

Project Review

“Implementation of a Novel Strategy for Background Correction into the GASepo software platform”

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In 2003 the development of the software platform GASepo was submitted and succeeded for a WADA research grant. This included the participation of various experts of 9 WADA accredited labs for the development of this software. After two years GASepo now provides a reliable and easy-to-use software platform for quantitative interpretation of gel images deriving from IEF analysis as well as from SDS-Page analysis for the detection of recombinant EPO.

As indicated in the initial grant application, further development of the software is anticipated due to the increasing demands of the various procedures and data from rEPO detection. This proposal targets to a novel and additional way for background subtraction of gel images and sample lanes with a special focus on low abundance gel images.

The current version of the GASepo software offers two different ways of automated background subtraction:

- 1 – subtraction of the background surface deriving from the lane boundaries
- 2 – Subtraction of the background surface deriving from an artificially created lane near the lane of interest

The proposed background subtraction module shall allow for subtraction of the background for each band separately. In addition some minor adjustments regarding the flexibility of report creation and the new demands of SDS-PAGE shall be implemented.

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Results and Conclusions

The project aimed at functionality enhancement of the existing GASepo software platform for quantitative interpretation of gel images from isoelectric focussing analysis. The GASepo software Version 1 has been previously developed and, in the meantime, has become an internationally accepted tool among the vast majority of the WADA-accredited anti-doping laboratories.

Due to the recent development in the EPO doping analytics as well as due to accumulated experience with GASepo gained over time, it was necessary to update selected functionality features and adapt the software to the new generation of operating systems called Windows 7, both in its 32 bit as well as its 64 bit version.

Major and minor software modifications improved the usability and adapted the software to the recent demands of the WADA Technical Document TD2010EPO on EPO detection.

Final product of this project is a renewed software version 2.1 of the GASepo platform. The software was validated against a phantom image with known pixel numbers and intensities. A validation report as well as the phantom image for revalidation is included in the software package