

**ABSTRACT #2 - Global Conference on Radiation Topics****HemaMax™ Simultaneously Enhances Near-Term Survival and Long-Term Recovery from Lethal Total Body Irradiation****Dolph D. Ellefson, Timothy K. Gallaher, Lena Basile**

Radiation exposure often results in outgrowth of enteric bacteria translocated across the intestinal barrier. Radiation-induced immunosuppression enhances mortality by allowing translocated bacteria to quickly become septic. In addition, radiation exacerbates mortality by denuding bone marrow progenitor populations essential to regeneration of peripheral immunity. Mitigation of hematopoietic syndrome requires the suppression of bacterial outgrowth in the near-term until restoration of effective peripheral immune surveillance. HemaMax™ (rHuIL-12), currently in advanced development as a frontline drug for the treatment of the hematopoietic syndrome component of acute radiation sickness, enhances survival when administered 24hrs after exposure to lethal total body irradiation. HemaMax enhances long-term survival by generation of systemic multipotent recovery of neutrophils, lymphocytes, platelets, and other critical organ systems essential to survival and recovery from lethal irradiation. In the near-term, HemaMax enhances survival by suppression of bacterial outgrowth by induction of innate and adaptive immune responses. Recent studies in non-human primates and mice treated 24hrs after exposure to lethal total body irradiation display a diminished bacterial load relative to vehicle-treated controls. Cumulative evidence from studies in humans, non-human primates, and mice demonstrate that HemaMax treatment, irradiation, and wounding upregulate IL-12R $\beta$ 2, the endogenous receptor for HemaMax, in neutrophils, NK cells, as well as regenerative cells in bone marrow and spleen. These data and others demonstrate that IL-12 is an essential requirement for recovery following irradiation and injury. The HSARS project is funded solely with federal funds from the Biomedical Advanced Research and Development Authority under Contracts HHSO100200800060C and HHSO100201100037C.