

The biology of hematopoietic stem and progenitor cells and the process of primitive hematopoiesis

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We will discuss the process of primitive hematopoiesis, including the biology of hematopoietic stem and progenitor cells (HSPCs). We will review experimental methods to define HSPCs and their properties including quiescence, proliferation and differentiation rates. We will explore the current state of knowledge regarding how environmental stresses such as infection and inflammation perturb these properties. We will describe lineage tracing and bar-coding methodologies to study such perturbations. Finally, we will discuss how changes in HSPC populations contribute to clonal hematopoiesis and the potential contributions of infection and inflammation to leukemic transformation. This will include a basic discussion of leukemia, leukemic stem cells, and genetic basis of cancer.