sea | Mediterranean Sea – 80 km; Red Sea – 140 km | Mediterranean Sea –160 km; Red Sea – 40 |  |
| Rain source | Mediterranean Sea and Red Sea Trough | | (Goldreich, 2013) |
| Wet season | December to March | |
| Mean annual rainy days | 27 | 18 |
| Mean annual dew days | 200 | NA | (http://www.ims.gov.il/IMSEng/CLIMATE) |
| Mean annual dew precipitation (mm) | 20 | NA |
| Dewpoint (°C) | 7-14 | NA |
| Mean annual foggy days | NA | 3 |
| Mean annual temperature (°C) | 24 | 31 |
| Mean annual relative humidity (%) | 40 | NA |

## References

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