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# Stress related plasma proteins & UCB stem cell trafficking

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## Abstract

A greater understanding of the mechanisms behind hematopoietic stem and progenitor cell (HSPC) trafficking is vital to increase the efficacy of HSPC therapy. The composition of adult blood plasma (ABP) is well documented, in particular proteins and metabolites, but very little is known about umbilical cord blood plasma (CBP) which contains a host of bioactive proteins released as a stress response during birth - as opposed to ABP which is generally regarded as homeostatic. Physiologic mammalian stress response may result in altered concentration gradients of bioactive amines thereby creating differing concentration gradients between the marrow and peripheral blood compartments. We have investigated factors in CBP and ABP and their effects, if any, on HSPC migration. An improved knowledge of the factors that influence HSPC mobilization may provide us with a better approach towards stem cell priming and graft HSPC engineering prior to transplantation. The proteins examined here and their effects on HSPC migration provides novel insights into the physiologic stress response and factors that influence HSPC trafficking. Further understanding of HSPC migration to proteins released in stress response may be exploited to direct HSPC trafficking in cellular therapeutics in hematology and regenerative medicine applications in both the autologous and allogeneic setting.

## Biography

Mary J. Laughlin, MD is Professor of Medicine, Cancer Center Distinguished Professor, and Director of Hematopoietic Stem Cell Transplantation at University of Virginia. She is internationally recognized as an expert in unrelated umbilical cord blood allogeneic transplantation for patients with hematologic malignancies - linking clinical medicine and laboratory research in hematopoietic and immune cell biology. She previously held academic tenure appointments at Case Western Reserve University and Duke University. Dr. Laughlin recently served as President of the International Society of Cellular Therapy (ISCT), and Co-chair of the Graft Sources Committee for the Center for International Bone Marrow Transplant Registry (CIBMTR).