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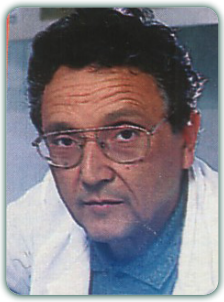

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From nanogenomics and nanoproteomics to the new frontiers of personalized medicine

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Nucleic acid programmable protein arrays utilize a complex mammalian cell free expression system to produce proteins in situ. In alternative to fluorescent-labelled approaches a new label free method, emerging from the combined utilization of three independent and complementary nanotechnological approaches, appears capable to analyze protein function and protein-protein interaction in studies promising for Personalized Medicine. Quartz Micro Circuit nanogravimetry, based on frequency and dissipation factor, mass spectrometry and anodic porous alumina overcome indeed the limits of correlated fluorescence detection plagued by the background still present after extensive washes. This has been further optimized by a homogeneous and well defined bacterial cell free expression system capable to realize the ambitious objective to quantify the regulatory protein networks in humans. Implications for a new frontiers in personalized medicine of the above label free protein array technologies using different test genes proteins are reported along with recent conductometric monitoring of drug-gene and drug-protein interactions is of fundamental importance in the field of personalized medicine.

Biography

Claudio Nicolini received the Doctoral degree in Physics from the University of Padua, in 1967. In 1985, he was called as “eminent scientist” to the Chair of Biophysics of the University of Genoa, in Italy until 2012, where he was successively Director of Biophysics Institute, DISTBIMO and CIRSDNNOB. From 1993 until now is Life President of the Fondazione ELBA Nicolini and of the Nanoworld Institute. On 2008, he was elected as a Foreign Member of the Russian Academy of Sciences and on 2010 *Honoris Causa* Professor of Biophysics and Nanobiotechnology at Moscow State University. He received several awards and prizes and has authored more than 480 publications in international scientific journals (SCI), 35 patents (WPI), 28 books and Series Editor in Bioelectronics (Plenum) and Nanobiotechnology (Pan Stanford). His main scientific activities concerned cancer research, biophysics and nanotechnology, pioneering world-wide chromatin structure-function, bioelectronics and nanobiotechnology.

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