



## Department of Pediatrics and Adolescent Medicine

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As of 2010, the department has a capacity of 110 beds and just over 400 employees (87% female). On the basis of an up-to-date thorough knowledge in general pediatrics and in specialized areas, our overall goal is to attain optimal results using state-of-the-art medical care including innovative diagnosis and therapy in the treatment of children and adolescents. In addition to general pediatrics, including sub-specialties such as metabolic diseases, pulmonology, allergy and mucoviscidosis (Prof. Dr. M. Leichsenring), gastroenterology (Dr. C. Posovszky), nephrology (Dr. O. Beringer), our internationally recognized expertise is in pediatric hematology/oncology (Prof. Dr. D. Steinbach, PD Dr. H. Cario) with stem cell transplantation and immunology (PD Dr. A. Schulz, Dr. M. Hönig) as well as in the sections for pediatric endocrinology and diabetology (Prof. Dr. M. Wabitsch), and neonatology with pediatric intensive care (Prof. Dr. H. Hummler). Sections for pediatric cardiology (Dr. C. Galm), and pediatric neurology and social-pediatrics (Prof. Dr. H. Bode) add to this specialized range. This broad spectrum is complemented by the section for pediatric surgery of the Department of General Surgery of the university hospital.

Research in hematology/oncology is dedicated to understanding the role of cell death and cell death signaling in diseases, and possible mechanisms to modify cell death signaling for cancer therapy. Our lab was involved in the early discovery of one of the key apoptosis signaling pathways (CD95/APO/Fas) and this was followed by one of the first descriptions of the role of cell death signaling in cancer therapy in the journal *Nature Medicine* in 1996. Since then, we have addressed several issues of apoptosis regulators and apoptosis signaling as prognostic factors and therapeutic targets. By using xenotransplant models of primary leukemias in the NOD-SCID mouse, we are in the process of analyzing aspects of leukemia stem cell function and apoptosis sensitivity of leukemia initiating cells as well as parameters for treatment response and outcome in patients.

In the area of immunodeficiency and stem cell transplantation, our groups have characterized a number of novel immunodeficiencies and our clinic has always been at the forefront of novel developments in stem cell transplantation. Since one of the first ever bone marrow transplants in children in Europe was performed in the sixties at our institution, novel therapies such as haploidentical stem cell transplantations for treatment of leukemia, cell-based immunotherapy approaches and, most recently, radio immunotherapy-based conditioning for reduced toxicity have been developed.

The section specializing in pediatric endocrinology and diabetes focuses on childhood obesity and studies on the biology of adipocytes. Basic research projects involve the characterization of recently discovered obesity genes within the national genome network (NGFN). Our research group was the first to establish a human preadipocyte cell line (SGBS) which is now widely used for the study of adipogenesis and fat cell metabolism.

The research of the section for neonatology and pediatric intensive care is dedicated to clinical studies related to primary care of neonates and preterm infants. Our center participates in a number of multicenter randomized trials, including the coordination of a European multicenter study on the use of inhalative NO treatment, and has initiated a study on permissive hypercapnia in very immature preterm infants.

To provide the best possible care for families, we also provide as much outpatient treatment as possible. For this purpose, we have established a large daycare clinic especially for leukemia patients, tumor patients and patients with immuno-deficiencies in addition to patients for pre- and post stem cell-transplantation. For the parents of our inpatients, we provide a large number of apartments in our parent houses directly adjacent to the hospital (Hartmut-Blauw House, Maria-Hermann House). Special services include playrooms with trained childcare specialists, art therapy, visits of clinic clowns, special therapy services for children with neurodevelopmental deficits and



a consultation service comprising specialized doctors, nurses, social workers, psychologists, physiotherapists and diabetes specialists. We also provide in-house interpreters for Arab and Russian patients.



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#### **Selected Publications:**

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