

Proteomics-based dissection of human endoderm progenitors by differential cell capture on antibody array

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Heterogeneity, shortage of material, and lack of progenitor-specific cell surface markers are major obstacles to elucidating the mechanisms underlying developmental processes. To alleviate these difficulties we developed a proteomics platform and demonstrated its effectiveness in fractionating heterogeneous cultures of early endoderm derived from human embryonic stem cells. The approach, designated differential cell-capture antibody array, is based on highly parallel, comparative screening of live cell populations using hundreds of antibodies directed against cell-surface antigens. We used this platform to fractionate the hitherto unresolved early endoderm compartment of CXCR4+ cells and identify several endoderm (CD61+, CD63+) and non-endoderm (CD271+, CD49F+, CD44+, B2M+) subpopulations. We show that one of these subpopulations, CD61+, is directly derived from CXCR4+ cells, displays characteristic kinetics of emergence, and exhibits a distinct gene expression profile. The results demonstrate the potential of the cell-capture antibody array as a powerful proteomics tool for detailed dissection of heterogeneous cellular systems.

Biography

Yoav Soen completed his Ph.D from the Technion – Israel Institute of Technology, and conducted his postdoctoral studies at Stanford University, School of Medicine. Dr. Soen is now a Senior Scientist at the Weizmann Institute of Science, Rehovot, Israel. His research group focuses on developmental plasticity at the levels of cells and the entire organism.

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