

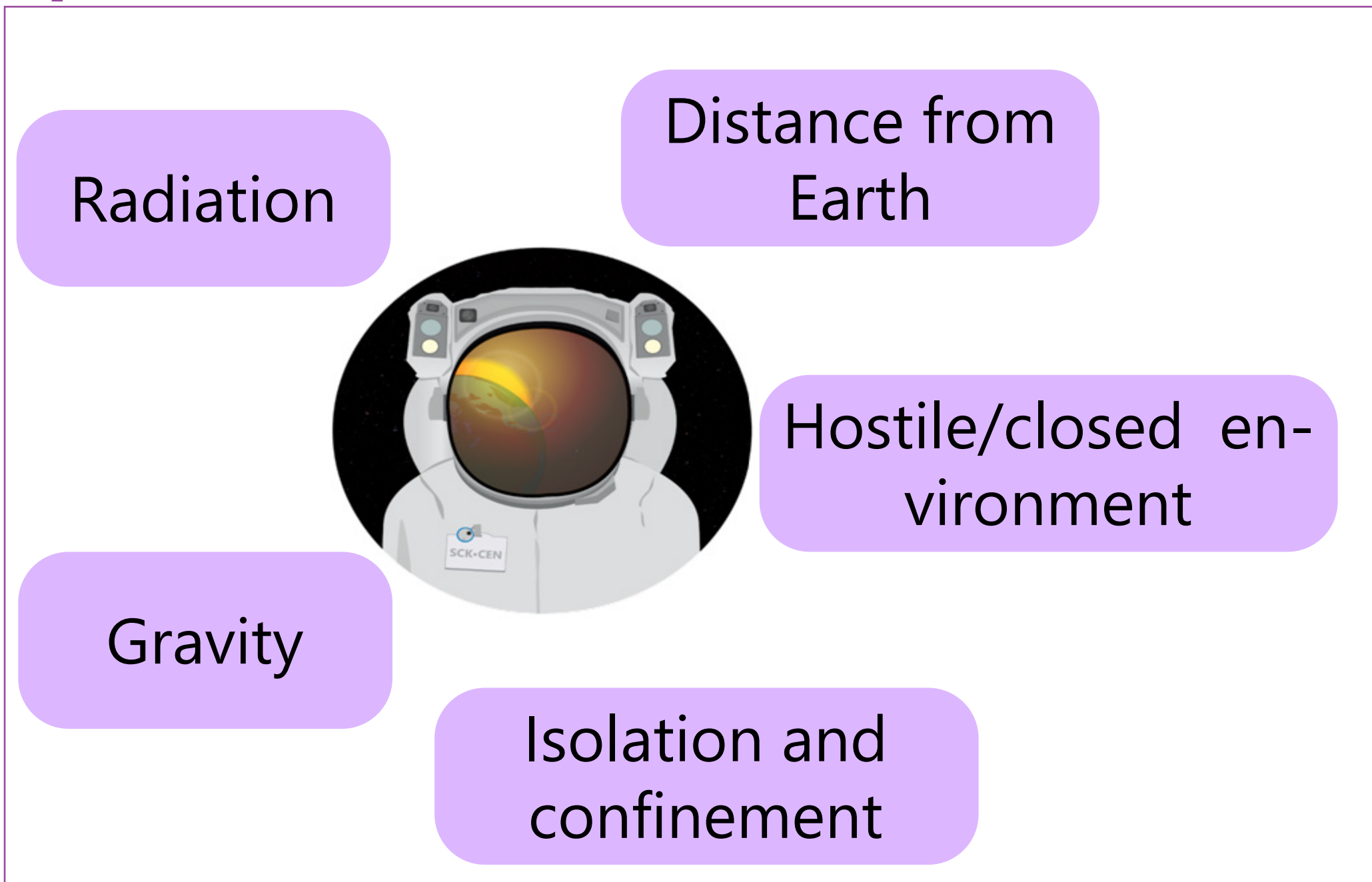
sck cen What can biofabrication do for space and what can space do for biofabrication?

