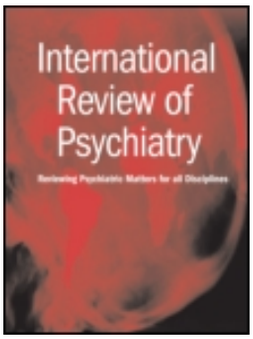

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Future roles of pharmacogenomic testing and Biomarkers in Psychiatry

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EDITORIAL

Future roles of pharmacogenomic testing and Biomarkers in Psychiatry

Since the discovery of the antipsychotic action of chlorpromazine in 1952 (Delay et al., 1956), and of the antidepressant effect of imipramine in 1956 (Kuhn, 1957), the psychopharmacological portfolio has developed and differentiated substantially. Research has provided many insights into how molecular agents influence the dopamine, serotonin, noradrenalin, acetylcholine, and γ-aminobutyric acid neurotransmitter systems including their receptors, receptor subtypes, reuptake pumps and metabolizing enzymes. This has led to the development of several widely used medications. Additionally, medications have been developed to modulate the activity of neuronal ion channels providing further success in the exciting field of neuropsychopharmacology. The field will probably soon see the introduction of drugs influencing hormonal systems, cytokines, endogenous cannabinoids and eicosanoids as well as their second and third messengers. This undoubtedly will bring benefits to many more patients.

However, despite those growing numbers of treatment options, substantial gaps in care remain due to limited of knowledge of how to match individual patients with individually appropriate drugs. As a result, only a small proportion of patients who receive 'adequate treatment' achieve full remission with the first applied psychopharmacological drug (Himmerich & Wranik, 2012). Unfortunately, no valid clinical predictors that match the 'right' drug to the 'right' patient exist nowadays. Pharmacogenetics, therapeutic drug monitoring, and biomarkers are among the most promising approaches for applying such 'individualized medicine' to psychiatry. The article by Altar et al. (2013, pp. 509–533) highlights the benefits of considering an individual's cytochrome P450 metabolism and serotonin gene variants in clinical practice. While initial careful steps have been taken to deliver genetic testing in the clinic (Müller et al., 2013, pp. 554–571) more research is needed, including larger, well-characterized studies, genome-wide approaches, functional analyses, and understanding of gene–gene and gene–environment interactions.

This issue of the *International Review of Psychiatry* provides important updates on methods that hold the promise of clinical utility in the near future, such as genetics and epigenetics, gene expression and cytokine measurement, therapeutic drug monitoring (TDM), neuroimaging, and neurophysiological measures. The articles inform, critically discuss, and provide perspectives on how these research areas might enrich and potentially improve the diagnosis and treatment of psychiatric conditions.

We would like to thank all the authors for their outstanding contributions and for highly collegial interactions throughout the publishing process. In addition, we would like to thank all members of the workgroup 'Biomarkers and Psychopharmacotherapy' of the German Society of Biological Psychiatry (DGBP) for their contributions. We feel that we are witnessing an exciting time of new discoveries in the area of individualized psychiatric drug treatment. The expected discoveries and changes to come are likely to revolutionize current treatment forms – and patient benefits are likely to be of similar magnitude to those highlighted before in the early 1950s.

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Guest Editors

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