

## Biomarkers

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The term “biomarker” is broadly used and covers a broad range of parameters. In a definition from a working group of the National Institute of Health (2001) it is described as “a characteristic that is objectively measured and evaluated as an indicator of normal biological processes, pathogenic processes, or pharmacological responses to a therapeutic intervention”.

Biomarkers may be used for screening, prognosis, prediction or stratification of response to therapy, or monitoring of disease and course of therapy.

In autoimmune diseases, a multitude of biomarkers, e.g. auto-antibodies, may evolve and call for instrumental and administrable algorithms guiding the general practitioner to a precise diagnosis at an early stage. Such an approach is presented in the paper from Endler et al., providing a bridge from clinical symptoms suspicious for autoimmune rheumatoid disorders to diagnosis and, later on, monitoring of therapy.

A similar complexity is addressed in the paper of Bieglmayer et al., dealing with the utilization of biomarkers in the differential diagnosis of osteoporosis and their interpretation in the course of the disease. Both the number of different aetiologies, as well as the recently evolved repertoire of available therapeutic options, requires a consistent strategy of how to use and how to appraise assays for biomarkers.

Both papers are backed by the input of a group of experts, thus representing invaluable consensus guidelines for the respective fields.

Anaemia is a disorder of global significance, with many different underlying diseases, and at first glance diagnosis seems to be well established. Halwachs-Baumann in her paper critically re-evaluates the application and interpretation of biomarkers in the differential diagnosis of anaemia, discussing the well-known as well as

the more recently arisen biomarkers and their value and limitations. This manuscript also can be summarised as a valuable guideline for everybody who meets anaemia in one of its manifold faces.

Acute coronary artery disease is a pressing, life-threatening event, and there is a strong need for fast and accurate diagnostic. In their paper, Freynhofer et al. review value, limitations and future directions in the use of more recently established biomarkers. Moreover, in this manuscript, platelets and several definable characteristics of these cellular blood components are discussed as old and new biomarkers in the context of cardiovascular events and for prediction and monitoring of current therapeutic strategies.

No clinical entity, but a promising technology to qualitatively and quantitatively evaluate biomarkers, especially in (therapeutic) drug monitoring, endocrinology and toxicology, is focussed in the paper of Seger. Current application of liquid chromatography—tandem mass spectrometry (LCMS/MS), its benefits and limitations are critically reviewed in the context of clinical routine laboratories.

According to the multitude of biomarkers and their widespread impact in biological sciences and medicine in particular, a special edition like the one you hold in hand can only cover a tiny section of the field.

However, I feel confident that the manuscripts from this issue will be of great value for many readers and after a first reading will be consulted again as practical guides in the respective areas.

### Conflict of interest

Dr. Martin Willheim declares no conflict of interest.

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