Laudatio auf Professor Dr. Widmar Tanner, Universität Regensburg, Deutschland, zum Anlass seiner Ernennung zum Ehrenmitglied der Deutschen Botanischen Gesellschaft (DBG)

von Professor Dr. Ekkehard Neuhaus

Widmar Tanner is, with no doubt, one of the leading plant biologists in Germany and internationally. Already during his studies of biology, chemistry and geography in Munich he received a uniquely valuable education by world-class experts in the fields of physiology, plant biology and biochemistry like F. Lynen, O. Kandler, H. Merxmüller or H.J. Autrum. He earned first practical experience in the laboratory of Meinhart Zenk, at that time an upcoming assistant at the Botanical Institute of Ludwig Maximilians University (LMU), who had just returned from Purdue University. Widmar Tanner then decided to specialize in the field of plant cell physiology. It appears that the profound originality and foresight of Widmar Tanner's work originated in this excellent scientific environment, which he enjoyed in that very early phase of his career.

As recommended by M. Zenk, Widmar Tanner moved for his PhD studies to the US to the laboratory of Harry Beevers. Beevers was to that time already a first address in the field of plant biochemistry and his laboratory was one of the best places to learn the use of radioactively labelled metabolites for physiological studies and metabolite fluxes. During this time, Widmar Tanner described the function of the glyoxylate cycle in lipid mobilizing tissues, which is instrumental in the conversion of fats to carbohydrates. During his PhD studies, Widmar Tanner produced an impressive number of papers of highest scientific caliber documenting his impressive talent to solve challenging physiological and biochemical enigmas.

Back in Munich, Widmar Tanner joined the group of Otto Kandler at the Institute of Applied Botany of the Technical University (TUM). Kandler had unparalleled wide interests in botany (photosynthesis, carbohydrate metabolism) and microbiology (bacterial cell walls, chemotaxonomy), and this environment further fostered Widmar Tanner's wide perception of biological problems. He again conducted excellent research, now on photosynthesis in Chlorella and on oligosaccharide biosynthesis in Phaseolus (bean). The green alga Chlorella was ideally suited for his research since this tiny, single-celled organism features most metabolic traits common to vascular plants but allows to raise data with low experimental noise. Widmar Tanner obviously considered this combination a perfect prerequisite for the intention of a scientist – earlier than most others - to describe basic physiological insights at a quantitative level. In a side project, Widmar Tanner-studied glucose uptake into Chlorella, and from this resulted - later in Regensburg

- the characterization of the corresponding transport system in greatest detail, at both the physiological and molecular level. This transporter then received most of his scientific attention in Regensburg, and it was, in fact, the first plant sugar transporter, and the first H^+-symport system in eukaryotes, to be identified and characterized at the functional level. But before addressing Widmar Tanner's years in Regensburg, two more results of his work in Munich must be mentioned: First, contrary to biochemical reasoning that UDP-Galactose should be the galactose donor in the biosynthesis of the oligosaccharides of the raffinose family, the conjugate of galactose with *myo*-inositol was identified as the immediate galactose donor. Next - and with far-reaching consequences for cell biology - it was the identification of dolichol phosphate mannose (Dol-P-Man) as a lipid intermediate in mannan biosynthesis in yeast, which paved for the way for the later work of Widmar Tanner on glycoprotein biosynthesis.

In 1970, at the age of only 32 (!) years, Widmar Tanner took over the chair of Cell Biology and Plant Physiology at the newly founded University of Regensburg. The Faculty of Biology and Preclinical Medicine was fortunate in having quite a number of outstanding scientists and strong characters as founding members, among them Karl Otto Stetter (Microbiology) Manfred Sumper (Biochemistry), Rainer Jaenicke (Biophysical Biochemistry) and Andreas Bresinsky (Plant Systematics), with all of whom Widmar Tanner had an excellent relationship. This appears to be one of the reasons why he never accepted offers from other universities - much to the benefit of the University of Regensburg. With no doubt, he was the driving force in establishing two independent Collaborative Research Centers (Sonderforschungsbereiche, SFB) in his faculty, representing the flagships of funding by the German Research Foundation (DFG).

As leader of a uniquely productive group, Widmar Tanner further concentrated on the sugar transporter in Chlorella and conducted sophisticated biochemical studies on this protein which allowed not only the identification of the substrate binding site in this transporter, but also provided insight how the markedly specific glucose/H^+ cotransport is realized on the structural level. It is clear, that this excellent work on transport processes and the involved proteins, both in Chlorella and in higher plants, served as a major incentive for many laboratories to focus on solute carriers, in consequence making Germany an internationally recognized hotspot for research on membrane transport.

Apart from this fundamental work on Chlorella, Widmar Tanner focused in-depth on selected cellular processes in baker’s yeast, in particular on aspects related to mannan metabolism, protein *O*-glycosylation, and – already nearing retirement – on the impact of microdomains, called “lipid

rafts", on the lateral compartmentation of the yeast plasma membrane.

Finally, the never-ending joint curiosity of Widmar Tanner and his former mentor Harry Beevers (on sabbatical leave in Regensburg) prompted them to do experiments that resulted in the challenge of the long held textbook statement that transpiration drives long distance transport of ions in plants. These 'experiments on the side' wonderfully illustrate Widmar Tanner's indomitable joy and unbiased approach in the study fundamental plant processes.

The wide recognition of Widmar Tanner's research in the fields of membrane transport and glycol-biology is evident from the numerous reviews that he was asked to write on these topics. However, Widmar Tanner's work received not only great attention internationally, but also led to several honors like, e.g. his memberships in the European Molecular Biology Organization (EMBO), in the Nationale Akademie der Wissenschaften Leopoldina, in the Bayerische Akademie der Wissenschaften, and - just recently - the Corresponding Membership in the American Society of Plant Biologists. However, it should not go unnoticed that he never received a prize for his discoveries. One can speculate that this is due to his research on at least two distinct scientific stages, with different actors and audiences.

But beyond being a remarkably knowledgeable and successful researcher always looking for something novel, Widmar Tanner was a well gifted and inspiring teacher, and mentor. He provided a vibrant atmosphere in his laboratory and allowed his coworkers to develop their own scientific profiles. Several of them became professors, e.g. Ewald Komor (Bayreuth), Norbert Sauer (Erlangen), Thomas Reutsch (Graz/Copenhagen), Sabine Strahl (Heidelberg) and, recently, Guido Grossmann (Düsseldorf).

Moreover, Widmar Tanner served untiringly on many scientific boards, always as a solicitor for excellent science and scientists. Among these positions, it is worth mentioning that he was speaker of two subsequent SFBs in Regensburg, that he served as a member of the German Wissenschaftsrat, as the Obmann of Section 9 of the Leopoldina and that he even found time to act as vice president of the Deutsche Forschungsgemeinschaft.

Lastly, in many spirited lectures and publications for a broad audience, Widmar Tanner took science meritoriously into society and argued against misconceptions, e.g., in the case of gene technology.

In summary of all, it is a great pleasure for the German Botanical Society to have Widmar Tanner from now on as honorary member.