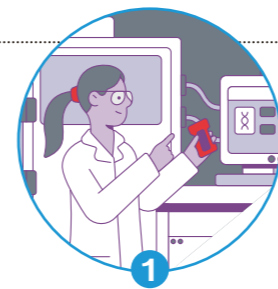


Tumor analysis at the IKP



THE RIGHT MEDICATION FOR EVERY PATIENT

Gene analysis is used at the Dr. Margarete Fischer-Bosch-Institute for Clinical Pharmacology (IKP) to develop **personalized treatments** that will save lives and further revolutionize medicine.



Game changing DNA: Experts at the RBK examine the genetic material of patients for gene variants.



Based on the **patients' DNA**, they recommend appropriate medication.



Genetic makeup is linked to medications in the **Medication Passport app for DNA**.



Tailor-made drug doses mean that treatments are more effective and safer for the patient.

When the doctors at Robert Bosch Hospital in Stuttgart, Germany, first met Ilse Berger (*name changed*), they immediately had a specific suspicion. The 88-year-old woman had been admitted to the hospital with a fractured femur and had also complained of severe muscle pain. She was taking 13 different medications, including statins, the cholesterol-lowering drug, for her heart disease. However, statins can cause a decrease in muscle growth in people with a specific genetic makeup.

What can be done about it? The doctors had the patient's genetic material analyzed. The standardized DNA check was introduced at Robert Bosch Hospital (RBK) in cooperation with the Dr. Margarete Fischer-Bosch Institute for Clinical Pharmacology (IKP). In this process, the patient's genome is examined for a number of gene variants that influence commonly used drugs. Patients receive this critical information in a Medication Passport app valid for their entire lifetime and, in Germany, is only available through the RBK. According to one study, it can reduce a patient's side effects by nearly 30 percent.

Prof. Dr. Matthias Schwab, IKP director, also took a closer look at Ilse Berger's genetic findings, confirming the initial specialist's suspicions. As a result, Ms. Berger's medication was replaced with a prescription for a cholesterol-lowering drug that is not associated with the gene variant. The analysis of the medication schedule and her genetic makeup also meant that the number of medications could now be

reduced to 9 from 13. She now has the best medication therapy imaginable – one that is as unique as she is. "In medication, the principle of 'one size fits all' still applies: one drug is prescribed for all people suffering from a certain disease," explains IKP director Prof. Dr. Matthias Schwab.

FOCUS ON PEOPLE

The approximately 70 associates at the IKP focus on precision medicine, also known as pharmacogenomics. Researchers carry out genome analyses and then interpret patients' genetic disposition so they can recommend appropriate medication. It is a niche that makes the IKB one of the premier research institutes in the world and, as Schwab emphasizes, it is very much in the tradition of Robert Bosch. The IKP was founded by Robert Bosch's eldest daughter, Dr. Margarete Fischer-Bosch, in the fall of 1973. "As a scientist, Margarete Fischer-Bosch understood that the human being was often neglected in research," says Schwab.

The institute's top priority is translation – the rapid transfer of research findings to the patient's specific case, which all happens at the Bosch Health Campus. "We have a strong focus on drug therapy for specific types of tumors. We are a leader in breast cancer and, more recently, kidney cancer," Schwab says. The IKP is the largest institute of its kind in Germany, with only a few comparable facilities worldwide.

👉 Claudia Hagen, Stephanie Ferdinand

Three questions for

Prof. Dr. Matthias Schwab,
IKP director

What is clinical pharmacology?
Clinical pharmacology is primarily concerned with providing the most appropriate and effective treatment for all patients. Drug safety is crucial here. For example, a person's genetic makeup is used to determine whether a drug will work and whether or not there may be any side effects.

What is precision medicine?
This approach aims to improve the efficacy and quality of any specific treatment by tailoring treatments to a person's genetic makeup, for example.

What research is being conducted at the IKP?
A particular focus is oncology. We can simulate in a model how tumor cells behave in the human body or under the effect of various drugs.



PHOTOS: MAREK VOGEL/ROBERT BOSCH STIFTUNG; ILLUSTRATION: STUDIO MUTI/ROBERT BOSCH STIFTUNG