Journal of
Personalized Medicine

an Open Access Journal by MDPI

IMPACT FACTOR 3.4

CITESCORE 2.6

Section

Mechanisms of Diseases

Journal of
Personalized Medicine

IMPACT FACTOR 3.4

CITESCORE 2.6

an Open Access Journal by MDPI

Section Editor-in-Chief

Prof. Dr. Yves A. Lussier

Section Information

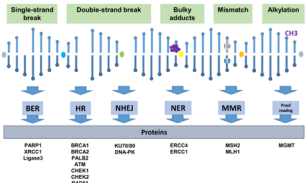
The “Mechanisms of Diseases” section of the Journal of Precision Medicine aims to disseminate leading-edge scholarship on individual or personalized biomolecular mechanisms related to disease, disease progression, persistent disease remission, mechanisms of resistance, mechanisms of outstanding response, and mechanisms of regular response to therapy. We emphasize translational research, requiring validation using human cohorts, human tissues, or human-derived data, either retrospectively, prospectively, or through meta-analyses. We encourage submissions that explore complex biomolecular interactions and patterns, including those spanning different biological scales, exploring synergistic and antagonistic effects of distinct biomolecular mechanisms that may interact in an individual manner and confer paradoxical resistance of or risk factors not more otherwise explained by simple additive and subtractive effects of risks. We strongly encourage the submission of articles that focus on predictive analytics and biomarkers, including those that involve multiple variables (e.g., multi-omics, biomolecular pathways, clinical imaging, clinical data, or a combination of these) rooted in causal biomolecular mechanisms.

Feature papers

DOI:10.3390/jpm11070612

Biomarkers for Homologous Recombination Deficiency in Cancer

Authors: Svenja Wagener-Ryczek, Sabine Merkelbach-Bruse and Janna Siemanowski

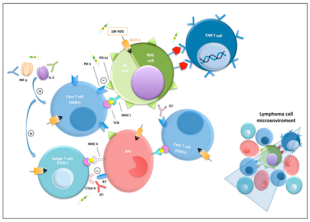


Abstract: DNA double-strand breaks foster tumorigenesis and cell death. Two distinct mechanisms can be activated by the cell for DNA repair: the accurate mechanism of homologous recombination repair or the error-prone non-homologous end joining. Homologous Recombination Deficiency (HRD) is associated with sensitivity towards PARP inhibitors (PARPi) and its determination is used as a biomarker for therapy decision making. Nevertheless, the biology of HRD is rather complex and the application, as well as the benefit of the different HRD biomarker assays, is controversial. Acquiring knowledge of the underlying molecular mechanisms is the main prerequisite for integration of new biomarker tests. This study presents an overview of the major DNA repair mechanisms and defines the concepts of HRR, HRD and BRCAness. Moreover, currently available biomarker assays are described and discussed with respect to their application for routine clinical diagnostics. Since patient stratification for efficient PARP inhibitor therapy requires determination of the BRCA mutation status and genomic instability, both should be established comprehensively. For this purpose, a broad spectrum of distinct assays to determine such combined HRD scores is already available. Nevertheless, all tests require careful validation using clinical samples to meet the criteria for their establishment in clinical testing.

DOI:10.3390/jpm11030217

Early Evaluation of Immunotherapy Response in Lymphoma Patients by 18F-FDG PET/CT: A Literature Overview

Authors: Cristina Ferrari, Nicola Maggialetti, Tamara Masi, Anna Giulia Nappi, Giulia Santo , Artor Niccoli Asabella and Giuseppe Rubini

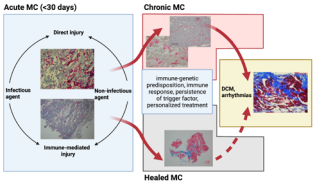


Abstract: Immunotherapy is a promising therapeutic strategy both for solid and hematologic tumors, such as in Hodgkin (HL) and non-Hodgkin lymphoma (NHL). In particular, immune-checkpoint inhibitors, such as nivolumab and pembrolizumab, are increasingly used for the treatment of refractory/relapsed HL. At the same time, evidence of chimeric antigen receptor (CAR)-T-cell immunotherapy efficacy mostly in NHL is growing. In this setting, the challenge is to identify an appropriate imaging method to evaluate immunotherapy response. The role of 18F-Fluorodeoxyglucose (18F-FDG) positron-emission tomography/computed tomography (PET/CT), especially in early evaluation, is under investigation in order to guide therapeutic strategies, taking into account the possible atypical responses (hyperprogression and pseudoprogression) and immune-related adverse events that could appear on PET images. Herein, we aimed to present a critical overview about the role of 18F-FDG PET/CT in evaluating treatment response to immunotherapy in lymphoma patients.

