Basic Science

At SwissPedHealth, we place a strong emphasis on basic science research. Our goal is to understand the fundamental mechanisms underlying disease and develop new diagnostic tools and treatments based on this knowledge. Our approach integrates various scientific disciplines and technologies to push the boundaries of what we know about health and disease.

## Genomics

Genomics involves the study of a person’s entire genetic material. By analyzing DNA and RNA sequences, we can identify genetic variations linked to different diseases. We also learn what genetic features can help us to remain healthy. This knowledge aids in the development of personalised treatments and preventive strategies.

## Proteomics and Metabolomics

Proteomics and metabolomics allow us to study the proteins and metabolites in a patient’s body. These fields provide insights into the biological processes and pathways involved in disease development and progression, leading to potential new targets for treatment.

## Lipidomics

Lipidomics is the large-scale study of pathways and networks of cellular lipids in biological systems. It plays a crucial role in cell, tissue and organ physiology. By understanding these processes, we can identify new therapeutic targets.

## Epidemiology and Social Science

Epidemiology and social science research help us understand how social, economic, and environmental factors influence health outcomes. These insights can inform policies and interventions to improve public health on a broad scale.

## Statistics and Machine Learning

Statistical analysis and machine learning are essential tools for interpreting the vast amounts of data generated by our research. These technologies allow us to identify patterns and make predictions, guiding our research and helping us develop more effective treatments.

## Critical Care Technology Improvement and Creation

Innovation in critical care technology is central to improving patient outcomes. We work on creating and refining technologies that aid in monitoring, diagnosis, and treatment in critical care settings.

## Computer Science and Data Management

Computer science and data management are foundational to all of our research. Efficient data management systems ensure that we can store, retrieve, and analyze data effectively. Meanwhile, advancements in computer science enable us to process and interpret vast amounts of data, accelerating the pace of our research.

## Data Science

Data science combines domain expertise, programming skills, and knowledge of math and statistics to extract meaningful insights from data. In the context of health research, data science can uncover patterns and insights that inform our understanding of diseases and health outcomes.

## Conclusion

Basic science research forms the backbone of SwissPedHealth’s mission to improve pediatric health care. By integrating various disciplines and leveraging cutting-edge technologies, we are pushing the boundaries of knowledge and developing innovative solutions to improve the lives of our patients.