

## A Man with Vision

Pursuing new ways of thought, questioning old assumptions, believing in a vision for the future, and letting curiosity run free: Innovative people push the limits of our knowledge, thereby changing the world. Harald zur Hausen is one such person. Scientific journalist Hildegard Kaulen met with the Nobel laureate in this exclusive for *Medical Solutions*.



He is a man of calm, unassuming energy: Professor Harald zur Hausen, MD, Dr. h.c., Nobel laureate in medicine, virologist, and long-time Scientific Director of the German Cancer Research Center (DKFZ), has achieved what only a few have accomplished. Through tenacious work, he proved a brilliant idea that was at odds with the prevailing doctrine, thereby paving the way for a vaccination that will protect countless women from cervical cancer. For his work, he was awarded the Nobel Prize in Medicine last year, the highest award given to any scientist. Since then, there have been radical changes in his life. He tells us that he has given more than 300 interviews and faces dozens of inquiries each day. He is astonished by the breadth of topics on which his opinion is solicited – almost as if he had become another person when the prize was granted, zur Hausen says, commenting on the hubbub surrounding him personally. And yet, his scientific career got off to quite a bumpy start. Zur Hausen makes no secret of the fact that his first few years in the lab were not very exciting. But very early on, he developed the idea that viruses could cause cancer. The critical clue came from papers completed in the 1950s on bacteriophages. Phages

are viruses that specialize in bacteria and integrate their genetic material into the host cell's genome. So why wouldn't there be human viruses that do something similar, driving the cells to respond with cancer? Before zur Hausen could pursue the idea, however, he first had to learn the necessary tools of the trade. And the opportunity to do so came to him in a wastebasket. That's where a letter addressed to his boss from the famous husband-and-wife research team of Gertrude and Werner Henle of Children's Hospital in Philadelphia, Pennsylvania, USA, both of them originally from Germany, had ended up. In the letter, the two researchers inquired whether zur Hausen's boss could provide them with a research assistant. When zur Hausen learned of it, he fished the inquiry out of the wastebasket and applied for the position. At that time, his superiors offered him little encouragement. "Just get to work," zur Hausen says, was the standard sentence he heard at the time. And yet much of what he had initially planned was entirely too naïve. It was not until he worked for the Henles in Philadelphia, between 1965 and 1969, that he found an environment that motivated and inspired him. For that reason, zur Hausen now advises young scientists

to select their jobs with greater care than he did in the early years of his career. After his return to Germany, zur Hausen made a scientific breakthrough in the early 1970s. He was able to show that Epstein-Barr viruses accumulate in human tumor cells. This was proof that viruses can, in fact, remain within the genome of tumor cells and probably have something to do with cancerous growth. Over the next few years, zur Hausen and his team members proved that it was not, as originally presumed, the herpes viruses that caused cervical cancer, but rather human papilloma viruses. In 1983, they isolated the virus types 16 and 18, laying the groundwork for a vaccine against the second-most prevalent type of cancer in women.

### Luck, a Good Strategy, and Communication

Asked what conditions are necessary to achieve success, zur Hausen gives a clear answer. Luck is important, he says, but a good strategy is much more so. One has to be able to develop hypotheses and consistently put them to the test. This is where he sees his own personal strengths: in his dedicated pursuit of his convictions. He also says the ability to communicate in person with others is



necessary for success. He always made time to speak with his colleagues and team members. Only when people speak to each other is it possible to shed light on a problem from all sides. And, it's important to make sure the working group is not too large, or no one will have any time left to speak with all the others. For that reason, zur Hausen has never had more than five or six members in his core working group.

He answers the question of whether it is easier or harder to do innovative research these days with a double affirmative. It is easier, he says, because we have better technologies today. But it is also harder, because the pressure has increased.

There is hardly any room left for unconventional ideas. People are forced to publish right away. It is difficult to work on a new idea without disruption for a longer period. That's why zur Hausen considers giving leeway and supporting even uncommon projects highly important.

### **Intuition for Topics and Talents**

In addition to his fine intuition for topics and talents, the Nobel laureate also has an extraordinary political and diplomatic aptitude. When he took up his position as the head of the DKFZ in 1983, the

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Harald zur Hausen, MD, Dr. h.c., German Cancer Research Center, Heidelberg, Germany, Nobel Laureate in Medicine 2008

institution was under criticism. The DKFZ had been publicly accused of having deficient management and inadequate expert qualifications. The notion that a person with a pronounced scientific agenda had agreed to head up such an institution was astonishing at first. But zur Hausen was happy to join the DKFZ, where he saw two initial problems: The DKFZ had been founded without a clinic of its own and at that time, cancer was considered only from the viewpoint of carcinogens, with no other causes in mind. Zur Hausen accomplished a great deal in both areas and today, the DKFZ is

among the leading cancer centers in the world.

In his acceptance remarks in Stockholm, zur Hausen told an anecdote about his three-year-old granddaughter: “When her parents told her about the Nobel Prize, and that her grandfather was getting it, she started to cry. With tears in her eyes, she told her parents she wanted a Nobel Prize, too. When I told the story to a colleague, he became thoughtful and said, ‘your granddaughter voiced the wishes of a legion of scientists. It’s just that most of us don’t want to talk about it or publicly burst into tears.’”