**EYES Research Observership Programme (R.O.P)**

**Translational research in the field of adrenal and pituitary tumors**

Endocrine tumors are one of the main research topics of the Division of Endocrinology and Diabetes at the University Hospital of Würzburg since many years. Our basic/translational lab team that would host the Early Career Investigators is currently composed of 17 people encompassing 6 post-docs and senior researchers, 3 PhD students, and 8 technicians. Furthermore, this team is closely connected with our clinical research team.

Here, a list of some **research topics**, we are currently working on:
- improving the diagnostic power of plasma and urinary steroid profiling by LC-MS/MS for adrenal tumors
- establishment of prognostic and predictive marker in adrenocortical carcinoma (e.g. mutational profiling, ccfDNA, etc.)
- understanding the interaction of glucocorticoids and immune cells in adrenocortical carcinoma
- search for potential treatment targets in adrenocortical carcinoma (e.g. by exome and whole genome sequencing)
- defining the role of immune cell infiltration in pheochromocytoma
- establishment of theranostic concepts for adrenal tumors
- deciphering the molecular pathogenesis of Cushing’s disease

**Techniques**

We routinely use a large array of techniques and approaches that the intern will be able to familiarize with. These include but are not limited to:
- cell culture (with a variety of adrenal cell lines, primary human adrenal cells and immune cells), both in 2D and 3 D models (e.g. spheroids)
- proliferation and cell viability assays
- immunohistochemistry and immunofluorescence
- DNA, RNA- and protein extraction
- RT-qPCR
- RNAseq mRNA in situ hybridisation
- flow cytometry
- LC-MS/MS for steroid analyses (metabolit/precursor)-, metabolomics, plasma metanephrines, salivary cortisol/cortison, therapeutic drug monitoring
- immunoassay for steroid measurements
- combining lab data from tumor material with patient outcome data (e.g. Kaplan Meier curves, Cox regression analyses etc.)

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**Selected publications**


