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Personalized and Precision Oncology (PPO) to Be Set Up via Cancer Pathology-related Modeling and IT-Assisted Clinical Practice of the Next Step Generation to Prevent, to Treat and to Get Cured Cancer and Its Complications

Editorial

A new systems approach to diseased states and wellness result in a new branch 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 recognition of biomarkers and thus the targets to secure the grand future of drug design and drug discovery.

Each decision-maker values the impact of their decision to use PPM on their own budget and well-being, which may not necessarily be optimal for society as a whole. 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 resulting in improved patient outcomes, reduced adverse events, and more cost effective use of the latest health care resources including diagnostic (companion ones), preventive and therapeutic (targeted molecular and cellular) etc.

Meanwhile, along with the impact of genomics and A, pathology is the central specialty of PPM-related resources. It is pathology that provides the skills, infrastructure, and predictive and prognostic vision we need to lead the way in research-driven biobanking, and it is pathology that can help to ensure optimal research use of human biosamples, utilizing DNA-, RNA- and Protein-imprinting technologies.

I are those of the most rapidly emerging areas of biomedical research and the most promising technologies for improving health care and health outcomes. Examples include the use of AI for improved DNA sequencing and SNP analysis to target specific cell and tissue types, biosensors for specific molecules *in vivo*, and point-of-care molecular diagnostic devices enabled by genomics- and AI tools.

Editorial

Sergey V. Suchkov[1,2]*, Daniel Scherman[3], Holland R. Cheng[4]

[1]Department for Personalized Medicine, Precision Nutriciology & Biodesign and Scientific Director the Institute for Biotech & Global Health, RosBioTech, Russia

[2]Department for Clinical Allergology & Immunology, A.I. Evdokimov Moscow State University of Medicine & Dentistry, Moscow, Russia

[3]Centre de Recherche Pharmaceutique de Paris (CRP2); Faculté de Pharmacie, Université Paris Descarte, Centre National de la Recherche Scientifique, Unité de Technologies Chimiques et Biologiques pour la Santé (UTCBS) Inserm, Paris, France

[4]College of Biological Sciences, University of California Davis, Davis, CA, USA

***Correspondence:** *Sergey V. Suchkov, Department for Personalized Medicine, Precision Nutriciology & Biodesign and Scientific Director the Institute for Biotech & Global Health, RosBioTech, Russia, Tel: +7(985) 761 65 67; Email: ssuchkov57@gmail.com*

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The enormous development of genomics research has raised great expectations concerning its impact on PPM aiming to customize medical practice with a focus on the individual, based on the use of genetic tests, identification of genomic biomarkers, and development of targeted drugs. Personal genomics is an area of genomics focusing

specifically on the sequencing and analysis of one person's genome, and then giving them their genomic information.

PPM is a developing trend for the future of intensive care medicine. In this sense, the impact of physiology and pathology allows a modular approach, as its various aspects are under development in sometimes unrelated areas of PPM. Integration of the concepts will provide a true challenge for the future, requiring collaboration between clinicians, physiologists, pathologists, biodesigners and bioengineers and remaining a real challenge to bioindustry.

Pathology and Physiology are the central specialties of PPM. It is pathology that provides the skills, infrastructure, and scientific vision we need to lead the way in science-driven biobanking, and it is pathology that can help to ensure optimal research use of human biosamples, In this sense, molecular diagnostics has a long tradition in pathology, especially in clinical one, where various OMICS-analyses of cancers are being incorporated into diagnostic and decision-making algorithms to secure a way where the pathologists continue to play an essential role in developing and implementing molecular profiling tests in practice and communicate the results and their relevance with clinician

Although "the next-generation pathologists" have already been launched, further and continuous educational efforts must fully implement the paradigm shift into diagnostic molecular pathology practice and reinvent it as a leading diagnostic discipline in the PPM era. Most of the approved and validated predictive biomarkers in PPM still require further optimization and standardization.

The combination of comprehensive biobanking and the next wave of theranostic pathology technologies provides a natural, externally visible infrastructure that now allows pathology as a discipline – to engage directly with the biotechnology and pharma sector. We're at an exciting junction in pathology's growth as a medical specialty, and pathology-driven biobanking is becoming both central to our core expertise and, even more importantly, a powerful enabler for many of the most promising growth areas of our discipline: PPM healthcare, clinical trials and drug development, theranostics, and functional assessment and monitoring of disease. In the context of these changes and challenges, the pathology can play a fundamental role in both clinical practice and research.

We stress that implementation of PPM thus requires a lot before the current model "physician-patient" could be gradually displaced by a new model "medical advisor-healthy person-at-risk". This is the reason for developing global scientific, clinical, social, and educational projects in the area of PPM to elicit the content of the new branch. In short, PPM will transform the way doctors practice and will shake up the entire pharmaceutical value chain.

Conflict of Interest

The authors declare that they have no competing interests.

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