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Jorge M Pacheco* (pacheco@cii.fc.ul.pt), Complexo Interdisciplinar, Av. Prof. Gama Pinto, 2, 1649-003 Lisboa, Portugal. *Dynamics of hematopoiesis*.

The human bone marrow produces 3.5×10^{11} blood cells per day. This is as much as a cat produces in one week and a mouse produces during its lifetime (≈ 2 years). At the root of blood cell production lie hematopoietic stem cells. In this talk I will discuss how one can use allometric scaling to find that ≈ 400 stem cells which replicate, on average, once per year, maintain daily blood cell production in humans. Furthermore, I shall propose a hierarchical model of hematopoiesis which allows one to understand how humans sustain such high blood cell production daily. As a result, a common view of hematopoiesis across mammals is proposed, which can accommodate most of the relevant data existing to date, and which predicts that the smallest mammals are the most robust against acquired hematopoietic stem-cell disorders. (Received January 29, 2008)