Inroads to personalized medicine through molecular pathology

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Advances in human genome analysis, OMICS science and big data analysis continue to make inroads for molecular pathology to assist in personalized medicine. Through proper analytical and clinical validation, many of those newly discovered biomarkers such as SNPs/SNVs and INDELs that are associated with specific diseases or responses to various drug therapies, could be used to develop new molecular diagnostic tests for prediction, diagnosis, treatment and monitoring of various diseases. Since these molecular-based testing can be used to assess individual’s genetic variability and probability for onset of certain diseases or responses to various drug therapies, customized treatment plan or therapies could be designed specifically for each individual patient. As more and more medical professionals realize the benefits of being able to use these useful molecular pathology tools for precision medicine, personalized patient care through individualized molecular pathology testing is no longer a future perspective but rather a reality in many of the major medical centers in the United States including the University of Maryland School of Medicine and Medical Center. There is no doubt that individualized molecular testing will soon become a routine clinical practice for personalized patient care world-wide. However, successful transition of such a paradigm shift from traditional medicine to personalized medicine requires integrated and concerted effort from all allied medical professionals. Education and continued education of healthcare administrators, physicians, medical practitioners and laboratory personnel on the pharmacogenomics testing and associated patient care are among the essential steps for successful transition and implementation of personalized medicine. This lecture will introduce some of the key factors associated with this paradigm shift from current medicine to personalized medicine, review different categories of pharmacogenomics testing that are designed for personalized healthcare. Specific case reports will be presented drawn from our own experiences on how individualized molecular testing has helped us in our clinical practice and personalized patient care. Future perspectives on this exciting new area of molecular pathology and medicine will also be discussed.

Biography

Richard Y Zhao, a Molecular Pathologist, is a Tenured Professor of Pathology, Microbiology-Immunology and Human Virology at the University of Maryland School Of Medicine. He is also the Division Head of Molecular Pathology in the Department of Pathology, Director of Translational Genomics Laboratory in the School of Medicine, and Director of Molecular Diagnostics Laboratory at the University of Maryland Medical Center. He has published over one hundred scientific papers and has served on numerous scientific editorial boards including Clinical and Applied Immunology Reviews, Clinical Laboratory Science, Cell Research, Cell and Biosciences, Chinese Journal of Clinical and Experimental Virology, Journal of Clinical and Experimental Pathology, Frontiers in Virology, Microbial Cell, PLoS One and Retrovirology. He has been invited to review scientific grant applications for funding agencies of over 10 different countries and has chaired a number of NIH grant review study panels. He has been invited to give scientific and clinical lectures world-wide.

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