Cell Stem Cell
Editorial

Reprogramming, in Print and in Person

In honor of the Cell Symposia series conference on Stem Cell Programming and Reprogramming taking place in Lisbon on December 8–10, this month's issue contains a special focus on reprogramming. Our Review and Perspective articles both come from speakers at the meeting. Thomas Graf outlines a broad range of discoveries dating back as far as 1951 that provided the backdrop for our current understanding of reprogramming both to pluripotency and across lineages. Some of the findings he discusses had a somewhat indirect, yet important, influence, whereas others served to provide the conceptual foundation on which transcription-factor-based reprogramming was built. Marius Wernig and his colleagues focus more on recent events, with a discussion of the latest advances in reprogramming somatic cells directly into neuronal cells of various different "flavors." In addition, they lay out their views on guidelines and benchmarks for characterizing induced neuronal cells, based to a significant extent on existing standards for neuronal differentiation of pluripotent cells. Two of the research papers also provide insights into reprogramming, both focused on pluripotency. One, from the Pei lab, makes progress in understanding the chromatin-based mechanisms that underlie reprogramming by showing that the histone demethylases Jhdm1a/1b promote the process via demethylation of H3K36me2/3 and interface with both senescence and miRNA-based pathways. These demethylases also function downstream of vitamin C, which the same group showed previously enhances reprogramming. Rudolf Jaenisch's group present a different point, by showing that quite subtle differences in the stoichiometry of reprogramming factors can have a significant effect on the properties of the resulting reprogrammed cells. As the field continues to discuss issues related to the "quality" of reprogrammed cells, this paper introduces an additional parameter to take into account when devising reprogramming strategies.

Broadening beyond science itself to policy and funding, this issue also features four Letters that give different perspectives on the recent European Court of Justice ruling regarding the patentability of embryo-derived human cells. Ian Wilmut voices many of the concerns that have been raised by the scientific community about the likely impact on the progress of research. Alan Trounson and colleagues from CIRM provide insights based on their experiences of funding translational research. James Lawford Davies and Alex Denoon are patent lawyers who specialize in life science and biotechnology, and they argue that, while certainly not beneficial to the field, the effects of the ruling on stem cell research may be more limited than has been suggested. Last but not least, Katja Triller Vrtovec and Christopher Scott discuss the likely implications for the patenting of pluripotent cells more broadly, particularly iPSCs. This discussion is especially pertinent given the geographical location of our conference, as many of the European scientists presenting and attending will still be digesting the ruling and considering the potential implications for their research programs. The costs associated with translating stem cell research were also of course brought into sharp focus recently by the decision by Geron to discontinue its pioneering spinal cord injury trial.

The Cell Symposia Stem Cell Programming and Reprogramming meeting is part of the broader Cell Symposia conference series that Cell Press started last year. These meetings are relatively small and are designed to offer numerous opportunities for dialogue and discussion among participants, both during the sessions themselves and at a dedicated conference dinner that gives an additional avenue for interaction with the invited speakers. The topics we covered this year in the Symposia were varied, ranging from regulatory RNAs to autism; the same will be true for next year's series too, so keep an eye out for the announcements. All of the organizers of Cell Symposia Stem Cell Programming and Reprogramming are looking forward to meeting authors and readers later this month in Lisbon. We hope to see you there. However, if you are not able to make it, we hope you will instead enjoy the updates on various different aspects of reprogramming that appear in this issue, plus of course the broad range of stem cell topics covered by the rest of the articles, and we hope to see you in person elsewhere in the near future.

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