

## **Title**

# **Assays beyond uHTS through COPAS™ flow sorting**

## **Authors**

Kris Ver Donck, Luc Bols, Rico Bongaarts, Peter Van Osta, Arwin J. Brouwer\*, Rob M.J. Liskamp\*, Johan Geysen,

Union Biometrica, European Scientific Operations, Geel Belgium

\* Dept of Medicinal Chemistry, Utrecht University, The Netherlands

## **Abstract**

Assay miniaturization and microtiterplate logistics are two major bottlenecks for increasing assay capacity. Current uHTS systems can handle up to 200 000 compounds a day. By redesigning the assay format it appears possible to dramatically increase the capacity of first line hit selection screening.

With the COPAS™ flow sorter (Complex Object Parametric Analysis and Sorter) we are able to specifically detect and sort out beads with a fluorescent label from a large population of unlabelled beads. We propose to use COPAS™ for screening bead based compound libraries in combination with a fluorescently labeled target to enable ultra high speed binding assays. The COPAS™ series of instruments can handle bead sizes from 50 up to 500 micron. It can read the typical green, yellow and red labels used in today's fluorescent assays. This non-invasive assay technology allows for reuse of the bead library for consecutive screening campaigns. The hits can be individually dispensed into microtiterplates for hit validation retesting and subsequent compound analysis. Using non-destructive compound analysis, like NMR, also the positive beads can be reused for later campaigns.

In conclusion, the COPAS™ analysis and sorter system, combined with bead based libraries, offers a novel, ultra fast, non-invasive assay platform, that extends the limits of high throughput screening.