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APPLYING GENETIC ALGORITHMS TO EVALUATE FEMUR MORPHOMETRY ADAPTATION
ON MARS GRAVITY**Abstract**

Bone is a hard and complex tissue that forms the skeleton of most vertebrates. It is alive and dynamic, participating in a continuously process of remodeling. Bone tissue has features that allow itself to detect environment changes. Among its attributes, the one this work aim to explore is the gravity recognition and adaptation capability (Pereira, et al., 2015). A Genetic Algorithm will be used to model a system to translate how the femur shape will either evolve or adapt based on Mars gravity parameters. GA for short, is a programming technique which mimics biological evolution as a strategy for solving problems. Genetic algorithm is an AI technique that was developed in order to imitate certain biological processes observed in the natural evolution of species. This technique is based on the explanations offered by Charles Darwin about the selection and development of individuals. This work aims to Apply Genetic Algorithm on femur morphometry to define and to visualize how would Mars gravity shape the bone after rounds of generations. Given the interdisciplinary nature of this project, the results transits between both computational framework (models and tools) and applications (study of skeleton morphometry and biomechanics).