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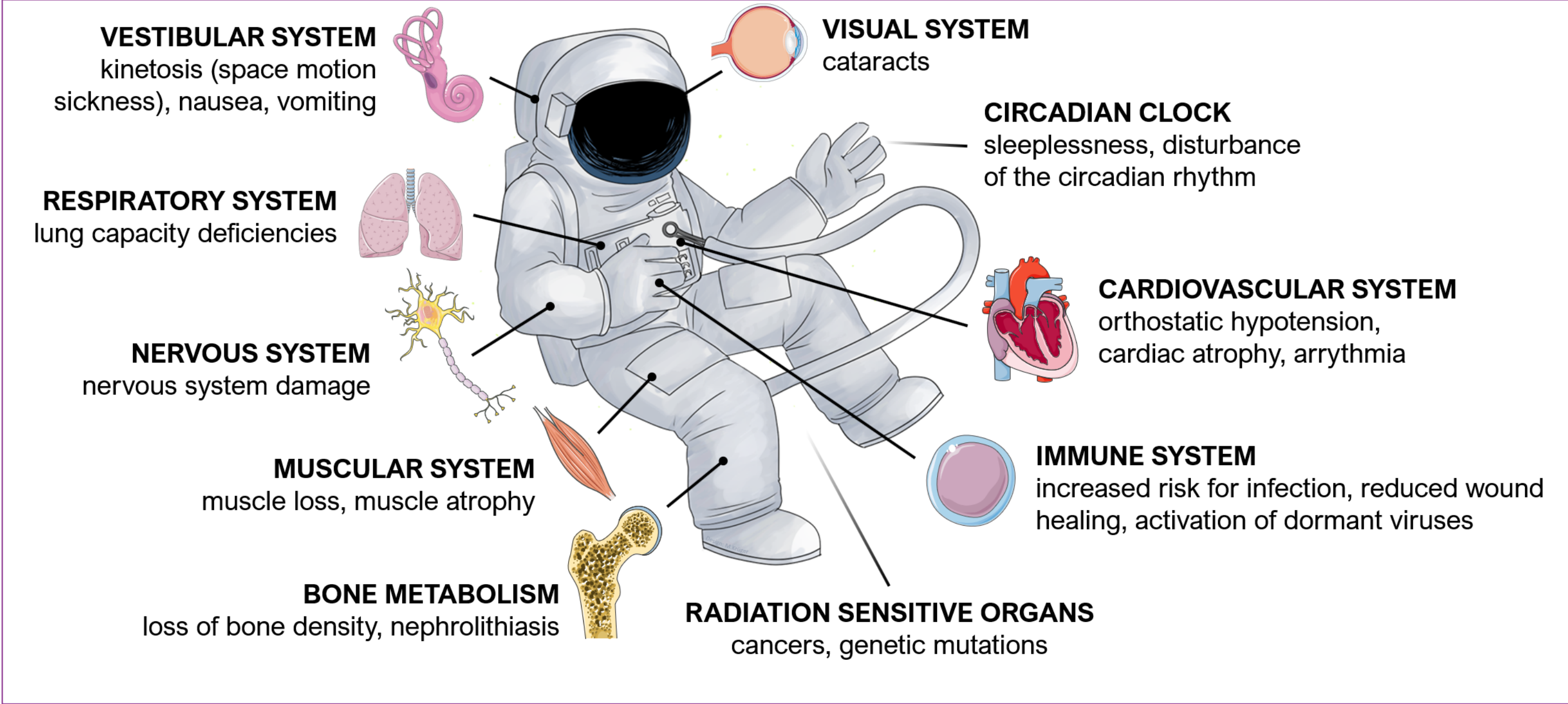
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Effect of space on the Human body

