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## **An ichnological predictive map of the Jezero Crater, Mars: searching for potential traces of life-substrate interactions based on terrestrial analogues (Liguria, Italy; Naturtejo UNESCO Geopark, Portugal; Ômnôgov, Mongolia)**

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Seeking signs of past life in the geological record of Mars is one of the four primary goals of the NASA Mars 2020 mission. However, scant attention has been paid to the fossilized products of life-substrate interactions (ichnofossils), which are one of the most abundant and reliable biosignatures on Earth. This lack of attention is surprising because the ichnofossil heritage does not include only metazoan tracks, but also macroscopic burrows produced by bacteria, microborings ascribed to the activity of bacteria and fungi, and biostratification structures produced by archaea, cyanobacteria and euglenozoans. In light of this gap, the goal of the present study is evaluating the suitability of the Mars 2020 Landing Site for ichnofossils. To this goal, this work applies palaeontological predictive modelling, a technique used to predict the location of fossil sites in uninvestigated areas on Earth. Accordingly, a GIS of the landing site is developed. Each layer of the GIS maps the suitability for one or more ichnofossil types (bioturbation, bioerosion, biostratification structure) based on an assessment of a single attribute (suitability factor) of the Martian environment. Suitability criteria have been selected among the environmental attributes that control ichnofossil abundance, preservation, and accessibility in W Liguria (Italy), Naturtejo UNESCO Geopark (Portugal), and Ômnôgov district (Mongolia). The goal of this research will be delivered through a predictive map showing which areas of the Mars 2020 landing site are more likely to preserve ichnofossils. This map can be used to guide future efforts to the regions of the Mars 2020 Landing Site with the highest ichnological potential, realizing benefits in life-search efficiency and cost-reduction.