

Scientists create biggest family tree of human cells

April 21 2013

In a paper published today by the prestigious journal, *Nature Methods*, biologists at the University of Luxembourg, Tampere University of Technology and the Institute for Systems Biology in Seattle, USA, have created the biggest family tree of human cell types.

Cells are the basic unit of a [living organism](#). The human body consists of a vast array of highly specialized cells, such as [blood cells](#), [skin cells](#) and neurons. In total more than 250 different cell types exist. How are the different types related to each other? Which factors are unique for each cell type? And what in the end determines the development of a certain cell?

To answer these questions, the research team designed a computer-based method that uses already existing biological data from research groups all over the world and analyses them in an entirely new way. This led to the identifications of unique factors for 166 different human cell types. These factors, or master regulators, determine the development and distinguish different cell types from each other. With this information they could map the relationship between the cell types in a family tree. These outcomes may serve as basis for the development of cell replacement therapies.

"Many diseases, such as Parkinson's disease and diabetes, or extensive burns result in the loss or altered functionality of cells", explains Dr. Merja Heinäniemi, who previously worked at the Life Sciences Research Unit and the Luxembourg Centre for Systems Biomedicine

(LCSB) at the University of Luxembourg. "Ideally one would like to replace those sick or lost cells again by healthy ones to cure the patients. This study forms an important step towards the development of such therapies."

Prof. Rudi Balling, Director of the LCSB, adds: "This study illustrates the increasing importance of computer science for biology and medicine. Only with the help of computers it was possible to analyze these large amounts of [biological data](#) to create the first large-scale analysis of cell-type specific master regulators".

Provided by University of Luxembourg

Citation: Scientists create biggest family tree of human cells (2013, April 21) retrieved 2 May 2024 from <https://phys.org/news/2013-04-scientists-biggest-family-tree-human.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.