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Advancing and Translating Personalized and Precision Medicine in Pediatric Services to secure the human Wellness and Biosafety: Past, Present and Future

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And personalized tumor molecular profiles (tumor biomarkers can be OMICS-profiles that predict therapy response.), tumor disease site and other patient characteristics are then potentially used for determining optimum individualized therapy options.

Recent advances in systems biology and cancer pathology have tremendously affected the practice of pathology, gradually transforming it from a morphology-based into a precise molecular-based cancer-related discipline. The improvement of methodology for genomic testing has made it one of the cornerstones of PPM-related cancer medicine (PPO). Various genomic analyses of human can-cers are being incorporated into diagnostic and decision-making algorithms of the precision cancer pathology

Genomics and bioinformatics are those of the most rapidly emerging areas of cancer pathology-related research as applicable to PPM and PPO. Examples include the use of AI for improved DNA sequencing and SNP analysis to target specific cell and tissue types, biosensors for specific mole-cules in vivo, and point-of-care molecular diagnostic devices enabled by genomics- and IT tools. Coupled with IT, the upgraded tools are ever more efficient and robust within clinical settings.

In this context, most of advances in PPM-guided cancer management are associated with patient care and treatment, including development of new or more precise individual therapies and genome-driven diagnostics, which had implicated in better outcomes and extended survivals, mostly due to personalized approaches for each tumor, cancer patient and pre-cancer person-at-risk into the PPM era. In order to be effective and successful, PPM-guided approach as applicable to clinical oncology practice assumes the integration of several areas of interdisciplinary knowledge and advanced tech-nologies focused on patient's characteristics and specific healthy needs, including OMICS sciences, bioinformatics, biomarkers, digital health, data science & sharing, and data bioanalytics. In this con-text, the implementation of translational studies based on liquid biopsy and organoids or xenografts to evaluate molecular changes due to clonal pressure generated due to the use of target agents or tumor heterogeneity would help in the detection of mechanisms of resistance, suggesting the possi-bility for novel combinations. Precision pathology has therefore become fundamental not only to inform on tumor diagnosis and prognosis but also to drive therapeutic decisions in daily practice.

Providing functional PPM to cancer patients in real life is very challenging. Biodesign-driven transla-tional research has revolutionized how we develop new treatments for cancer patients. This shift in perspective, in which attention is focused on the specific molecular alterations of the tumor, has opened the door to personalized treatment. This situation is reflected in the increasing number of basket trials selecting specific molecular targets. But the complexity of cancer cells enriched with concomitant molecular alterations complicates identification of the driver. Moreover,

tumor hetero-geneity could be responsible for the lack of benefit when targeted agents are used. And thus the fu-sion of the above-mentioned strategies has created a new dimension for PPM-guided cancer therapy. This entails the development of next generation cancer targeted drugs (for therapeutic applications) and individualized cancer vaccines (for preventive purposes). The latter is becoming crucial for PPM-guided cancer therapy since the molecular heterogeneity of cancer, and the complex interaction of cancer, tumor microenvironment and immune cells, require sophisticated combinatorial geno-phenotypic testing in order to answer a broad scope of important questions for new cancer-related targeted agent discovery, preclinical and clinical development. So, PPM calls for a transdisciplinary approach, and considerations for how best to develop innovation frameworks to support safe and effective deployment of the new enabling diagnostic and therapeutic technologies in clinical oncolo-gy!

Biography:

Dr Sergey V. Suchkov, MD, PhD

Sergey Suchkov was born in the City of Astrakhan, Russia, in a family of dynasty medical doctors. In 1980, gradu-ated 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 Re-search Institute in Moscow. From 1995 through 2004-a Chair of the Dept for Clinical Immunology, Moscow Clinical Research Institute (MONIKI). In 1993-1996, Dr Suchkov was a 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.

At present, Dr Sergey Suchkov, MD, PhD, is:

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