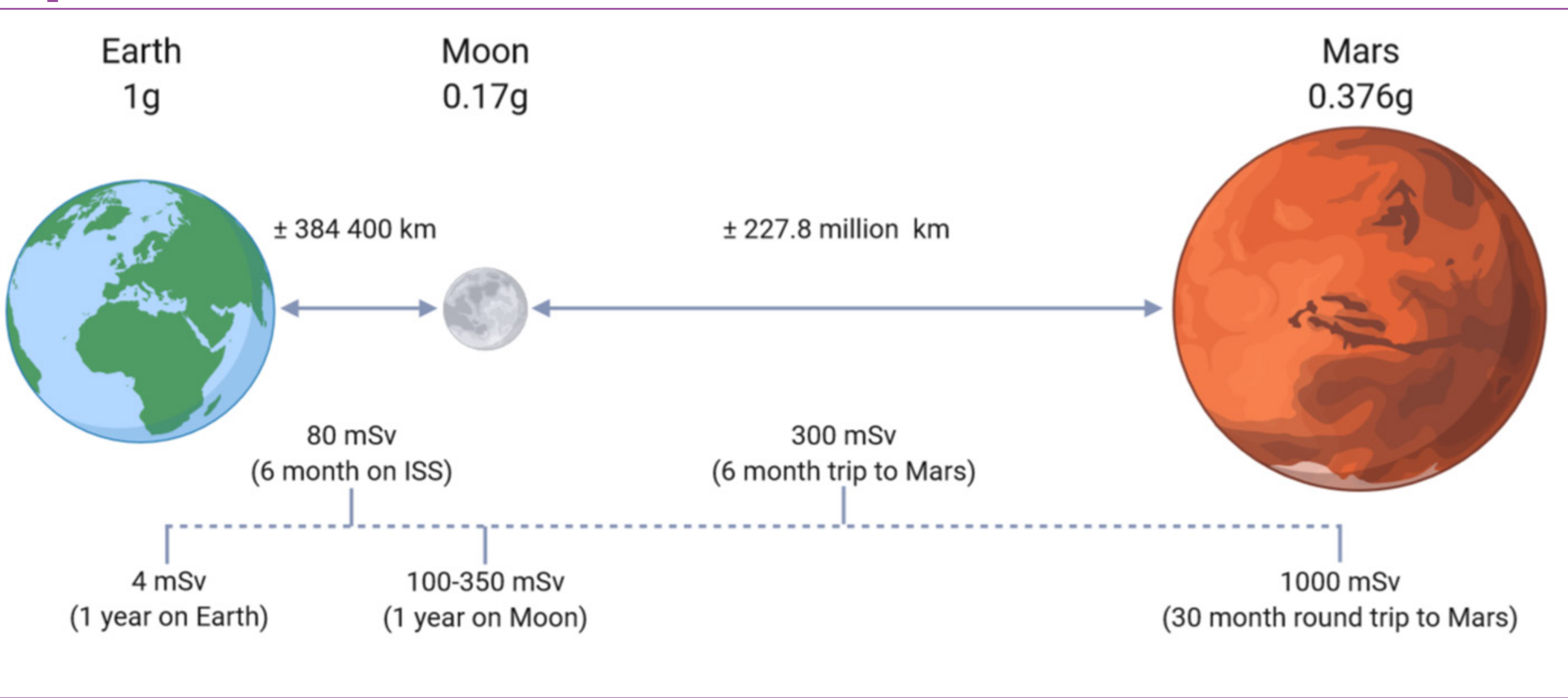
Space hazards



Health risks

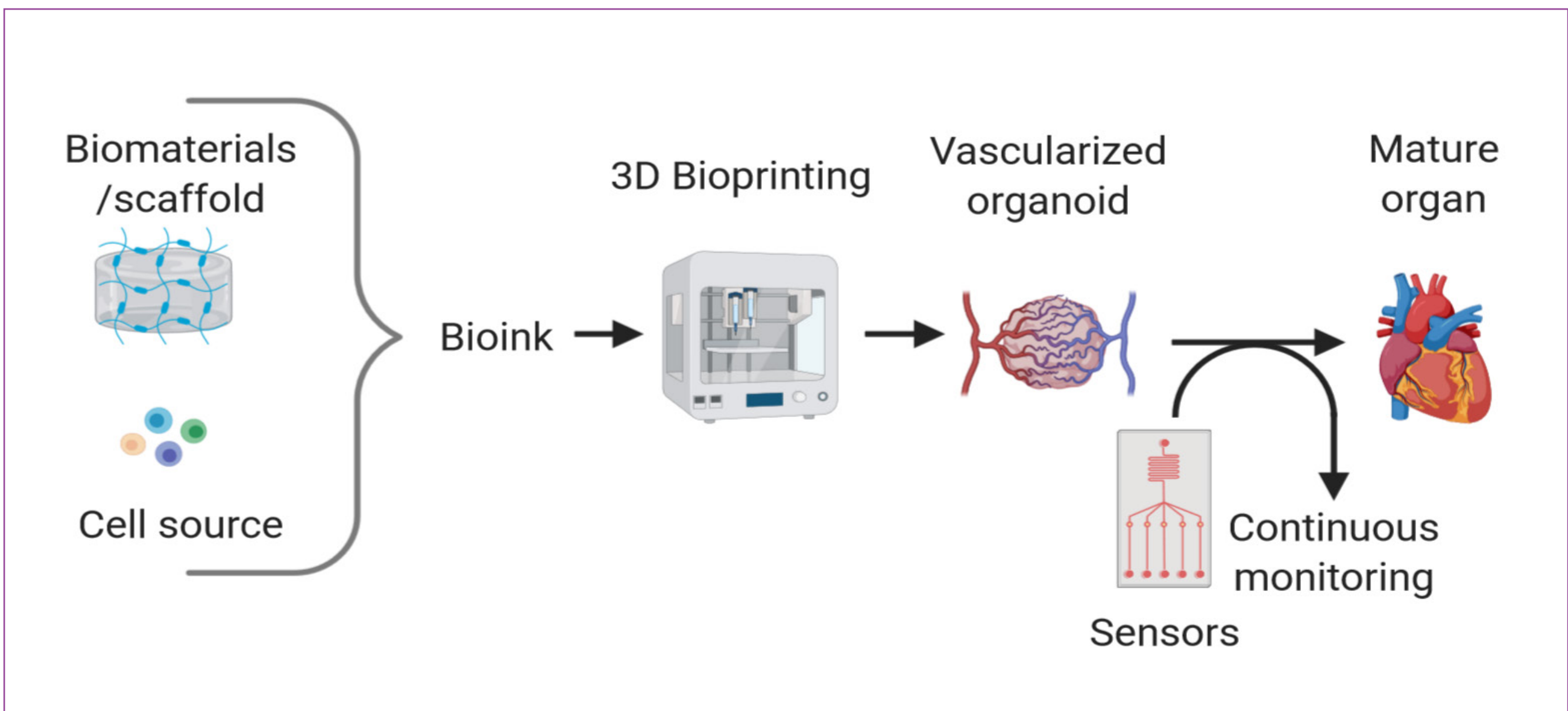


Space travel



Biofabrication in space

Biofabrication workflow



- Biofabrication technologies, and in particular **bioprinting**, hold the promise to create 3D *in vitro* models that exquisitely mimic the complexity of our tissues and organs.
- **Microgravity** enables biofabrication of tissue and organ constructs of more **complex geometries**, thus facilitating novel **scaffold-, label-, and nozzle-free** technologies based on multi-levitation principles.
- **Self-sustainability** is crucial during **long-term manned missions** in space. Biofabrication capabilities is key to ensure the success of these missions.

Space as an accelerator of ageing

- Accelerated **cardiac ageing** is one of the concerns observed after the Apollo program that needs to be resolved.
- Number of **physiological functions are impaired** during space-flight, leading to arrhythmias, the reduction of aerobic capacity, and cardiac atrophy, ultimately resulting in two major age-associated cardiac pathologies: **heart failure** and **atrial fibrillation**
- A **deeper understanding** of the adverse outcome pathways leading to cardiac ageing, in particular the ones that are radiation-induced, is one of the key challenges for developing new therapies to **improve healthcare** both for **deep space exploration** as well as on **Earth**.

Hallmarks of cardiac ageing

