



The fish oil-fatty acid research





He first studied the metabolism of fish oil in the eye and discovered a way to stop eye diseases from diabetes. Now the pharmacologist Jiong Hu has turned his attention to the heart.

Yes, it's good for the heart. No, not at all. Yes it is! Well, is it or isn't it? Ask Mr Hu. Mr Hu, does fish oil help prevent cardiovascular diseases and heart attacks?

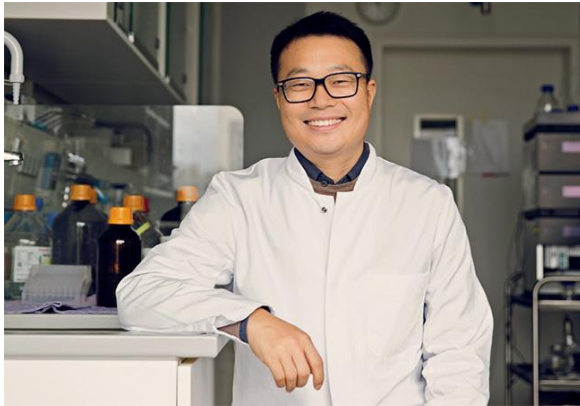
Mr Hu, whose first name is Jiong, first retrieves two cappuccinos from the machine in the break room of the Vascular Research Center, Building 25 B at the Frankfurt University Hospital. The room is empty, although occasionally someone comes through the door to get some coffee. Hu, 37 years old, wears blue chinos, a blue polo shirt, sneakers, and glasses. He is someone who holds the door open and will let things get awkward before going through first himself. But he's also a leader – he is the head of a small research group here

Metabolism was what interested him most. “I think that metabolism is a link between genetics, proteomic and epigenetics,” says Hu. These are all different approaches, but they are somehow connected. “I think metabolism connects them all and I want to bring these different levels together.” How much is known already? Hu laughs. He says, “The more research you do, the more you learn how little you actually know. Altogether, we certainly don't know even one percent.” One option of course is to resign and throw in the scientific towel. Or – and this is how research works today – you try to get to two percent. You just have to start somewhere, and so Hu now studies which enzymes are involved when the body processes fatty acids – such as

His research on the metabolism of the retina was Hu's biggest coup so far. Together with his colleagues, he discovered that the occurrence of diabetic retinopathy – a diabetic eye disease that can lead to blindness if left untreated – can be prevented by inhibiting the activity of the enzyme sEH. These findings made it all the way to the renowned scientific journal “Nature”. “We did celebrate a bit,” says Hu. “Research is like a baby. You raise it, watch it prosper and...” Hu's sentence ends here, and it is a kind of modesty that keeps him from pointing out how pleasant it is to reap the fruits of one's work. He just says: “We put a lot of work into that project.”



at the institute.



Later, walking through through the laboratory, he has a bit of small talk for everyone and during our conversation now his eyes never seem to lose focus on who else is in the break room, chatting in front of the coffee machine while they wait. We sit down at the end of a long table that seems suitable both for conferences and lunch. So, Mr Hu: fish oil, good or bad? Yes, just a minute, he just needs to quickly get a few print-outs. Then it will be easier to explain.

Metabolism as key element

Why is Hu so well-suited to answer the question about fish oil? Somehow his father is to blame. He is a doctor, as Hu later explains, and he never stopped

fish oil.

Jiong Hu returns to the break room, the heavy glass door crashing closed behind him. He spreads a Power Point presentation on DIN A4 pages over the table. He points to a few graphics and starts talking about the two enzymes he is currently researching. To call them by name: they are Cytochrome P450, CYP for short, and Soluble Epoxide Hydrolase, or sEH. “If someone eats meat or fish, they contain certain poly unsaturated fatty acids. Fish oil for example,” explains Hu. “The body has to process the fatty acids into various products and these two enzymes play a certain role.”

Fatty acids as source of energy

Fatty acids are an important energy source for the heart. At over 75 percent, it extracts the lion’s share of its energy from them; only between ten and 20 percent comes from glucose. “There have been studies that show that for some people with heart defects, the heart extracts more energy from glucose than fatty acids,” says Hu. The heart still



He likes the following story even more: After a paper was published – this would be several years ago – Hu and his colleagues were invited to Münster to receive an award. “A short article about the award ceremony was published in the local newspaper,” says Hu. “A week later, an older woman called me and told me that she suffers from diabetic retinopathy and saw the article and wanted to know where she could get the medicine.” He had to tell her that it normally takes years for the things he



trying to convince Hu and his six siblings to also become doctors. “I actually did study at a medical school and wanted to be a heart surgeon,” says Hu. “But I saw how stressful my father’s life was: so, no.” This is how it came about that Hu switched to pharmacology.

get enough energy, but can no longer function properly. “This metabolism process is important. But we still don’t know exactly how and why it takes place.” In diabetic patients, for example, one of the enzymes is massively increased. But once more Hu observes: “No one knows if this is good or bad. Our research will tell us a little bit more about this.”

Enzyme effect depends on context

The difficulty with Hu’s research is that there is no black and white. The enzymes are neither good nor bad, and neither is fish oil. It all depends on the context. Take, for example, the molecule Acyl-CoA, which Hu is also researching. It can play a role in producing energy. Or it acts as epigenetic modifier. And at another location in the body, the same substances can lead to all kinds of other things. “We think that they occur everywhere that the same substrates as fish oil occur,” says Hu. “For example, a lot of the enzymes are in the retina. We researched this in the past.”

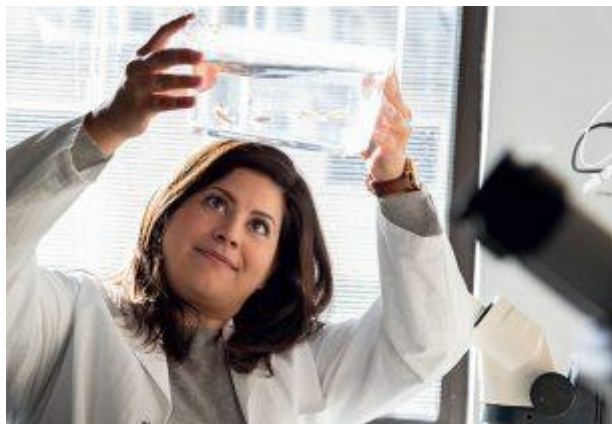
normally takes years for the things he discovers to find their way into practice. “But that was when I realized that people could really benefit from our work one day.”

*By Jan Schwenkenbecher
Photos by Katrin Binner*

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