

## **PROJECT REVIEW**

### **“GH-2004: Validation of novel assays for the GH-marker approach in the detection of GH abuse in sport”**

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Growth hormone (GH) is a naturally occurring hormone produced by the pituitary gland. Although banned under the International Olympic Committee (IOC) and World Anti-Doping Agency (WADA) list of prohibited substances, the detection of GH abuse poses a formidable challenge.

The GH-2000 and GH-2004 projects have worked to develop a test to detect GH that is based on the measurement of GH-sensitive markers, which rise in response to the administration of GH. The magnitude and duration of the elevation is dependent on the dose of GH given, gender and the individual marker. Men were more sensitive to the effects of GH than women. IGF-I and P-III-P were the best of these markers and were selected to construct formulae that gave improved discrimination between those taking GH and those taking placebo compared with a single marker.

The results of the GH-2000 and GH-2004 projects have been reviewed by a panel of international experts at IOC, WADA and USADA workshops in Rome (April 1999), Dallas (March 2004), Nashville (May 2005), Austin (June 2006), Chicago (June 2007) and London (April 2008). These meetings have confirmed the method's scientific validity and independent confirmation of this approach has been provided by the Australian-Japanese consortium and Kreischa Institute.

The major impasse in implementing this methodology is the need for two immunoassays to be used for each analyte. Furthermore, the original IGF-I assay used in the GH-2000 study is no longer available. It is therefore necessary to validate two new assays for IGF-I and a further P-III-P assay to overcome this hurdle. The aim of the current study is to do this. This will be achieved by simultaneously measuring IGF-I and P-III-P by two commercial immunoassays for each protein on samples obtained from 500 elite athletes