

## Poietics™ Human Immune System Cells

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### Peripheral Blood CD4<sup>+</sup> T Cells

Peripheral blood CD4<sup>+</sup> T cells (2W-200) play a central role in regulating the cell-mediated immune response to infection. Often known as "helper" T cells, they act on other cells of the immune system to promote various aspects of the immune response, including immunoglobulin isotype switching and affinity maturation of the antibody response, macrophage activation and enhanced activity of natural killer cells and cytotoxic T cells (CTL). CD4<sup>+</sup> T cells act by releasing cytokines in response to antigenic stimulation. The release of cytokines allows cells of different types to "talk" to each other in the on-going immune response. One of the major effector functions of the peripheral blood CD4<sup>+</sup> T cells is in the activation of macrophages. The peripheral blood CD4<sup>+</sup> T cells are isolated from normal peripheral blood using negative immunomagnetic selection. Purity is ≥ 90% and the standard quantity is ≥ 10 million viable cells per cryopreserved ampoule.

### Peripheral Blood CD8<sup>+</sup> T Cells

Peripheral blood CD8<sup>+</sup> T cells (Lonza Cat. No. 2W-300), also referred to as cytotoxic T cells, are critical components of the adaptive immune response. CD8 is a transmembrane glycoprotein which serves as a co-receptor for TCR (T Cell Receptor) to recognize antigens on major histocompatibility complex (MHC). Once bound, CD8<sup>+</sup> T cells kill the infected cell by secreting cytotoxic granules, containing granzymes and perforin, resulting in apoptosis of the target cell. Additionally, CD8<sup>+</sup> T cells secrete cytokines upon activation, primarily TNF- $\alpha$  and IFN- $\gamma$ , which have anti-tumour and anti-viral microbial effects. CD8<sup>+</sup> T cells are isolated from normal peripheral blood using negative immunomagnetic selection. Purity is ≥ 85% and the standard quantity is ≥ 10 million viable cells per cryopreserved ampoule.

### Peripheral Blood CD14<sup>+</sup> Monocytes

CD14<sup>+</sup> Monocytes (Lonza Cat. Nos 2W-400A, 2W-400B, 2W-400C) are found in the circulating peripheral blood where they make up 10-20% of the total mononuclear cell population. Monocytes are

characterized by their phenotypic expression of CD14, and thus, are commonly called CD14<sup>+</sup> monocytes. They play an important role in host defense as circulating monocytes and differentiation into tissue macrophages and can differentiate into dendritic cells with potent antigen-presenting capability. Cryopreserved CD14<sup>+</sup> monocytes are guaranteed to express CD14 and will contain either ≥10, 20, or 40 million viable cells per ampoule depending upon the product ordered.

### Dendritic Cells

Dendritic cells (Lonza Cat. No. CC-2701) act as the messenger cells of the immune system by processing antigens from pathogens and presenting the antigens to T cells to initiate an immune response. Derived from CD14<sup>+</sup> monocytes, Poietics™ Normal Human Dendritic Cells are tested for a panel of specific surface markers to provide detailed characterization of these cells. The cells can survive up to 7 days in culture with the proper cytokines (IL-4 and GM-CSF) to maintain the cells as immature dendritic cells (iDCs). Cells can be further differentiated to mature dendritic cells with the addition of TNF- $\alpha$  and IL-1 $\beta$ . Cryopreserved Poietics™ Normal Human Dendritic Cells (NHDC) are guaranteed to contain ≥3 million viable cells per ampoule.

### Natural Killer Cells

Natural killer (NK) cells are lymphocytes of the immune system that are critical in host defense and immune regulation. Since they are part of innate immunity, they do not require sensitization for the expression of their activity. NK cells play significant roles in viral infections, autoimmunity, pregnancy, cancer, bone marrow transplantation, and more recently, adaptive immunity. NK cells are most traditionally characterized by the presence of surface marker CD56. Poietics™ Human NK Cells are isolated using positive immunomagnetic selection for the CD56 marker (Lonza Cat. No. 2W-502) or negative selection, which results in the enrichment of CD56 expressing cells (Lonza Cat. No. 2W-501). Purity is ≥ 90% for CD56 for both products. 2W-501 cells are also simultaneously ≥ 70% positive for CD16. The standard quantity is ≥ 5 million viable cells per cryopreserved ampoule after thawing.

When placing an order or for Scientific Support, please refer to the product numbers and descriptions listed above. For a complete listing of all Poietics™ products, refer to the Lonza website, [bioscience.lonza.com](http://bioscience.lonza.com) or the current Lonza catalog. To obtain a catalog, additional information or scientific support you may contact Lonza using the phone number or email address listed at the top of this document.

## Product warranty

CULTURES HAVE A FINITE LIFESPAN *IN VITRO*. Lonza warrants its cells only if Poietics™ media are used, and the recommended protocols are followed. Cryopreserved primary human hematopoietic cells are assured to be viable and functional when thawed and maintained properly.

**THESE PRODUCTS ARE FOR RESEARCH USE ONLY.** Not approved for human or veterinary use, for application to humans or animals, or for use in clinical or *in vitro* procedures.

**WARNING: CLONETICS™ AND POIETICS™ PRODUCTS CONTAIN HUMAN SOURCE MATERIAL, TREAT AS POTENTIALLY INFECTIOUS.** Each donor is tested and found non-reactive by an FDA approved method for the presence of HIV-1, hepatitis B virus and hepatitis C virus. Where donor testing is not possible, cell products are tested for the presence of viral nucleic acid from HIV, hepatitis B virus, and hepatitis C virus. Testing can not offer complete assurance that HIV-1, hepatitis B virus, and hepatitis C virus are absent. All human sourced products should be handled at the biological safety level 2 to minimize exposure of potentially infectious products, as recommended in the CDC-NIH manual, [Biosafety in Microbiological and Biomedical Laboratories](#), 5<sup>th</sup> edition. If you require further information, please contact your site safety officer or Scientific Support.

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