**Prof. RNDr. Boris Vyskot, DrSc.**

Department of Plant Developmental Genetics, Institute of Biophysics, Czech Academy of Sciences, Brno

SCIENTIFIC BACKGROUND

Boris Vyskot graduated in biology from the Faculty of Science, Masaryk University, in 1974. As an undergraduated student he was awarded by the Academy of Sciences for his diploma thesis on haploid plants. He started as a PhD student at the Institute of Experimental Botany in Olomouc and continued at the Institute of Biophysics in Brno. Since 1975 he has been working at the Institute of Biophysics, first as a PhD student and later, when he finished his PhD (in 1978) as a research worker. Boris Vyskot together with Dr. Milan Bezděk started to study crown-gall tumours and later constructed first transgenic plants in our country. Efforts of Boris Vyskot were focused more on epigenetics and developmental biology. BV has been working on the model dioecious plants since 1992. Using immunostaining techniques he was able to demonstrate differences in DNA replication and chromatin modification between the two X chromosomes in female cells of *Silene latifolia*, which indicates a dosage compensation phenomenon. Similarly he demonstrated a large histoneH4-hypoacetylated heterochromatin of the two Y chromosomes in male nuclei of *Rumex acetosa*. His most original work is obviously epigenetic control of sex determination. Using DNA hypomethylating and histone hyperacetylating drugs he induced sex reversal in *S. latifolia*, i.e., male plants formed bisexual flowers. This trait was inherited with incomplete penetrance and varying expressivity. Holandric pattern of inheritance showed that the sex determining gene(s) are Y-linked. More recently, BV with his colleagues study evolutionary aspects of sex chromosomes. They found accumulation of retroelements and microsatellites on the Y chromosome and stated that different pairs of chromosomes evolved into the sex chromosomes in two closely related dioecious sections within the genus *Silene*. According to WoS data, Professor Vyskot published more than 122 papers in international scientific journals, which were 3,000times cited (h-index 34; citations per paper on average - 26), plus eight monographs and/or textbooks. His team has got a lot of foreign collaborations with joint papers (Prof. Dan Voytas – University of Minnesota, Prof. Gabriel Marais – University of Lyon, Prof. John Pannell – University of Lausanne, etc.). Since 1991 BV is a university teacher at the Masaryk University, he became the full professor in 2001. He presents full courses of Developmental Genetics, Epigenetics, and Gene Engineering at the Masaryk University, Mendel University, and Palacký University. In 1996-2002 he was a member of the Accreditation Committee responsible for university studies of biology and ecology. For this work he was awarded by the Medal of the Ministry of Education. In 2003 he was elected as the fellow of the Learned Society of the Czech Republic. Since 2013 he is a member of the Gremium of the Academy of Sciences for the scientific degree.

EDUCATION

1999 - distinguished degree of DrSc. in Molecular Biology, Academy of Sciences, Prague

1978 – PhD. in Biophysics, Institute of Biophysics, Czech Academy of Sciences, Brno

1974 – MSc., RNDr. in Biology, Faculty of Science, Masaryk University, Brno

PROFESSIONAL EXPERIENCE

since 2001 Full Professor of Genetics and Molecular Biology, Masaryk University, Brno

1995–2000 Associated Professor of Genetics, Masaryk University, Brno

since 1992 The Head of the Department of Plant Developmental Genetics, Institute of Biophysics

since 1975 Research fellow at the Institute of Biophysics, Czech Academy of Sciences

AWARDS AND SERVICE

2017 Medal of Johann Gregor Mendel for achievements in biology

2013-now Member of the Gremium for the distinguished scientific degree DSc.

2012-now Coordinator of the Czech Centre of Excellence for Plant Genetics

2010 Author of a university textbook “Epigenetics”

2004-2008 Chairman of the Section of Biology and Ecology of the Grant Agency of the CAS

2004 Award of the Ministry of Education

2003 Elected the Fellow of the Learned Society of the Czech Republic

since 2002 Editorial Board of the Tropical Biology (Springer) and Zoological Research (China)

2003 President of the International Congress on Plant Embryology, Brno

2002-2006 Member of the Scientific Council of the Palacky University, Olomouc

1999 Invited co-author of a monograph “Sex Determination in Plants” (Bios Oxford)

1999 Author of a university textbook “Introduction to Developmental Biology and Genetics”

since 1999 Member of the Scientific Board for PhD studies in at the Charles University, Palacky

