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Frank Emmrich

University of Leipzig, Germany

Perspectives and new process developments in cell therapy

About 20 years were needed to implement the invention of monoclonal antibodies with clinical and industrial acceptance for novel therapies, and another 10 years for reaching blockbuster level. Now the time has come to welcome cell therapies at the clinical stage with complex procedures that have been developed throughout the last 10 to 15 years. Dendritic cell vaccines, NK cells and chimeric antigen receptor (CAR) T cells are being explored in various configurations in clinical studies. Connected with these developments are new challenges. Certain regulatory authorities find it difficult to handle processes with mixed categories like cell therapy and gene therapy, or combinations of drugs with medical devices. On the manufacturing site originates a demand of for reduction product costs by drastically reducing manual processing steps and implementing automation. Moreover, a better understanding of mechanisms at the molecular and cellular level may reduce costs and risks of new therapeutic procedures for patients. It is well established that anti-CD4 antibody treatment of helper T cells would induce immunological tolerance when applied in the ongoing phase of an immune response. We studied the mechanism and could further develop the procedure to an applicable technology that allows extracorporeal treatment of T cell containing allotransplants thus reducing treatment risks and product costs significantly. If applied in the field of organ transplantation and transplantation antigens the procedure may be useful for preventing graft rejection of organ transplants or the graft versus host disease (GvHD), the most severe adverse reaction upon allogeneic stem cell transplantation.

Biography

Frank Emmrich is a Professor of Clinical Immunology and Head of the Fraunhofer Institute for Cell Therapy and Immunology (IZI) Leipzig since 2005. He has published more than 270 papers in reputed journals. He is Member of numerous scientific societies, advisory boards and Project Adviser for various research funding organizations. He has served two election periods as Member of the German National Ethics Council. He is a Professor for Clinical Immunology at the University of Leipzig. His special interest is T Cell Immunology and Immunotolerance. He is currently the Chairman of the Regenerative Medicine Initiative Germany (RMIG).

frank.emmrich@izi.fraunhofer.de

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