Benno Parthier (1932–2019)

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Benno Parthier, Professor emeritus of Plant Biochemistry at the Martin Luther University Halle-Wittenberg, Germany, and XXIV President (1990–2003) of the German Academy of Natural Scientists Leopoldina, the oldest continuously existing academy of natural sciences and medicine in the world and today known as the German National Academy of Sciences Leopoldina, died on August 25, 2019 at the age of 87. He played an instrumental role during the restructuring of the natural sciences in Germany after its reunification. Benno was worldwide acknowledged for his research on the action of cytokinins in protein metabolism, on the differentiation of chloroplasts, and for his initial work on jasmonic acid and its recognition as a novel plant growth regulator and hormone.

Born in 1932, Benno Parthier grew up on a small farm in a village near Halle (Saale). His childhood exposure to nature, the outdoors and agriculture inspired him to study plant biology at the Martin Luther University Halle-Wittenberg where he met his mentor, Professor Kurt Mothes, then long-term President of the Academy Leopoldina and founding director of the Institute of Biochemistry of Plants (IBP). Kurt Mothes, who initiated groundbreaking research into plant nitrogen metabolism, alkaloids (he first used the term *secondary plant compounds*), and the role of cytokinins in nutrient partitioning, recruited Benno Parthier to the IBP as staff scientist to explore the function of cytokinins in protein metabolism.

In 1965 and 1966, Benno joined as visiting scholar the Wenner-Gren Institute of the University of Stockholm where he established the use of antibiotics to study protein biosynthesis in different plant cell compartments, which proved to be an important tool in plant physiology in the decades to come. Back in Halle (Saale), Benno Parthier was appointed Head of the IBP Department for Molecular Biology; however, he was denied succession of Kurt Mothes as IBP Director because of tightening communist rule. Nevertheless, Benno Parthier who unwaveringly resisted demands to join the communist party managed to uphold the exceptional institutional culture of academic freedom, discourse, and exchange at the IBP, which continued to be a beacon of academic integrity and excellence. A case in point: In 1977, Benno Parthier organized together with his friends and colleagues abroad (Lawrence Bogorad, Jacques-Henry Weil, Hans Kende, Philip Matile, and Nikolaus Amrhein) the first International Congress of Plant Physiology in East Germany, officially known as German Democratic Republic (GDR). This was a bold move by Benno and a difficult undertaking in face of permanent censorship, observation, security control, and erratic visa permission to visitors from Western Europe and Overseas.

In the late 1960s and early 1970s, Benno Parthier initiated long-term research on the biogenesis and differentiation of chloroplasts by introducing *Euglena gracilis* as a model mixotroph flagellate, which recapitulates the entire

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developmental program of chloroplast differentiation upon transfer from dark to light exposure. Using the *E. gracilis* system and flexible growth conditions, numerous enzymatic and cell biological studies were conducted, which led to the first characterization of compartment-specific tRNA synthetases and, together with his colleague Reinhold Wolgast who identified DNA in chloroplasts, to the first report of protein synthesis during chloroplast differentiation.

In the early 1980s, Benno Parthier established molecular biological studies on the action of jasmonic acid (JA), a novel growth-inhibitory and senescence-promoting plant hormone, which was discovered at the IBP and by a group in Japan (Ueda) at about the same time. Benno Parthier's laboratory published the first and fundamental proof of JA-induced gene expression by describing the identification of JA-inducible proteins (JIPs) in barley. Since those pioneering early years, many groups worldwide have contributed to the understanding of the mode of action of jasmonates in plant stress response and development. Benno Parthier remained very much interested in jasmonates and their action in protein synthesis in barley, including the promotion of senescence and its counteraction by cytokinins. He promoted manifold collaborations in his department on various aspects of jasmonate chemistry and biology. These international collaborations have been well maintained and further developed by the jasmonate group at the institute after his retirement in 1997.

Given his distinguished international reputation as a leading scientist in chloroplast biology, in 1974, the German Academy of Natural Scientists Leopoldina elected Professor Parthier as regular member at age 42. He soon actively engaged in various academy matters, served as secretary and Vice-President, and eventually headed the Academy Leopoldina as its XXIV President (1990–2003). After the reunification of Germany (1990), the entire country but foremost East Germany experienced dramatic societal change. In addition to his responsibilities as Academy President, Benno Parthier became deeply involved in the reorganization of the German academic landscape by joining the German Science Council (1990) and by serving as its deputy chairperson (1992–1997). The Council evaluated all institutes of the former GDR Academy of Sciences, each subsequently undergoing a rigorous and sometimes painful restructuring process, which could even lead to termination. Benno Parthier's institute, the IBP, passed muster and was newly founded in 1992 under his leadership. The IBP was renamed IPB (Institute of Plant Biochemistry) and soon joined the Leibniz Association of non-university research institutions in Germany. Benno served as the first democratically elected Director of the IPB until his retirement.

Benno Parthier's lifetime achievements had been honored in many ways. He was member of various national and international academies, honorary doctorate of the University of Würzburg (Germany), and honorary member of the German

Botanical Society. Benno received the Cothenius Medal (Gold), the most prestigious award of the Academy Leopoldina, and he was presented the Federal Cross of Merit (First Class) of the Federal Republic of Germany, the Order of Merit of the German State of Saxony-Anhalt, and the Olaf-Henkel-Prize for science policy of the Leibniz Association.

Besides his impressive amount of published original research contributions, Benno Parthier developed over the decades a passion for the history, communication, and advancement of the sciences. This passion was not only nourished by his broad academic and cultural interests but was certainly stirred by his Leopoldina Academy membership and presidency. He carefully scripted in his uniquely engaging style numerous and excellent commemorative publications, laudatory speeches, addresses, obituaries for friends, colleagues and academy members, historical reviews and perspectives as well as articles to inform and educate the public. Benno Parthier was indeed a well-learned, highly educated citizen, a scholar in its best sense. He found refuge in music, the fine arts and literature, but foremost emotional support in his family with whom he loved to spend the weekends in the nearby Harz Mountains, away from the all too many professional and administrative responsibilities.

Although Benno Parthier rose to a towering figure in the German academic system, a position he filled with much success, vision, and long-lasting impact, he always remained the modest, polite and approachable person who once left the village at the Saale River. Benno was a very generous and empathic mentor to all of his colleagues, Ph.D. students and undergraduates. He supported them by sharing his experience and love for science, and back in times of the GDR, by offering help and perspective for coping with political intolerance and inevitable frustration. Later, by taking advantage of his numerous contacts to scientists all over the world, he encouraged many of his co-workers to go abroad and to follow their heart and passion for science. For those who had the privilege to work under Benno's guidance, his unselfish and mild-mannered personality, his honesty, tolerance, willingness to respect and help, and genuine ability to appreciate the achievements of others were truly exemplary and a source of life-long feelings of admiration and gratitude.

Benno Parthier is survived by his wife, Dr. med. Christiane Parthier, his three children, and six grandchildren. He will not only be intensely missed by his close family, but by his extended academic family of countless friends, former colleagues and students.

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