Cell Therapy Company Rexgenero Utilizes HemaCare’s Bone Marrow Products for Development of their Critical Limb Ischemia Therapeutic

Introduction

Rexgenero, a regenerative medicine company based in Seville, Spain, is developing a number of cell-based therapeutics for the treatment of serious diseases such as peripheral artery disease and critical limb ischemia. These diseases are fairly prevalent among the older population, affecting up to 10% of people over the age of 70.[1] The company uses three different cellular technologies, each aimed at regenerating diseased tissues and thereby treating the underlying cause of the disease, rather than simply slowing disease progression or treating symptoms. Rexgenero’s lead candidate, REX-001, is an autologous cell therapy currently being studied in two Phase III clinical trials focused on the treatment of diabetic patients with Critical Limb Ischemia (CLI).[2]

Rexgenero’s main research facilities are located in Seville, Spain, where Dr. Liesbeth de Jong, VP of Manufacturing and R&D, carries out her work. Dr. de Jong recently took the time to discuss her research, and her experience with HemaCare products.

Dr. de Jong is primarily involved in the development of their lead candidate REX-001, and is directly responsible for overseeing the manufacturing and quality control of the cellular product being administered to each clinical trial patient.

Much of Dr. de Jong’s work involves studying the bone marrow-derived mononuclear cells that form the basis of the investigative cell therapy treatment REX-001. REX-001 is an “autologous” treatment, relying on the use of cells harvested from each patient’s own bone marrow. The collected bone marrow is purified to enrich for disease-fighting mononuclear cells, then infused back into the patient to combat their disease. Collecting patient-derived bone marrow, however, is an invasive procedure that can be highly demanding for the person involved. Moreover, cells derived from this process are limited in quantity, and are often impacted to some extent by the very disease the patient’s doctors are trying to treat. Due to these limitations, a reliable supply of bone marrow from healthy donors is needed in order to carry out development and optimization studies. This is where HemaCare’s longstanding reputation of being a first-class global supplier of high quality human cells and tissues comes in.

“At Rexgenero we perform all of the necessary comparability studies and optimization studies until we are able to develop the final protocol that we will use for manufacturing of this product for our clinical trial. Every time we undertake a development study, we have to assess comparability of donor material with patient material. It’s important to use bone marrow from healthy donors as much as possible during this process, since a patient’s bone marrow is often impacted by their disease, and can look quite different from healthy donors. In general, bone marrow is very difficult to collect, because it’s a very invasive procedure. In Europe, it’s hard to buy such a product, so for all of our development studies, we use healthy donor material from HemaCare.” stated Dr. de Jong.

Dr. de Jong purchases bone marrow from HemaCare in the U.S., because the United States has less restrictive regulations regarding purchase and shipping of biological material derived from human donors.

Working with HemaCare

Dr. de Jong was introduced to HemaCare through a colleague while working at her previous job, and kept in touch with the company after her move to
Rexgenero. When the need for healthy donor material arose, it was therefore a simple matter of calling on her old contacts to see whether HemaCare’s global shipping program of unprocessed bone marrow would logistically work for her. When asked about her experience in working with HemaCare products, Dr. de Jong explained that for her particular research, product consistency is of paramount importance. Since healthy donor material is being used as a stand-in for patient material for their manufacturing process development, it’s critical that variability be kept to a minimum. [3] Often, donor material needs to be pooled to provide adequate volume and cell counts for a given process. HemaCare’s extensive donor database makes it possible to request bone marrow from healthy donors with closely matched demographics and screening results. It also allows Dr. de Jong and her colleagues to request “special orders” of bone marrow material when they need donors who have been screened for particular characteristics.

“With HemaCare, the quality is highly consistent, which of course is critical to our research. HemaCare is also extremely helpful in planning processing runs, and in understanding our logistical limitations. They are very flexible, for example if we need to split an order and have it ship to multiple sites, or if we pre-order for a certain week, but then need to re-schedule due to a change in circumstances. Because of these factors and the high quality of product received we are extremely happy with their service.” stated Dr. de Jong.

Shipping freshly collected bone marrow from one country to another can be a tedious process. HemaCare can collect their donor material in the USA on a Monday, and even with a 9-hour time difference, the labs in Rexgenero will receive the bone marrow on Wednesday of the same week. Dr. de Jong finds that viability and quality of the cells are still very good considering the geographical delay from collection to processing. HemaCare performs regular stability and quality control assays prior to shipment, to ensure that they have a good snapshot of cellular composition and function at the time of collection (see figure 1). Once the bone marrow is in house at Rexgenero, the required manipulation is fairly minimal, primarily involving enrichment for mononuclear cells. The whole process is completed within a day, at which point the cells are ready for development studies.

Fig. 1. Stability studies performed using human bone marrow mononuclear cells show that despite processing time after collection, there is little difference in cellular function, as measured by cellular capacity to form colonies and proliferate. Storage temperatures over this period of time also do not appear to have a meaningful effect on function. Blue line = 4°C, Red line = 21°C. Image credit: HemaCare Corporation.

Rexgenero’s lead candidate is currently in Phase III clinical trials and hopefully will be approved for commercial release in the near future. Even after a cell therapy is approved, however, there is often a need for further development work, and, with additional cell therapy candidates making their way down the pipeline, Dr. de Jong imagines Rexgenero and HemaCare’s relationship will continue to flourish. HemaCare, for its part, looks forward to continuing to provide Rexgenero with unprocessed bone marrow with the HemaCare Advantage of superior quality, customer service, and logistics planning.

Reference: