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Personalized and Precision Medicine (PPM) as a unique healthcare model to be set up through bio-design and bioengineering, Hi tech 3d printing and other translational applications, and upgraded business marketing to secure the human healthcare and biosafety

Traditionally, a disease has been defined by its clinical presentation and observable characteristics, not by the underlying molecular mechanisms, pathways and systems biology-related processes specific to a particular patient (ignoring persons-at-risk). A new systems approach to subclinical and/or diseased states and wellness resulted in a new trend in the healthcare services, namely, Personalized and Precision Medicine (PPM).

To achieve the implementation of PPM concept, it is necessary to create a fundamentally new strategy based upon the biomarkers and targets to have a unique impact for the implementation of PPM model into the daily clinical practice and pharma. In this sense, despite breakthroughs in research that have led to an increased understanding of PPM-based human disease, the translation of discoveries into therapies for patients has not kept pace with medical need. It would be extremely useful to integrate data harvesting from different databanks for applications such as prediction and personalization of further treatment to thus provide more tailored measures for the patients and persons-at-risk resulting in improved outcomes and more cost effective use of the latest health care resources including diagnostic (companion ones), preventive and therapeutic (targeted molecular and cellular) etc.

Who is expected to be responsible for getting PPM Model Armed and Re-Armed? Translational researchers, bio-designers and manufacturers are beginning to realize the promise of PPM, translating to direct benefit to patients or persons-at-risk. For instance, companion diagnostics tools and targeted therapies and biomarkers represent important stakes for the pharma, in terms of market access, of return on investment and of image among the prescribers. At the same time, they probably represent only the generation of products resulting translational research and applications.

Bioprinting technologies as a future field of implementation for 3D printing could be PPM as well as regenerative therapies, with the creation of human tissue for organ replacement. The latter, for instance, can be used to construct a wide variety of pharmaceutical dosage forms varying in shape, release profile, and drug combination. The major technological platforms of 3D printing researched on in the pharmaceutical sector include binder jetting, fused filament fabrication, selective laser sintering, stereo lithography, and pressure-assisted micro syringe. The rapid advancement of 3D printing technologies could move the pharmaceutical production from mass manufacture to on-demand personalized dosage forms which would provide patients with more safe and effective medicines. Its potential to transform the conventional pharmacy practice could be pivotal to the healthcare system of the next step generation.

So, developing medicines and predictive diagnostic tools requires changes to traditional clinical trial designs, as well as the use of innovative (adaptive) testing procedures that result in new types of data. Making the best use of those innovations and being ready to demonstrate results for regulatory bodies requires specialized knowledge that many clinical development teams don't have. The areas where companies are most likely to encounter challenges, are data analysis and workforce expertise, biomarker and diagnostic test development, and cultural awareness. Navigating those complexities and ever-evolving technologies will pass regulatory muster and

provide sufficient data for a successful launch of PPM, is a huge task. So, partnering and forming strategic alliances between researchers, bio-designers, clinicians, business, regulatory bodies and government can help ensure an optimal development program that leverages the Academia and industry experience and FDA's new and evolving toolkit to speed our way to getting new tools into the innovative markets.

We are experiencing a renaissance primarily driven by next-generation biotechnologies and healthcare is undergoing a transformation, and it is imperative to leverage new technologies to support the advent of PPM. This is the reason for developing global scientific, clinical, social, and educational projects in the area of PPM and TraMed to elicit the content of the new trend. The latter would provide a unique platform for dialogue and collaboration among thought leaders and stakeholders in government, academia, industry, foundations, and disease and patient advocacy with an interest in improving the system of healthcare delivery on one hand and drug discovery, development, and translation, on the other one, whilst educating the policy community about issues where biomedical science and policy intersect.

Recent Publications

1. Sergey Suchkov, Abner Notkins, Trevor Marshall, Personalized & translational medicine as a tandem of the new philosophy, updated mentality and technological platforms, Meta Gene, Volume 17, Supplement 1, 2018, Pages S1-S2.
2. Sergey Suchkov, Noel Rose, Mariya Studneva, How to develop a medical school of the newest generation: from canonical integrity through a bridge of the challenge to the multi-integrative approach, Meta Gene, Volume 17, Supplement 1, 2018, Page S6.
3. Sergey Suchkov, Harry Schroeder, Noel Rose, Aleksandr Gabibov, Antibody-proteases as highly informative biomarkers and efficient targets of the newest generation, Meta Gene, Volume 17, Supplement 1, 2018, Pages S18-S19.

Biography

Sergey Suchkov was born in the City of Astrakhan, Russia, in a family of dynasty medical doctors. In 1980, he graduated from Astrakhan State Medical University and was awarded with MD. In 1985, Suchkov maintained his PhD as a PhD student of the I.M. Sechenov Moscow Medical Academy and Institute of Medical Enzymology. In 2001, Suchkov maintained his Doctor Degree at the National Institute of Immunology, Russia. From 1989 through 1995, Dr Suchkov was being a Head of the Lab of Clinical Immunology, Helmholtz Eye Research Institute in Moscow. From 1995-2004, he has been the Chair of the Dept for Clinical Immunology, Moscow Clinical Research Institute (MONIKI). In 1993-1996, Suchkov was the Secretary-in-Chief of the Editorial Board, Biomedical Science, an international journal published jointly by the USSR Academy of Sciences and the Royal Society of Chemistry, UK.

Currently, he is a Professor and Scientific Director of the Institute for Global Health of MGUPP and Professor of A.I. Evdokimov MGMSU, Russia; Secretary General in United Cultural Convention (UCC), Cambridge, UK; a member of the New York Academy of Sciences, USA, American Chemical Society (ACS), USA, American Heart Association (AHA), USA, European Association for Medical Education (AMEE), Dundee, UK, EPMA (European Association for Predictive, Preventive and Personalized Medicine), Brussels, EU, ARVO (American Association for Research in Vision and Ophthalmology), ISER (International Society for Eye Research), Personalized Medicine Coalition (PMC), Washington, DC, USA, All-Union (from 1992 - Russian) Biochemical Society and the All-Union (from 1992 - Russian) Immunological Society. Suchkov is also a member of the Editorial Boards of "Open Journal of Immunology", EPMA J., American J. of Cardiovascular Research and "Personalized Medicine Universe".

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