

# 4<sup>th</sup> African Pharma Congress

June 20-21, 2016 Cape Town, South Africa

## CSIR's cutting edge tools and platform technologies that accelerate drug discovery R&D

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The long time-lines and high cost of drug discovery and development ensues. With this context, pharmaceutical companies are exploring more active partnership models with academia and Biotech companies. The high genetic variability of the African population, resulting in some of these drugs not being effective in African population and resulting in adverse toxic effects not experienced in other population groups remains critical in the African context. The CSIR has developed a number of cutting edge tools that address the factors. The first is a high throughput array printing technology that enables screening of 3000 compounds per week versus 300 per week using some of the current technologies. Through this proprietary technology, the pharmaceutical companies can time and cost efficiently, be able to screen their compounds for specific bioactivity. Secondly through our synthetic biology platform, CSIR can utilize genetic engineering tools for dry repurposing as well as screening against specific genetic backgrounds using stem cells technologies. Thirdly, CSIR's capability in high throughput screening enables it to screen specific drugs at a high throughput against markers known to result in varied drug metabolism, resulting in toxicity. Lastly, the nanotechnology encapsulation and re-formulation platform, addresses specific limitations of bio and pharmaceutically active molecules. These technologies can improve the solubility, delay and control the release of actives as well as facilitate intracellular drug delivery and target to the site of interest. CSIR, in partnership with academic institutions is well positioned to develop tools that will result in realization of precision medicine objectives, cost and time effective screening tools, drug repurposing efforts and implement reformulated products.

### Biography

Boitumelo Semete-Makokotlela is the Executive Director at CSIR Biosciences. She has a PhD in Biochemistry and also holds an MSc in Management Finance and Investment Wits Business School. She was with McKinsey & Company for 2 years. Prior to that, she was at the CSIR's Polymers and Composites Division as a Senior Researcher. Her research team focused on developing Nanotechnology drug delivery systems for TB, HIV and Malaria. She has completed her Postdoctoral research training on Nano drug delivery systems at the University of Nottingham and EPFL, Switzerland. She has published as a first author and co-author in original papers, review articles and book chapters.

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