

Interview with Prof. zur Hausen



Harald zur Hausen studied Medicine at the Universities of Bonn, Hamburg and Düsseldorf and received his M.D. in 1960. After his internships, he worked at the Institute of Microbiology in Düsseldorf and subsequently in the Virus Laboratories of the Children's Hospital in Philadelphia. After being a senior scientist at the Institute of Virology of the University of Würzburg, he was appointed in 1972 as Chairman and Professor of Virology at the University of Erlangen-Nürnberg. In 1977 he moved to a similar position to the University of Freiburg.

Interviewers:

Sriram Kumar, PhD Student, Institute of Virology, Munster

Philipp Ostermann, PhD Student, Institute of Virology, Dusseldorf

QUESTIONS:

1. What kind of internships did you do to receive your qualification to practice medicine?

A. At that time, a two-year internship was required to receive the qualification to practice medicine. By the age of 24, I decided to receive this licensure, yet was convinced to later follow up on research activities. So, I chose my internships primarily based on a pleasant area and a good salary. My first internship position was in surgery in a hospital in Wimbern in Westphalia. Four months later I did an internship in internal medicine in Isny in Southern Germany. For my gynecological training I moved back to my home city of Gelsenkirchen-Buer-Erle. Here, I had the most labor-intensive and at the same time most satisfying period of my clinical phase as the head of this department was close to retirement and his head physician fell ill for two months during my stay.

2. What was your first research experience like?

A. Immediately after my internships, I started to work in my future research field and got a

From 1983 until 2003 he was appointed as Scientific Director of the Deutsches Krebsforschungszentrum (German Cancer Research Center) in Heidelberg. He retired from this position in 2003. He received a number of national and international awards, among them the Nobel-Prize for Medicine in 2008.

position at the Institute of Medical Microbiology in Dusseldorf, where I already did my medical thesis. Initially I started to work in the virus laboratory of this institute. The only activities there focused on the maintenance of primary African green monkey kidney cell cultures for replication and propagation of poliomyelitis viruses, virus neutralization tests, and determination of complement-fixing antibodies. After four weeks I found this extremely boring and was looking already for interesting clinical position in pediatrics. After a few failed attempts, I became frustrated and decided to continue in microbiology. In the meantime, I had discovered that tissue culture studies could be very interesting and so I gave up all clinical plans and stayed in science. What should be mentioned is that I was completely left on my own and had no stimulation discussions. After attending courses on cytogenetics in Munster and on bacteriophages in Cologne at my own expenses, it became clear that I should not stay too long in the remarkably sterile atmosphere of this microbiology institute. In retrospect, I learned during this time to develop my own ideas through literature research and deepened my knowledge of infectious diseases, cancer and neurological disorders.

3. How did you end up working in Philadelphia? How did you experience your first months there?

A. *By chance, I heard that Werner Henle in Philadelphia was looking for a young medically trained German with interest in virology. I applied for this position and received a friendly letter with an invitation to personally meet him and his wife Gertrude Henle in Heidelberg. We met and agreed that I would start in their laboratory 1st of January in 1966. When I arrived at the airport in Philadelphia on December 29, I quickly realized my insufficient knowledge of the English language. It took me approximately two to three months before I was able to communicate reasonably well in English. Despite of that, I soon became familiar with the Virus Laboratories of the Children's Hospital of Philadelphia. Compared to modern ones, the laboratories were surprisingly dark with no windows to the outside, but they were air conditioned. We even could have our lunch in the laboratory and smoking was also not restricted. There were small cabinets for tissue culture available, but no laminar flow hoods. From the scientific point of view, both Henles urged me to join them soon in their immunofluorescent analyses of EBV expression in Burkitt's lymphoma cell lines. But I tried to convince them that I needed to get some background in molecular techniques of virology. After intensive discussions, I was permitted to work with a reasonably well-studied virus (human adenovirus type 12) previously shown to be oncogenic in newborn rodents. I convinced them that this virus system would be perfectly suitable to learn virus purification and nucleic acid extraction procedures and study the effects of such infections on human chromosomes. In Dusseldorf I had already acquired some skills in chromosome spreading techniques and in the evaluation of chromosome structure. Werner Henle accepted my view and, to my joy, even bought an expensive Zeiss microscope equipped for phase contrast microscopy, immunofluorescence, and microphotography. His wife was less convinced that this relatively inexperienced German postdoc needed expensive equipment but changed her mind later, when the first publishable data emerged nine months after my arrival in Philadelphia!*

