

MULTIMODAL NANOPARTICLES FOR STRUCTURAL AND FUNCTIONAL TRACKING OF STEM CELL THERAPY ON MUSCLE REGENERATION

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THE PROBLEM:

Stem cell therapy keeps gaining ground as a promising approach for a broad range of diseases, with currently no alternative effective therapies. However, tools providing real-time tracking of transplanted cells on their early biodistribution and viability, are missing from the current therapeutic approaches. Thus, the need to develop methods which could evaluate and predict the safety and success of cell-based treatments is crucial.

THE n-TRACK APPROACH:

The EU-funded project n-TRACK, which started on October 2017, aims to develop a safe, scalable and highly sensitive multimodal nano-imaging agent, ready for first in humans. The n-TRACK approach will enable non-invasive whole body monitoring, longitudinal and quantitative discrimination of living stem cells in humans using CT, MRI and PET, simultaneously.

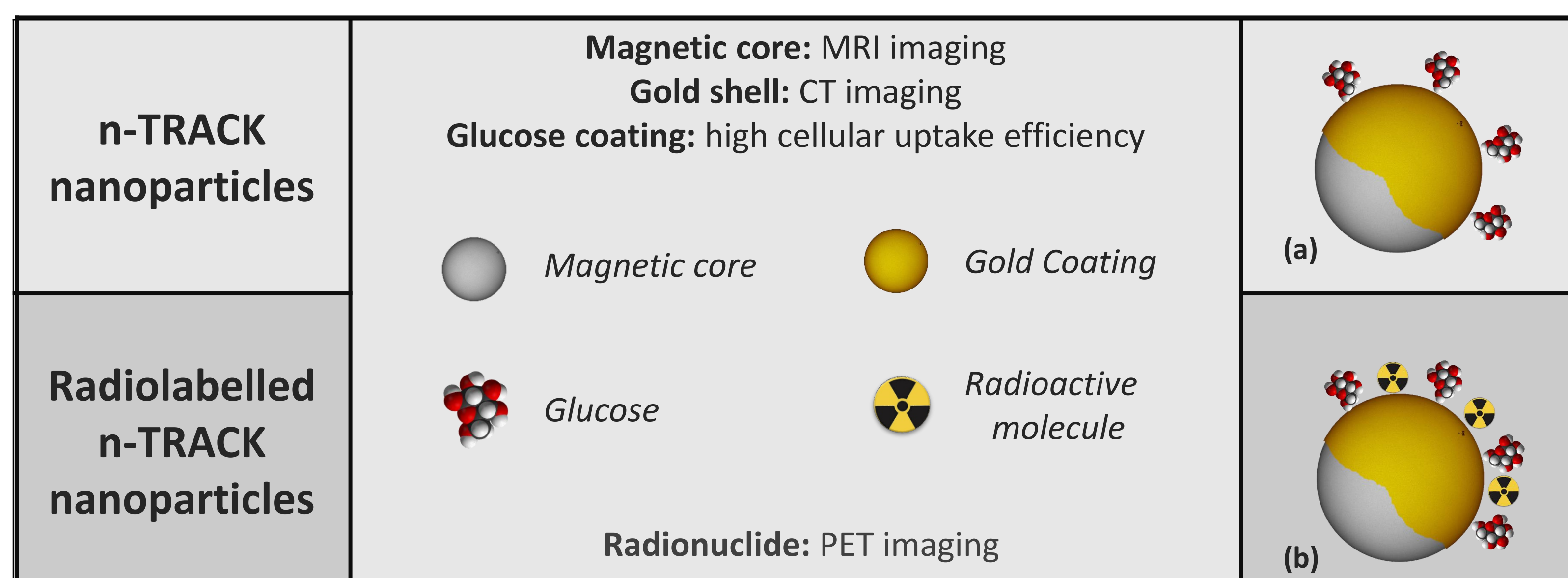
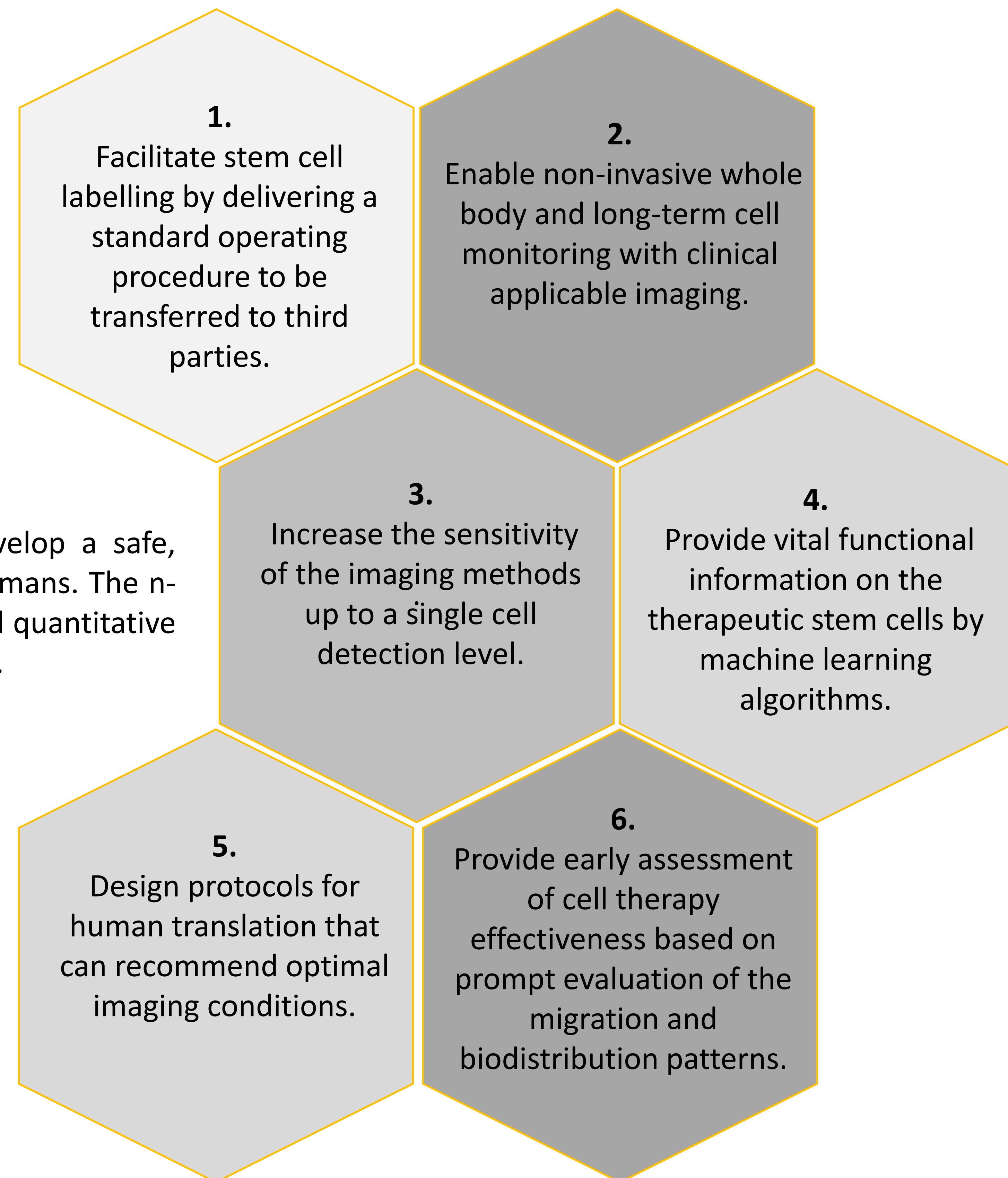


