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## The Marslabor of the University of Basel: Simulation of CLUPI operations in view of the ExoMars 2022 mission

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The Close-UP Imager (CLUPI) is one of the instruments of the Rosalind Franklin rover, which will explore Mars in the framework of the ESA/Roscosmos ExoMars mission. CLUPI will be mostly used for acquiring close up-images of geological samples, identifying materials and sedimentary structures that may record information about the hypothetical existence of past extraterrestrial life. Although the technical specifications of CLUPI are well known, it is not possible to readily translate such specifications in terms of feasibility to recognize “textures of interest” at a given distance under specific light conditions on Mars. Accurate predictions are important for taking informed decisions during the tactical planning of the rover. Here, we describe the results of some mission-preparation activities, during which a camera system analogue to CLUPI has been used to photograph rocks samples in an indoor facility (i.e., the Marslabor of the University of Basel) that has been built for simulating a Martian landscape. Under different light conditions, we performed a preliminary assessment of the minimal-working-distance required for interpreting rock textures and sedimentary structures that are potentially present on Mars, including textures that allows for differentiating sedimentary rocks from igneous rocks, grains that allows for classifying sedimentary rocks based on their granulometry, and stromatolitic laminations representing morphological biosignatures. The produced data represents a first step in identifying ideal CLUPI working-distances and illumination, and in preparing an image database that will be of help for optimizing rover operations and the scientific return of CLUPI during the ExoMars 2022 mission.