Journal of Experimental Botany, Vol. 72, No. 7 pp. 2273–2274, 2021
doi:10.1093/jxb/erab014

eXtra Botany

Obituary

A tribute to Vilém Zachleder (1944–2020)

Kateřina Bišová[1,*] and Irena Brányiková[2]

[1] Laboratory of Cell Cycles of Algae, Institute of Microbiology, Czech Academy of Sciences, Třeboň, Czech Republic
[2] Institute of Chemical Process Fundamentals, Czech Academy of Sciences, Prague, Czech Republic

* Correspondence: bisova@alga.cz

Vilém Zachleder, founder and a long-term head of the Laboratory of Cell Cycles of Algae at the Institute of Microbiology of the Czech Academy of Sciences, died suddenly on 26 August 2020. Vilém was one of the pioneers who turned to algae decades before they were (re-)discovered in the boom in algae-derived biofuels that has taken place since 2000. Driven by a powerful curiosity into what made the cells grow and divide, he paid little attention to what people considered fashionable. With the help of an extremely skilled and devoted technician, A. Kubínová, he almost single-handedly turned one green alga, *Scenedesmus quadricauda*, into a well-characterized and unique model system for studying the cell cycle. He then left it as a starting point for those who came after him.

V. Zachleder with his model organism, *Scenedesmus quadricauda* ('slightly' enlarged). Photo courtesy of K. Bišová.

Vilém came from a family living on a tight budget; his father was a steam locomotive driver, his mother a factory worker. The environment was loving, caring, and demanding, and it taught Vilém to look for and find fresh and unexpected solutions to any situation he faced—a trait he would later develop further and exploit in his scientific career. He graduated from Charles University in Prague in 1965, the first in his family ever to do so. Having completed his military service in 1967, he joined the Laboratory of Algal Research in the small south Bohemian town of Třeboň. There he completed his PhD and worked for the rest of his life. The laboratory was headed by Ivan Šetlík, a charismatic visionary and Vilém´s first mentor. Šetlík´s vision was that algae might one day feed the world, but for this to happen we would first need to understand them. To reach this goal, the laboratory used an at least two-pronged approach, studying algal biotechnology and photosynthesis. When Vilém joined the lab, he was given the freedom to choose a topic, and soon there was another approach—to study algal growth, division, and regulation of the cell cycle. Life in the communist Czechoslovakia had little to offer in life fulfillment, but it did offer a certain freedom in science. Researchers were free to pursue anything they considered interesting and important, as long as it did not cost much money and did not interfere with the ideology. For the curiosity-driven Vilém, it worked perfectly. He spent his days and nights in the laboratory, endlessly sampling the algae and analyzing their reaction to whatever treatment he saw fit to expose them to. To us young scientists,

in retrospect, it sounded almost like heaven, where you could just do science without the need to write a grant application, and without the pressure to publish in order to be able to move forward. Surely, it was no heaven; it was only Vilém´s storytelling gift that made it sound like one. To our awe, every so often, he would reach into his old, meticulously written protocols and bring to our attention an experiment, usually done before we were born or shortly after. The data were left behind because at the time there was not enough knowledge to explain them. Now their time has come. An example of this were the temperature-shift experiments published in the *Journal of Experimental Botany* in 2019 (Zachleder *et al.*, 2019). The original experiments were done in 1971, and they were repeated more than 40 years later. Such is the strength of biology that you would never guess which replica was from which time. The experiments show that upon temperature shifts, there is no connection between the cell cycle and cell growth. They challenge the long-established paradigm of the existence of a sizer, measuring a critical cell size in order to allow entry into the cell cycle. Vilém commented on the publication of the paper with only "OK, so now I have refuted all I had worked on for the past 50 years". He made it sound like a life accomplishment.

Vilém was also a lucky man. In 1984, he spent 3 months in the laboratory of Murdoch Mitchison at the Department of Zoology of the University of Edinburgh. Such an occasion was a rare treat for someone from behind the Iron Curtain. Vilém made the most of it. He thrived in the intellectual environment of the lab, loved the discussions, and admired Professor Mitchison, who became his other role model. In Mitchison´s laboratory, he met Peter Fantes and Paul Nurse, who worked on the yeast cell cycle and solved very similar problems to those he was facing in algae. Now he was not alone; he knew people with whom he could discuss his experiments. In later years, Vilém became fascinated with the coordination between the cell (nuclear) and chloroplast cycles. Many green algae contain a single chloroplast and its division needs to be coordinated with cell division. The only other laboratory studying this phenomenon was that of Tsuneoyoshi Kuroiwa at the University of Tokyo. Vilém spent more than a year there, and thus begun his love and admiration for Japan.

For all of us who joined Vilém´s laboratory, he soon became the source of knowledge and wisdom. The door to his modest office was always open. Any one of us could enter at any time with a mug of tea and quietly sit on the small sofa—a clear sign that Vilém was needed. At this hint, he would stop whatever he was doing and jump to help. Regardless of the topic discussed, the ambience was open-minded, non-judgmental, and thoroughly enjoyable. He was a true father to his lab members. Vilém didn't split his life between personal and professional. He was ready to jump on one of his many old bicycles in the middle of the night, no matter if it was pouring with rain or snowing, and go to the lab to sample. At the same time, he was ready to spend a few "working hours" solving our private issues. Discussing experiments before and after they were done was an intense intellectual exercise, delving deeply into cell physiology. There were always more aspects to analyze, and more better-planned experiments to run. His (and our) curiosity was never sated. Vilém was our guide in curiosity. He set the avenues, pointed out the interesting consequences, and approved or commented on our views and plans. Being more persuasive than insistent, he instilled in us trust, freedom, and responsibility. We strived to succeed because his drive for perfection was both an inspiration and an aspiration for all. Moreover, all the discussions were a real treat. Not only intellectual, they were genuinely funny. Vilém could have, in another life, made a successful stand-up comedian, the only distinction being that he preferred to sit when making jokes. He was always happy to join friends and colleagues at the local pub to have a beer, tell stories, and listen to music.

Vilém loved three things most: science, judo, and life. To judo he applied the same passion that he applied to science. As soon as you joined the lab, it was clear that you also had to join his judo classes. There was no escaping this. Some of us stayed for a few months or years; some of us stayed for a lifetime. He was a remarkable judo player and an inspiring, although strict, judo teacher. Until his last day, he remained an insurmountable challenge for his judo friends. Vilém died suddenly yet calmly on the judo mat when teaching judo.

Vilém taught us to love science with all its ups and downs, to love life, and to never give up. He showed us the way and will be much missed.

References

Zachleder V, Ivanov I, Vítová M, Bišová K. 2019. Effects of cyclin-dependent kinase activity on the coordination of growth and the cell cycle in green algae at different temperatures. Journal of Experimental Botany **70**, 845–858.