Figure 1: (a) n-TRACK nanoparticle; (b) Radiolabelled n-TRACK nanoparticle

APPLICATIONS:



HOW?

Stem cells will be labelled with the n-TRACK magnetic core and gold shell nanoparticles and will be fully characterised as far as functionality and safety are concerned, to be ready for the clinical stage. The labelled stem cells will be injected into an injured muscle and tracked, including cell functionality and long-term viability, using structural and functional imaging modalities that are clinically available. Functionality, activity and non-clinical safety will be evaluated. Regulatory and commercialization aspects will be addressed to foster a prompt clinical translation and exploitation.

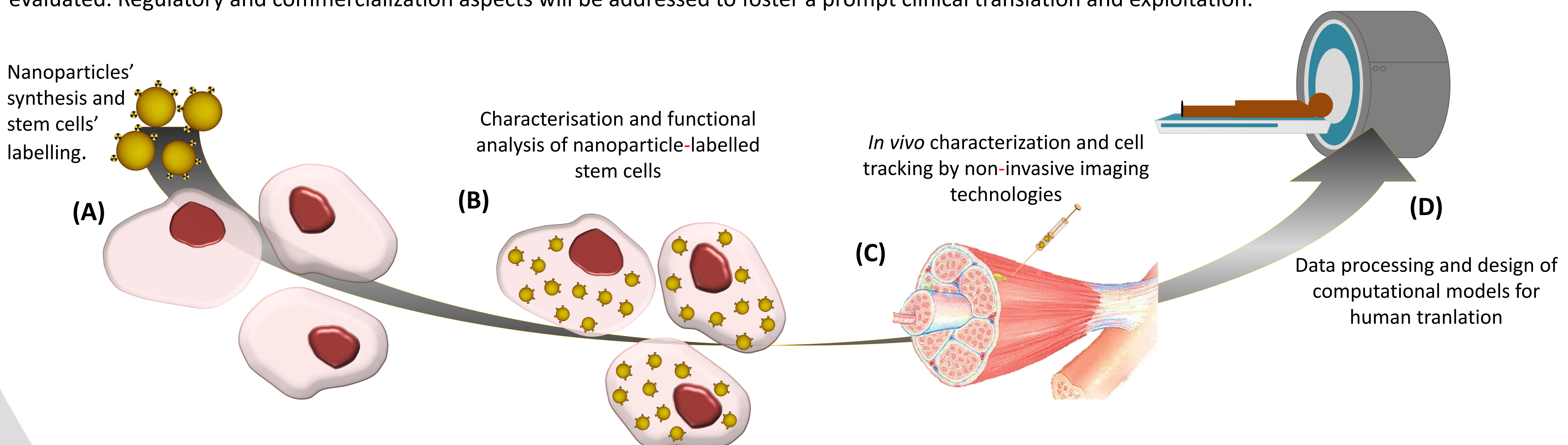


Figure 2: Schematic illustration of the n-TRACK's project plan.

THE CONSORTIUM:

12 different partners from different fields shape this project



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