

## **doc. Ing. Vladimír Farkaš, DrSc.**

Academician of the Learned Society of Slovakia



**Affiliation:** Institute of Chemistry, Slovak Academy of Sciences, Bratislava, Slovakia

**Born:** 25<sup>th</sup> December 1941 in Bingula, Serbia (former Yugoslavia)

**Marital status:** married, 1 daughter (1969)

**Specialization:** Biochemist, Biotechnologist

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### **Education, academic titles and degrees:**

-1965: Ing. (equivalent to MSc) graduated with honors in Nuclear Chemistry at the Czech Polytechnical University, Prague, Czech Republic

-1969: CSc. (equivalent to PhD) in Biochemistry at the Institute of Chemistry, Slovak Academy of Sciences, Bratislava, Slovakia.

-1998: doc. (equivalent to Associated Professor) in Biochemistry at the Faculty of Natural Sciences, Comenius University, Bratislava, Slovakia.

- DrSc. (Doctor of Sciences) in Biochemistry

-2004: Elected member of the Learned Society of Slovakia

### **Research topics:**

- Preparation of radioactively labelled sugar derivatives
- Biosynthesis of cell walls of fungi.
- Fungal differentiation and the effects of light
- Biodegradation and bioconversion of cellulose
- Plant bioprotection with fungi
- Polysaccharide transglycosylases

### **Principal results and achievements:**

- Discovery of the zymogenic character of the yeast chitin synthase
- Characterization of biochemical and physiological changes induced by light in the fungus *Trichoderma*
- Technological process for the massive production of *Trichoderma* spores
- Technological process for the commercial production of cellulase from *Trichoderma*
- Biotechnological process for the production of rare sugar cellobiose
- Discovery of a new enzyme plant xyloglucan endotransglycosylase
- Discovery of polysaccharide transglycosylases in yeast and design of new fluorescent methods for detection and determination of their activity

### **Professional stays abroad (duration more than one month):**

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| 1970-1971 | Postdoctoral Fellow (1 year) at the National Institutes of Health in Bethesda, Maryland, Maryland, USA    |
| 1978      | Visiting scientist, 3 months at the Department of Microbiology, Attila József University, Szeged, Hungary |
| 1981      | Visiting scientist (one month) at Helsinki Technical University, Helsinki, Finland                        |
| 1987-1988 | Visiting Professor (one year) at the Department of Biology, McGill University, Montreal, Canada           |
| 1991      | Visiting scientist (3 months) at the National Institutes of Health, Bethesda, Maryland,                   |

- USA
- 2000 Visiting professor at the Institute of Molecular Plant Sciences, The University of Edinburgh, Scotland, UK (40 days)
  - 2001 Visiting professor (2 months) at Lehrstuhl für Zellbiologie und Pflanzenphysiologie, Universität Regensburg, Regensburg, Germany
  - 2002 Visiting scientist (6 months) at Research Center for Pathogenic Fungi, Chiba University, Chiba, Japan
  - 2005 Visiting professor (3 months) at the Australian Centre for Plant Functional Genomics, University of Adelaide, Adelaide, Australia

### **Scientific output:**

Over 130 publications in the international journals, 9 reviews and chapters in textbooks and monographs, 16 patents; over 3,450 citations according to Google Scholar; 2,570 according to WoS; H index= 27 and 25 respectively.

### **Awards and distinctions:**

- 1966 Czech Polytechnical University, Faculty of technical and nuclear physics, Prague: graduated with honors
- 1991 Silver medal of Dionýz Štúr from the Slovak Academy of Sciences for merits in development of biological sciences
- 1997 Award "Golden Incheba" at the International chemistry fair INCHEBA in Bratislava for the biotechnological method of preparation and isolation of a rare sugar D-cellobiose
- 1998 Winner of the title "Technologist of the Year of the Slovak Republic 97" for for the process of fermentative production of fungal cellulase and its use for biotechnological preparation of D-cellobiose.
- 1999 Grand Prize of the technology fair "Novtech 99" for biotechnological method of preparation of D-cellobiose
- 2002 Winner of the Prize of the Slovak Academy of Sciences for outstanding scientific achievements
- 2004 Elected member of the Learned Society of the Slovak Academy of Sciences
- 2006 Jan Patočka Medal from the Czechoslovak Microbiological Society for scientific and organizational work for the Microbiological Society
- 2010 Winner of the title "Outstanding Personality of the Slovak Academy of Sciences"
- 2012 Golden Medal of the Slovak Academy of Sciences for the advancement of science
- 2018 Award of the Minister of Education, Science and Sports of the Slovak Republic for lifelong achievements in science

