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TELEGRAFT

MEMBER NEWSLETTER

Cytotherapy Corner

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May brought you both the regular May 2018 Cytotherapy issue and the ISCT Montreal meeting abstract supplement. No worry if you did not get to the meeting - a read of the abstracts is exciting enough and a token of the ever-increasing quality of the meeting. Of the 40 oral abstracts, about one third concern gene modification of cells (14 on CAR-T cells) - a metric of the future direction cell therapy is heading. Another third of the abstracts address tissue engineering using novel cell types and structures in diverse applications in regenerative medicine, a sign of the way our field is continually expanding. New on the scene is the rapidly advancing domain of exosomes (4 abstracts), while MSCs, once the main currency of ISCT meetings, occupy now only 12% of the topics. Our field of cellular therapy continues to witness huge shifts in topics as practice-changing advances in technology continue to shape the cutting edge of medical advances. Cytotherapy is constantly reviewing its scope and adapting to the changes in the field (see the Cytotherapy web page for the latest update).

The May issue (Vol 20 number 5) is notable for its focus on the hard realities that surround T cell product manufacture – issues of potency measurement – a key regulatory requirement for any successful cellular product to expand into the market place, and the scale-up challenges faced by manufacturers of cell products. *Charlotte de Wolf and colleagues* from the Netherlands in their review bring a regulatory perspective on potency assays for antitumor T cells. After proposing today's standards the authors explore ways in which potency assays could be further refined. For example potency assays naturally focus on cytotoxicity, but would benefit from simpler surrogates if these could be validated. In vitro potency assays fail to capture the complex interactions in the rich multicellular environment in vivo. Better understanding of the full cellular ecology surrounding T cell tumor cell killing may lead to the development of more accurate and sophisticated assays. When it comes to T cell manufacturing we are fortunate to publish an authoritative account of the challenges *by Jun and colleagues* from U Penn – the home of a successful FDA-approved CAR-T cell product. As T cell therapies move from early stage manufacture for small clinical trials in academic centers to scaled-up manufacture of much larger numbers of cell products for the general market, the challenges of scale are similar to those confronting Elon Musk in his attempt to break into mass production of his Tesla 3. The review describes the roadblocks and strategies for improving manufacture – a matter of further culture optimization and automation to standardize, monitor, and quality control cell products *and* reduce the cost of manufacture. All remains a work in progress and the review ends with a prescription of the way forward to global production with many of the building blocks still to be put in place.

Don't miss also the paper by *Zhang et al* on the way in which exosomes derived from MSC enhance regulatory T cell production through an APC mediated pathway, and the paper by *Kruse et al* on the antiviral effect of hepatitis B specific CAR-T cells in a preclinical mouse model of hepatitis B. All in all there is plenty to read before you pick up the June issue.