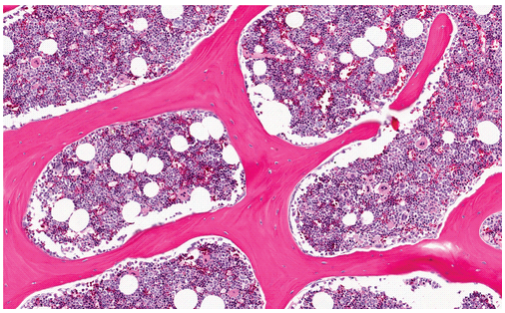
# 6 Interesting Facts about Normal Bone Marrow



The human body really is a remarkable biological system. One of the most important organs of the body is the bone marrow; though some might not think of normal bone marrow as an organ, like the liver or heart, it indeed should be viewed as such. In fact, bone marrow is the major hematopoietic organ and primary lymphoid organ that produces erythrocytes, lymphocytes, granulocytes, monocytes and platelets. Normal bone marrow gives rise to stem cells, progenitors of all immune cells and powerful regenerative machines. Clearly, bone marrow is as important to overall health as the heart, liver or lungs, and so is critical for essential medical research exploring the root causes ofserious and intractable diseases.

Impress your colleagues and friends with these six interesting facts about normal bone marrow:

1. In an adult weighing 140 pounds, roughly four percent of that weight, or 5.7 pounds (2.6kg), is normal bone marrow. On a daily basis, bone marrow hematopoiesis generates about 500 billion blood cells.

2. Only one out of every 100,000 normal bone marrow cells is an uncommitted stem cell. These cells are critically important to researchers and so isolating them is a priority, though a challenging process.

3. Bone marrow is an extremely important tool for researchers studying the causes and potential therapies for blood and autoimmune diseases. Currently, there are over 4,000 clinical trials ongoing utilizing bone marrow. Conducting a search through the NIH's Clinical Trials websites that includes trials focusing on all the components of normal bone marrow gives a total number of trials that exceeds 21,000.

4. Scientists have discovered specific niches within normal bone marrow that nurture different types of blood stem cells. They have found that there is not just one niche for development of blood cells in bone marrow.Researchers at Washington University School of Medicine hope this discovery will improve therapeutic solutions, perhaps via a drug that nourishes support cell niches; or one that disrupts the niche where tumor cells hide, thus driving them into the bloodstream and making them more vulnerable to chemotherapy treatments.

5. Neutrophil homeostasis is maintained through a balance of production and release from normal bone marrow with elimination of senescent neutrophils from circulation. Neutrophils are important to the immune response and can cause inflammation when regulation fails. Research has recently shown that chemokine expression by marrow stromal cells is important in regulating neutrophil release. Specific pathways involving a variety of biomarkers may be a therapeutic target, postulate researchers, to manage neutrophil quantities in the human blood.

6. Bone marrow mononuclear cells (BMMC) contain a highly purified population of progenitor cells and so are frequently isolated from bone marrow for important disease research. Scientists analyzed a BMMC gene network from patients suffering from systemic lupus erythematosus (SLE). They identified central gene regulator networks that are implicated in SLE disease pathogenesis and hope this may lead to the development of new therapy targets. Researchers note a high similarity between active SLE and non-Hodgkin's lymphoma and suspect that these networks may provide a molecular basis for the linkage between SLE and lymphoid cancers.

It's impossible to understate the importance of high-quality bone marrow biospecimens for medical research and drug discovery. What type of bone marrow donors do you need for your next research project?