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SMRTL is Awarded Funding for hGH Biomarker Research

January 25, 2011, Salt Lake City, UT-- The Sports Medicine Research & Testing Laboratory (SMRTL) received a research grant from the United States Anti-Doping Agency (USADA) to develop a method to analyze insulin-like growth factor -1 (IGF-1) and the N-terminal peptide of type III procollagen (P-III-P) using mass spectrometry (MS). SMRTL seeks to develop a reliable method to quantify IGF-1 and P-III-P in serum. This method is a key to detecting use of human growth hormone (hGH) by athletes.

Human Growth hormone is naturally secreted by the anterior pituitary gland and has many important physiological properties including the production of lean body mass, reduction of body fat, and the growth/repair of bone and connective tissue.^{i ii} Because of these properties, it is suspected that hGH is used by athletes to gain an unfair advantage.

The current hGH test is reliable, but is limited in effectiveness because of its 24-36 hour window of detection.ⁱⁱⁱ Biomarkers that are stimulated by the injection of hGH, such as IGF-1 and P-III-P, provide a much extended detection window. Reliable quantification of IGF-1 and P-III-P using MS could provide a detection window of up to 2 weeks, as the levels of the two proteins in serum do not return to normal levels for 14 days.^{iv}

Dr. Holly Cox, a SMRTL scientist, is working is to quantitate IGF-1 and P-III-P in plasma using MS. During her 10 years of experience in the field of protein mass spectrometry, she has developed many useful methods to identify and characterize proteins by MS. She received her B.S. in Biochemistry from Virginia Tech and her Ph.D. in Biochemistry from Ohio State University.

ⁱ *J. Clin Endocrinol Metab* (1993) **76**, 309 - 317

ⁱⁱ *Endocrine Reviews* (2008) **29**, 535 - 559

ⁱⁱⁱ *Lancet* (1999) **353**, 895

^{iv} *Growth Hormone & IGF Research* (2007) **17**, 220 - 226