### **Teaching:**

- 1996-2008 Lecturer of Biochemistry and Biochemical methods courses at the Department of Biochemistry, Faculty of Natural Sciences, Comenius University, Bratislava
- 1972- 2017 Supervisor and tutor of PhD students in Microbiology and Biochemistry at the Department of Biochemistry, Faculty of Natural Sciences, Comenius University, Bratislava and at the Department of Biochemistry and Microbiology, Slovak Polytechnical University, Bratislava. Under my guidance, 16 students (4 of them from abroad) have successfully defended their PhD thesis

## Functions and activities within organs of the Slovak Academy of Sciences (SAS)

1978-1983	Head of the Department of Biochemistry at The Institute of Chemistry, SAS
1983-1993	Head of the Department of Biochemistry and Biotechnology of Saccharides at The Institute of Chemistry, SAS
1988-1990	Chairman of the Commission for Biotechnology, SAS
1989-1990	Chairman of the Collegium for Chemistry, SAS
1997-2002	Member of the Collegium for Chemistry, SAS
1999-2008	Member of the Commission for defending the DrSc. Theses in Microbiology
2003-2011	Chairman of the Yeast Commission of the Czechoslovak Microbiological Society
2003-2011	Member of the Editorial Board (Field Editor) of the journal General Physiology and Biophysics, VEDA, Bratislava, Slovakia

## Selected publications:

FARKAŠ, V., SVOBODA, A. and BAUER, Š.: Secretion of cell wall glycoproteins by yeast protoplasts. Effect of 2-deoxy-D-glucose and cycloheximide. *Biochemical Journal*, 118: 755-758 (1970)

CABIB, E. and FARKAŠ, V. The control of morphogenesis: an enzymatic mechanism for the initiation of septum formation in yeast. *Proceedings of the National Academy of Sciences* 68-9: 2052-2056 (1971)

FARKAŠ, V.: Biosynthesis of cell walls of fungi. *Microbiological Reviews* 43: 117-144 (1979)

FARKAŠ, V., SULOVÁ, Z., STRATILOVÁ, E., HANNA, R. and MACLACHLAN, G.: Cleavage of xyloglucan by nasturtium seed xyloglucanase and transglycosylation to xyloglucan subunit oligosaccharides. *Archives of Biochemistry and Biophysics* 298: 365-370 (1992)

LORITO, M., FARKAŠ, V., REBUFFAT, S., BODO, B., and KUBICEK, C. P.: (1996). Cell wall synthesis is a major target of mycoparasitic antagonism by *Trichoderma harzianum*. *Journal of Bacteriology*, 178: 6382-6385 (1996)

NEMČOVIČ, M., et al. Induction of conidiation by endogenous volatile compounds in *Trichoderma spp.* *FEMS Microbiology Letters*, 284: 231-236 (2008)

CABIB, E., FARKAŠ, V., KOSÍK, O., BLANCO, N., ARROYO., McPHIE, P.: Assembly of the yeast cell wall: Crh1p and Crh2p act as transglycosylases in vivo and in vitro. *Journal of Biological Chemistry* 283: 29859-29872 (2008)

FARKAŠ, V., TAKEO, K., MACEKOVÁ, D., OHKUSU, M., YOSHIDA, S., SIPICZKI, M.: Secondary cell wall formation in *Cryptococcus neoformans* as a rescue mechanism against acid-induced autolysis. *FEMS Yeast Research* 9: 311-320 (2009)

HRMOVA, M., FARKAŠ, V., HARVEY, A. J., LAHNSTEIN, J. WISCHMANN, B., KAEWTHAI, N. – EZCURRA, I., TEERI, T., FINCHER, G. B.: Xyloglucan xyloglucosyl transferases from barley (*Hordeum vulgare* L.): Substrate specificity, catalytic mechanism, molecular structure and characterization of the acceptor substrate binding site. *FEBS Journal* 276: 437-456 (2009)

KOSÍK, O. et al. Polysaccharide microarrays for high-throughput screening of transglycosylase activities in plant extracts. *Glycoconjugate Journal*, 27: 79-87 (2010)

MAZÁŇ, M., et al. Catalytic properties of the Gas family  $\beta$ -(1, 3)-glucanoyltransferases active in fungal cell-wall biogenesis as determined by a novel fluorescent assay. *Biochemical Journal* 43: 275-282 (2011)

MAZÁŇ, M., BLANCO, N., KOVÁČOVÁ, K., FIRÁKOVÁ, Z., ŘEHULKA, P., FARKAŠ, V., ARROYO, J.: A novel fluorescence assay and catalytic properties of Crh1 and Crh2 yeast cell wall transglycosylases. *Biochem, J.* 455: 307–318 (2013), doi:10.1042/BJ20130354