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ESGCT 2017 in Berlin: Clear Steps Forward

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ESGCT 2017 in Berlin: Clear Steps Forward

The 2017 Annual Congress of the European Society of Gene and Cell Therapy (ESGCT) took place in Berlin on October 17-20 in a very enthusiastic and positive atmosphere. The record number of participants and exhibitors were clear evidence of the current favorable trajectory of the field of gene and cell therapy.

Progress in clinical applications was a prominent highlight of the meeting. Recent approvals of two CAR T cell therapies, for acute lymphatic leukemia (Kymriah) and non-Hodgkin lymphoma (Yescarta), in the US were obviously center stage. Various plenary presentations pointed the way forward for next generation therapies. Although the clinical results with these therapies are excellent (roughly 50% of the treated recurrent acute lymphatic leukemia patients had a complete response and 50% of these patients show long term survival) further developments are on the drawing board with the aim of both improving efficacy and specificity and better identifying the appropriate patient populations for these powerful treatments. Furthermore, a better understanding of serious adverse effects that are common to these new therapies, such as cytokine release syndrome, B cell aplasia and neurotoxicity are in under intense study with a view to minimizing them or avoiding them altogether. Other research aims to enhance the potency of these treatments, including but not limited to combining them with other anti-tumor immune-based approaches.

Encouraging clinical results were also reported for Adrenoleukodystrophy, a rare genetic disorder characterized by the breakdown or loss of myelin and progressive dysfunction of the adrenal gland. Hematopoietic stem cell-based gene therapy stabilized the disease in 88% of treated patients in a recent phase II/III transatlantic collaborative trial. Another presentation describing the treatment of an Epidermolysis Bullosa patient with transduced skin grafts to correct the genetic defect and save the patient's life generated enthusiastic applause from the audience. Promising results were also reported for B-thalassemia, Fanconi's anemia and Spinal Muscular Atrophy-1 following treatment with gene and/or cell based approaches. The results clearly highlight

the significant potential of combined gene and cell therapy and show that these treatments are on their way to the clinic.

All these reported advances involve relatively rare inherited genetic diseases where gene and cell therapy is finally fulfilling its long-waited promise. It is also evident that current manufacturing technology is adequate to support regulatory approvals and clinical needs for these indications. However, treatments for major common diseases where current treatment options are limited or uneffective remain under development.

Several presentations and posters described advances in vector technology, disease models and new approaches and targets for gene and cell therapy. In particular, CRISPR technology with several new adaptations has now advanced to such a level that protocols, reagents and various strategies for gene editing applications are already quite robust, affordable and doable in many laboratories worldwide.

Even though the current climate is very positive for gene and cell therapy, there is still much room for improvement in basic cell and vector technology. Basic research should focus on finding new and improved disease targets, therapeutic genes, target cell populations and validated translational models for human disease. In addition, issues such as genotoxicity and other types of safety aspects must be kept in mind so that unrealistic promises and approaches do not lead to public relations backlashes to the field as we have witnessed in the past. Nevertheless, the current increasingly supportive stance of regulators especially in the USA should help to guide the development of more predictable outcomes and clinical study designs which together with the increased experience of the various actors should better guard against potential failures that could significantly damage the field. Notwithstanding these caveats, it is expected that the field will see several new improvements and advances towards clinical applications in not too distant future.

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