•optimise pluripotent stem cells biotechnology for large-scale multi-systemic assays, •develop appropriate techniques to engineer genetically pluripotent stem cell lines,

•develop de-differentiation and reprogramming as a tool to explore human polymorphism in vitro,

•engineer specific “tool”-cell lines dedicated to screening of specific toxicity pathways

•develop technologies to identify molecular partners of toxicity pathways,

•explore all parameters of the toxicant administration (dose, duration, repetition, etc.) that may participate to adverse health effects, in order to conclude by •demonstrating the feasibility of the developed toxicity assays within an industrial framework.

To achieve this goal, the SCR&Tox is organised in 6 different work packages.

SCR&Tox aims at providing proof of concept on the use of pluripotent stem cell lines for identifying “toxicity pathways”, i.e. key signalling pathways, the perturbations of which result in adverse health effects, and for setting-up assays for assessing risks to trigger those pathways. This will be carried out in parallel in 5 main target organs for drug and cosmetic toxicity, namely the liver, heart, epidermis, nervous system and musculoskeletal system. SCR&Tox main objectives are to:

- Optimise pluripotent stem cells biotechnology for large-scale multi-systemic assays,

- Develop appropriate techniques to engineer genetically pluripotent stem cell lines,

- Develop de-differentiation and reprogramming as a tool to explore human polymorphism

in vitro,

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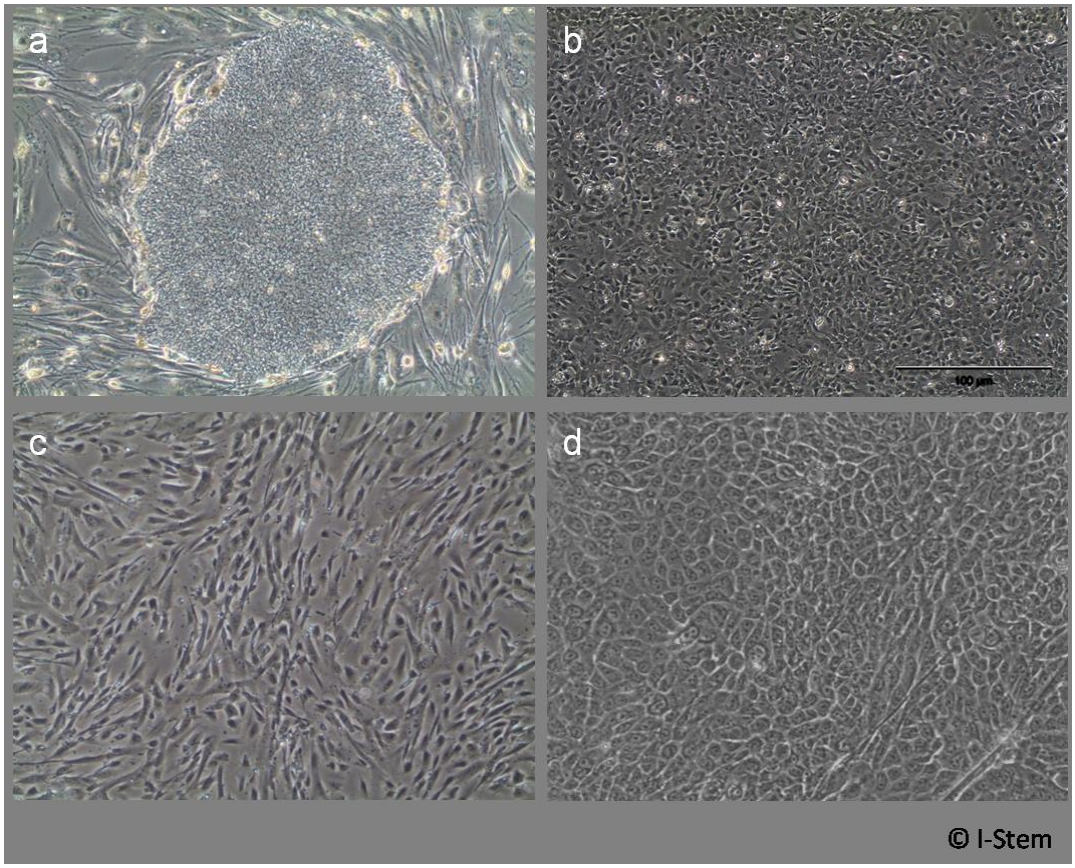

Human pluripotent stem cells: (a) colony of human embryonic stem cells can be differentiated in