DOI:10.3390/jpm12020183

Personalized Management of Myocarditis and Inflammatory Cardiomyopathy in Clinical Practice

Authors: Agata Tymińska, Krzysztof Ozierański, Aleksandra Skwarek, Agnieszka Kapłon-Cieślicka, Anna Baritussio, Marcin Grabowski, Renzo Marcolongo and Alida LP Caforio

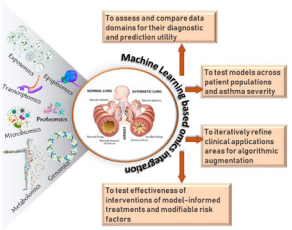


Abstract: Myocarditis is an inflammatory heart disease induced by infectious and non-infectious causes frequently triggering immune-mediated pathologic mechanisms leading to myocardial damage and dysfunction. In approximately half of the patients, acute myocarditis resolves spontaneously while in the remaining cases, it may evolve into serious complications including inflammatory cardiomyopathy, arrhythmias, death, or heart transplantation. Due to the large variability in clinical presentation, unpredictable course of the disease, and lack of established causative treatment, myocarditis represents a challenging diagnosis in modern cardiology. Moreover, an increase in the incidence of myocarditis and inflammatory cardiomyopathy has been observed in recent years. However, there is a growing potential of available non-invasive diagnostic methods (biomarkers, serum anti-heart autoantibodies (AHA), microRNAs, speckle tracking echocardiography, cardiac magnetic resonance T1 and T2 tissue mapping, positron emission tomography), which may refine the diagnostic workup and/or noninvasive follow-up. Personalized management should include the use of endomyocardial biopsy and AHA, which may allow the etiopathogenetic subsets of myocarditis (infectious, non-infectious, and/or immune-mediated) to be distinguished and implementation of disease-specific therapies. In this review, we summarize current knowledge on myocarditis and inflammatory cardiomyopathy, and outline some practical diagnostic, therapeutic, and follow-up algorithms to facilitate comprehensive individualized management of these patients.

DOI:10.3390/jpm12010066

Multi-Omics Profiling Approach to Asthma: An Evolving Paradigm

Authors: Yadu Gautam, Elisabet Johansson and Tesfaye B. Mersha



Abstract: Asthma is a complex multifactorial and heterogeneous respiratory disease. Although genetics is a strong risk factor of asthma, external and internal exposures and their interactions with genetic factors also play important roles in the pathophysiology of asthma. Over the past decades, the application of high-throughput omics approaches has emerged and been applied to the field of asthma research for screening biomarkers such as genes, transcript, proteins, and metabolites in an unbiased fashion. Leveraging large-scale studies representative of diverse population-based omics data and integrating with clinical data has led to better profiling of asthma risk. Yet, to date, no omic-driven endotypes have been translated into clinical practice and management of asthma. In this article, we provide an overview of the current status of omics studies of asthma, namely, genomics, transcriptomics, epigenomics, proteomics, exposomics, and metabolomics. The current development of the multi-omics integrations of asthma is also briefly discussed. Biomarker discovery following multi-omics profiling could be challenging but useful for better disease phenotyping and endotyping that can translate into advances in asthma management and clinical care, ultimately leading to successful precision medicine approaches.

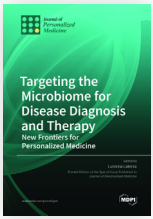
Journal Books

Personalized Medicine in Oncology

A Personalized Medicine Approach to the Diagnosis and Management of Autism Spectrum Disorder

Psychoneurobiology Research and Personalized Treatment of Schizophrenia

Targeting the Microbiome for Disease Diagnosis and Therapy: New Frontiers for Personalized Medicine



MDPI is a member of

Follow

facebook.com/MDPIOpenAccessPublishing

twitter.com/MDPIOpenAccess

linkedin.com/company/mdpi

instagram.com/mdpiopenaccess

weibo.com/mdpicn

Wechat: MDPI-China

Subscribe

blog.mdpi.com

Visit mdpi.com for a full list of offices and contact information.
MDPI is a company registered in Basel, Switzerland, No. CH-270.3.014.334-3,
whose registered office is at St. Alban-Anlage 66, CH-4052 Basel, Switzerland.