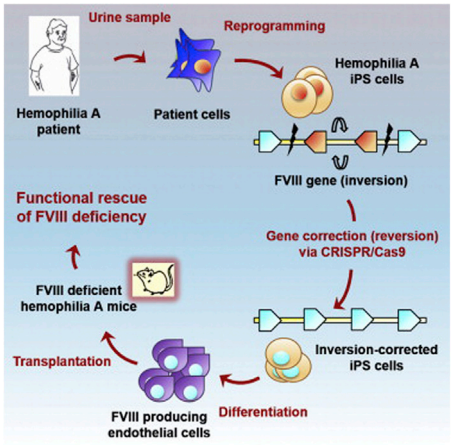
In This Issue

CellPress



TLR3 Links Damage to Regeneration in Skin

Wound-induced hair neogenesis provides a model for deciphering the mechanisms underlying mammalian regeneration. Nelson et al. show that dsRNA released from damaged skin triggers TLR3 activation and the downstream effector pathways IL-6/Stat3, leading to upregulation of hair follicle markers and activation of core hair morphogenetic programs.

Tetraspanin3 in Myeloid Leukemia

Reya and colleagues identify Tetraspanin3 as a key signal required for AML. Tspan3 deletion leads to improved survival in mouse models of AML and reduced cancer growth in xenografts. Tspan3 loss impairs migration of leukemic cells to SDF, suggesting that it may influence oncogenesis by controlling a normal chemokine response.

Runx1 Mutations Confer Stress Resistance to HSCs

Loss-of-function *RUNX1* mutations are common in myelodysplastic syndrome and leukemia and can be early events. Cai et al. demonstrate that Runx1 loss decreases ribosome biogenesis and translation in hematopoietic stem and progenitor cells and confers resistance to endogenous and genotoxic stress. Preview by Ito and Ito.

From Primed Pluripotency to Human Germ-Cell Fate

Saitou and colleagues report induction of human primordial germ cell-like cells (hPGCLCs) from pluripotent stem cells. hPGCLC and mouse PGC specification rely on similar signaling pathways but utilize distinct transcriptional programs, highlighting differences in PGC induction and demonstrating the utility of hPGCLCs for studying human germ cell development in vitro.

Small Molecules Take a Large Step in Direct Reprogramming

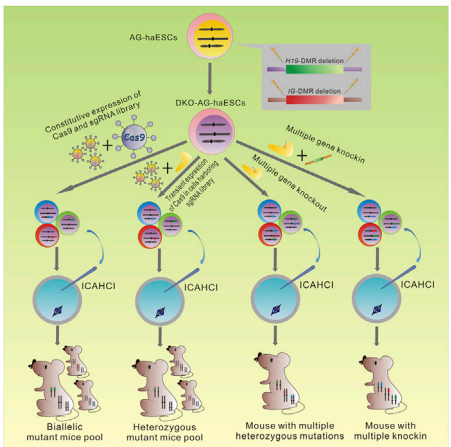
Deng and colleagues show that a cocktail of small molecules can drive direct lineage reprogramming of mouse fibroblasts into functional neurons via chemical disruption of the original cell program and induction of an alternate cell fate. In a related paper, Pei and colleagues demonstrate that a cocktail of small molecules alone can reprogram human fibroblasts from control and Alzheimer's disease patients into functional neuronal cells. These human chemical-induced neurons resemble iPSC-derived and transcription-factor-induced human neurons. Preview by Babos and Ichida.

RNA-Guided Correction of Inversions in Hemophilia

Park et al. used CRISPR/Cas9 in human iPSCs to correct two large inversions that are the most common underlying mutations for human hemophilia, and they show that the correction is functional by rescuing lethality in hemophiliac mice using iPSC-derived endothelial cells. (Top image.)

Gene Modified Semi-Cloned Mice from Haploid ESCs

Li and colleagues show that combined application of altered expression of two imprinted genes and CRISPR-Cas9-based genome editing allows efficient and stable generation of gene-modified semi-cloned mice from androgenetic haploid embryonic stem cells, highlighting the potential of this approach for mutagenesis and screening. (Bottom image.)



Inducible Gene KO with CRISPR

By combining CRISPR/Cas9-mediated genome editing with the Flp/FRT and Cre/LoxP system, Chen et al. developed an efficient two-step strategy to generate inducible gene knockout hPSC lines with predictable gene mutations upon tamoxifen treatment at any stage of differentiation. The iKO hPSC lines will enable elucidating gene functions throughout differentiation.