

# The Adrenal Gland: A Fascinating Object of Research and Clinical Care Showcased at the 15<sup>th</sup> German Adrenal Conference in Dresden

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## Bibliography

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Dear colleagues,

When younger fellows ask for guidance on how to choose a research project, many aspects require consideration: how to select a supervisor and mentor, should one change the institution, how does the project boost the later professional career, what are personal and professional aims. As many can probably relate it is passion for the research topic, both by the fellow and the mentor, that will go a long way and most often result in successful project completion.

The 15<sup>th</sup> German Adrenal Conference, organized by the Section Adrenal Gland, Steroids and Hypertension of German Society for Endocrinology (DGE; congress president: Nicole Bechmann) in Dresden in March 2023, testified to the passion that many researchers have for the adrenal gland: a tiny but fascinating organ that physiologically mediates an integrated stress response.

We were fortunate to collect a series of research papers based on conference presentations to present to the readership of *Hormone and Metabolic Research*. These papers are excellent examples of clinically oriented and basic work that examines the adrenal gland from many different angles.

Many of them are the result of close cooperation between different research groups. Sharing data and ideas is certainly a distinctive feature of the adrenal community and one of the reasons reason why the German Research Foundation (DFG) has granted renewal of a collaborative research center for adrenal physiology and disease (CRC/TRR 205; www.adrenal-research.de). Most of the groups that report in this issue benefit from this funding.

This special issue is a resource to explore the many facets of the adrenal gland, including how dysregulation results in diseases and what is important to know about its tumors.

Many “adrenalists” in the clinic are faced with the challenge of adequately diagnosing and rapidly treating what is termed “adrenal crisis”. It was the vision of Bruno Allolio, one of the godfathers of adrenal research in Europe, that the public – and not only endocrinologists – must become aware of this threat that leads to avoidable deaths among in patients with adrenal insufficiency. It became clear that a consensus about what an adrenal crisis is and how to treat it is the first step towards accomplishing this ambitious aim. The publication by Kienitz et al. [1] is one of the highlights of this series and will hopefully contribute to increased awareness and better treatment of adrenal insufficiency. The experts in this DELPHI process have pointed towards one piece in the puzzle that might be key to success: the informed patient and their capability of self-management. It is obvious that such an empowerment strategy requires time for counseling which in turn demands compensation by health care systems. To put such procedures in place is certainly one of the next steps – not only in Germany. Two original articles complement this consensus paper and focus on the challenge of diagnosing adrenal insufficiency at an early stage (Wäscher et al. [2]) and adequate long term therapy (Chifu et al. [3]).

The studies by Weniger et al. [4] and Kiewert et al. [5] report on two seemingly unrelated aspects of congenital adrenal hyperplasia. Molecular insights provided by the small animal model (Weniger et al.) of testicular adrenal rest tumors (TART) may become clinically very relevant. Indeed, the potentially adverse impact of TARTs on the fertility of affected males is an important aspect during the transition from adolescence to adulthood as exemplified with the experience in a transition-clinic (Kiewert et al.). A seamless transition is key for maximum personal wellbeing in affected individuals.

Adrenal tumors are a vibrant field of research. In pheochromocytoma and paraganglioma, great progress has been achieved in the past few years in the understanding of the molecular mechanisms underlying these diseases. Nevertheless, the manuscript by Karna et al. [6] convincingly shows the need for improved small animal and cell culture models.

The manuscripts by Kimpel et al. [7] and Schwarzlmüller et al. [8] complement each other in underscoring the utility of localized treatment in metastatic adrenocortical carcinoma (ACC). While firm conclusions on some modalities are hampered by the heterogeneity of local practice and expertise, it appears that radiotherapy may be particularly useful for local control of ACC. Schwarzlmüller et al. demonstrate that the combination of high-dose local application of radiation to the difficult-to-treat ACC liver metastases with immunotherapy may potentiate an abscopal effect of radiotherapy that rarely occurs with radiotherapy alone. Such an effect may even lead to systemic tumor control.

Three review articles conclude this thematic issue. They educate about novel concepts and provide insights into the pathophysiology of much more common diseases. It has long been postulated that the deleterious health impact of chronic stress is mediated by the hypothalamus-pituitary-adrenal (HPA) axis. In this issue, Cozma et al. [9] summarize how systemic metabolisms may reversely impact the HPA axis. Pöttl et al. [10] provide an overview of the influence of endocrine disruptors on the HPA axis, and particularly on the adrenal cortex. While many aspects are not yet completely understood, the potentially far-reaching consequences of environmental pollutants call for caution and more research.

Finally, the work by Chen et al. [11] disentangles the adverse outcome of mineralocorticoid excess and salt overload. The authors provide a comprehensive overview from experimental models and to research in humans that will certainly inform clinical decision making and counseling.

Together, the compiled papers provide an excellent overview of current clinical and basic research issues and lay the cornerstone for further collaborative collaborative projects focused on the adrenal gland.

Enjoy reading!

Matthias Kroiss  
Nicole Bechmann

Special Issue Editors for the Section of Adrenal Gland, Steroids and Hypertension of the German Society of Endocrinology (DGE)

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## Conflict of Interest

The authors declare that they have no conflict of interest.

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## References

- [1] Kienitz T, Bechmann N, Deutschbein T et al. Adrenal crisis – definition, prevention and treatment: results from a Delphi survey. *Horm Metab Res* 2024; 56: 10–15
- [2] Wäscher H, Knauerhase A, Klar B et al. On primary adrenal insufficiency with normal concentrations of cortisol – early manifestation of Addison's disease. *Horm Metab Res* 2024; 56: 16–19
- [3] Chifu I, Quinkler M, Altieri B et al. Morbidity in patients with chronic adrenal insufficiency – cardiovascular risk factors and hospitalization rate compared to population based controls. *Horm Metab Res* 2024; 56: 20–29
- [4] Weniger M, Mattes M, Grünwald TG et al. Quantitative characterization of ectopic adrenal gene expression in fetal testes in 21-hydroxylase deficient mice. *Horm Metab Res* 2024; 56: 38–44
- [5] Kiewert C, Jedanowski J, Hauffa BP et al. Transition from paediatric to adult care in CAH: 20 years of experience at a tertiary referral center. *Horm Metab Res* 2024; 56: 45–50
- [6] Karma B, Pellegata NS, Mohr H. Animal and cell culture models of PPGLs – achievements and limitations. *Horm Metab Res* 2024; 56: 51–64
- [7] Kimpel O, Dischinger U, Altieri B et al. Current evidence on local therapies in advanced adrenocortical carcinoma. *Horm Metab Res* 2024; 56: 91–98
- [8] Schwarzlmüller P, Corradini S, Seidensticker M et al. High-dose rate brachytherapy combined with PD-1 blockade as a treatment for metastatic adrenocortical carcinoma – a single center case series. *Horm Metab Res* 2024; 56: 30–37
- [9] Coszma D, Siatra P, Bornstein SR et al. Sensitivity of the neuroendocrine stress axis in metabolic diseases. *Horm Metab Res* 2024; 56: 65–77
- [10] Pöttl B, Kürzinger L, Stopper H et al. Endocrine disruptors: focus on the adrenal cortex. *Horm Metab Res* 2024; 56: 78–90
- [11] Chen L, Adolf C, Reincke M et al. Salt and aldosterone – reciprocal and combined effects in preclinical models and humans. *Horm Metab Res* 2024; 56: 99–106