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Development and application of nanotechnology based multiplexed microELISA system for remote antenatal populations

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Data is presented on a multiplexed microELISA platform which consists of a PictArray™, plastic slide of 16 microwells. Each microwell contains 25 defined specific immunoreaction immunoblots, consisting of assay controls and duplicate tests. Immunoblot intensity is determined by array reader, PictImager, and quantification performed by proprietary software (Pictorial©). This entire immunoanalysis solution is platform agnostic. Hence, due to its small footprint, superior affordability and simple technology, testing can be conducted in community health centres or outreach mobile health clinics. Current test menu includes screening for IgG and IgM for ToRCH and Hepatitis A & E antigens. Whereas, the ENA panel screen for IgG autoantibodies against nine connective tissue antigens. Testing may be performed on finger prick or with 10µL of serum. Due to simple technology, other region specific panels under development include sepsis and fever panels. Array precision profile compared favourably against established single analyte ELISA platforms and exceeded performance of many immunological Point-of-Care products. Direct comparison of Pictor Rubella IgG assay against commercial product, showed a significant correlation (r2) of 0.73. We have developed a versatile and robust multiplexed micro-ELISA test platform. Being platform agnostic and economical, the PictArray testing platform has been optimised for application to screen all populations, especially those rural communities which are currently beyond the reach of mainstream healthcare.

Test	Intra-Slide		Inter-Slide	
	Conc IU/ml	CV %	Conc IU/ml	CV %
T.gondii	34.0	10.0	35.7	6.1
Rubella	52.0	5.0	44.8	4.6
CMV	48.6	13.2	38.7	10.2
HSV1	33.1	10.0	41.1	9.2
HSV2	19.6	9.4	31.9	16.1

Table 1: Intra- and Inter-Slide variance (n=8).

Biography

Michael J Sinosich has completed his PhD on Trophoblast Physiology and PAPP-A. His research interests include non-invasive assessment of fetomaternal wellbeing. He is the Director of Prenatal Testing (DHM Pathology) and serves as Consultant at Pictor Ltd, a developer and manufacturer of multiplexed microELISA assay platform. He has published/presented numerous papers in reputed journals and holds several patents.

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