

# 5<sup>th</sup> World Congress on **Bioavailability and Bioequivalence** Pharmaceutical R&D Summit

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## Network medicine: Metabolomics and personalized medicine in neonatal pathologies and in some neurological disease

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This presentation is about the quantification of urinary metabolites and network model of interaction between metabolites defining the named “network medicine” a network-based approach to human disease. The author will discuss about an innovative application of a supervised multivariate analysis with data filtered with Orthogonal Signal Correction (OSC), a filtering technique applied to introduce in the model the metabolome alteration related to a primary macroscopic classification of pathological condition. The author will also discuss the application of the network medicine to the urinary metabolome in autism spectrum disorders ASD patients and the neonatal urinary metabolome in newborn defined IUGR (intrauterine growth retardation) and newborn Large for Gestational Age LGA. This method had the ability to point out the connection between peripheral processes that can be originated in endocrine system as well in immunology and digestive systems and may be related to the uro-nephrological, neurologic, and cardiovascular system. A disease rarely can be considered as a direct and univocal consequence of genes abnormalities; it reflects the perturbations of the complex intracellular and intercellular network that links tissue and organ systems between them and to the environment. Metabolomics as emerging tools of network medicine, offer a platform to explore systematically the molecular complexity of a particular disease, leading to the identification of disease modules and pathways, but also the molecular relationships among apparently distinct (patho) phenotypes related to external perturbations. In this way there exists a connection between all the “omic” platforms to better investigate pathologies with elevated social importance.

### Biography

Luigi Barberini after his degree in Physics from University “La Sapienza” in Rome moved to Cagliari, (Italy) and received a PhD in Chemical-Physics and then specialization in Medical Physics. He is a Technical Officer at Cagliari University, coordinator of the UASB research unit for analysis of biological signals and images. He has published more than 45 papers in international peer-reviewed journals and has been serving as an editorial board member of reputed journals. He introduced and developed the metabolomics studies at the University of Cagliari in 2003, with a multidisciplinary Clinical Project. He receives funds for the installation of the first NMR spectrometer dedicated to clinical metabolomics in Cagliari. He has coordinated clinical research projects in Neurology, Forensic Medicine, Toxicology, Cardiology and Neonatology.

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