After having had my findings confirmed by Peter Nowell, a well-known pathologist and cytogeneticist, I asked Werner Henle to join me as a coauthor on this publication. He refused by stating “We are not in Germany, where the director always cosigns every paper”. After a few modifications, my first publication in English was accepted by the Journal of National Cancer Institute.

4. How was your path returning to Germany and then receiving your first professorship?

A. In the late summer of 1968, Eberhard Wecker, a well-known German virologist, visited the Henles and inquired about my work. He became very interested in these studies and offered me a senior assistant position at his newly created Virus Institute at the University of Wurzburg in Germany. Since this offer also included the possibility for a habilitation (at that time a prerequisite for a subsequent appointment as professor), I gratefully accepted this offer and moved to Wurzburg in March 1969. I started my own group working on the molecular biology of EBV. After

presenting our interesting discoveries at the first meeting of herpesviruses and oncogenesis in Cambridge in 1974, I received a number of invitations to national and international meetings as well as the Robert Koch award in 1975.

I then focused on my qualification as lecturer and was able to write a cumulative “habilitation”. As the first one to do so, it created an outcry by several faculty members: “The publications are all in English; who knows whether the next Habilitationen will be in Chinese?”. I later learned that after a heated discussion my habilitation was accepted with a narrow majority of a single vote.

At the end of 1970, I received a phone call from Professor Adolf Windorfer, the chairman of Pediatrics at the University of Erlangen-Nurnberg in Bavaria, asking about my interest to apply for a position in clinical virology at this university. I quickly indicated my interest, and after a subsequent private discussion, I decided to apply for it. Eberhard Wecker discouraged me from accepting this position since it would require to focus all my activities on diagnostic virology.

I saw, on contrary, my big chance in setting up a new institute according to my own views. When I was offered the appointment as full professor for virology, I immediately accepted.

5. What were your initiatives at the DKFZ to support young scientists towards their career?

A. Restructuring the DKFZ's organization and research consumed a substantial part of my 20 years there. I consider two developments the most significant in the interest of young researchers: One, I blocked the extensive exploitation of PhD and other doctoral students - I noted that some of them had been working on their theses for six to seven years. I argued that most of the work should be finished within three years, but exceptions may be granted under certain circumstances (e.g., pregnancy, disease, or other unusual conditions). Two, intrigued by the rapid global epidemic spread of acquired immune deficiency syndrome in the 1980s, I proposed to the Ministry of Science and Technology that it establishes a bursary for young scientists to get two to three years of training abroad

in laboratories working in this field. After this period, they should return home and establish a laboratory in an institution of their choice. This proposal was approved, and we selected some very good candidates who found independent positions in the country after their return to Germany.

6. Can you recollect your experience, when you heard about winning the Nobel Prize in 2008?

A. During the last part of 2006 and the first part of 2007 several of my international colleagues casually suggested to me in passing that the licensing of the HPV vaccine in the previous year would promote me to a top candidate for the Nobel Prize in Physiology or Medicine in 2007. I heard this with amusement, secretly hoping that this would become reality. When the Noble Prize for Medicine or Physiology was announced in October 2007 to Mario Capecchi, Martin J. Evans, and Oliver Smithies, I thought this was an excellent selection but experienced at the same time some disappointment that the predictions had not come true.

Consequently, I felt that my chances had passed, and I did not take notice of similar predictions in 2008. But when I received a phone call from Stockholm in my office on October 6 at 11 AM and listened to a voice with a Swedish accent, I instantly realized that this must be good news.

The subsequent period was turbulent, hilarious, a bit exhausting, but fascinating, in part even more for my family and my friends than for me.

Thank you very much, Prof. zur Hausen, for this interview!