University, Mendel University, and Masaryk University

1998 Visiting professor at Ecole Normale Superieure de Lyon, France

1998-2004 Member of the Accreditation Committee of the Czech Republic

1995-1997 Chairman of the Section of Agricultural Sciences of the Grant Agency CR

1994-1995 Visiting scientist at the Howard Hughes Medical Institute, Ann Arbor, Michigan

1992 – Visiting scientist at the Bordeaux University II, France

**SELECTED PAPERS (last 10 years):**

Hudzieczek V, Cegan R, Cermak T, Bacovska N, Machalkova Z, Dolezal K, Plihalova L, Voytas D, VYSKOT B: Agrobacterium rhizogenes mediated transformation of a dioecious model Silene latifolia. NEW BIOTECHNOLOGY 2018

Rodriguez Lorenzo JL, Hobza R, VYSKOT B: DNA methylation and genetic degeneration of the Y chromosome in the dioecious plant Silene latifolia. BMC GENOMICS

Bacovsky V, Hobza R, VYSKOT B: Technical review: cytogenetic tools to study mitotic chromosomes. Plant Chromatin Dynamics, METHODS IN MOLECULAR BIOLOGY, Springer

Lorenzo Rodriguez JL, Hobza R, VYSKOT B: Epigenetic control of reproductive development. PLANT SYSTEMATICS AND EVOLUTION

Manzano S, Meglas Z, Martinez C, Garcia A, Aguado E, Chileh T, Lopez-Alonso D, Garcia-Maroto F, Kejnovsky E, Siroky J, Kubat Z, Kralova T,VYSKOT B, Jamilena M (2016) Overexpression of a flower specific aerolysin-like protein from the dioecious plant *Rumex acetosa* alters flower development and induces male sterility in transgenic tobacco. PLANT JOURNAL

Hobza R, Kubát Z, Čegan R, Jesionek W, VYSKOT B, Kejnovský E (2015) Impact of repetitive DNA on sex chromosome evolution. CHROMOSOME RESEARCH 23: 561-570

VYSKOT B, Hobza R: The genomics of plant sex chromosomes. PLANT SCIENCE 236: 126-135, 2015

Jimp WOS 3,904

Kováčová V, Žlůvová J, Janoušek B, Talianova M, VYSKOT B: The evolutionary fate of the horizontally transferred agrobacterial mikimopine synthase gene in the genera Nicotiana and Linaria. PLOS ONE doi:

10.1371/journal.pone.0113872, 2014 Jimp WOS 3,702

Šlancarová V, Ždánská J, Janoušek B, Talianová M, Zschach C, Žlůvová J, Široký J, Kováčová V, Blavet H, Danihelka J, Oxelman B, Widmer A, VYSKOT B: Evolution of sex determination systems with heterogametic males and females in Silene. EVOLUTION 67: 3669-3677, 2013 Jimp WOS 4,864

Lexa M, Kejnovský E, Šteflová P, Konvalinová H, Vorlíčková M, VYSKOT B: Qudruplex forming sequences occupy discrete regions inside plant LTR retrotransposons. NUCLEIC ACIDS RESEARCH 42: 968-978, 2013

Jimp WOS 8,278

Kejnovský E, Hobza R, Čermák Z, VYSKOT B: The role of repetitive DNA in structure and evolution of sex chromosomes in plants. HEREDITY 102: 533-541, 2009 Jimp WOS 4,110

Michalovova M, VYSKOT B, Kejnovsky E (2013) Analysis of chloroplast and mitochondrial DNA insertions in the nucleus (NUPTs and NUMTs) of six plant species – size, age and location. HEREDITY 111: 314-320 [IF 3.804]

Slancarova V; Zdanska J; Janousek B; Talianova M; Zschach C; Zluvova J; Siroky J; Kovacova V; Blavet H; Danihelka J; Oxelman B; Widmer A; VYSKOT B (2013) Evolution of sex determination systems with heterogametic males and females in Silene. EVOLUTION 67: 3669-3677 [IF 4.659]

Macas J, Kejnovský E, Neumann P, Novák P, Koblížková A, VYSKOT (2011) Next-generation sequencing resources for the model dioceous plant Silene latifolia. PLOS ONE 6: e27335 [IF =3.730]

Vrbsky J., Akimcheva S., Watson JM., Turner T.L., Daxinger L., VYSKOT B., Aufsatz, W., Riha, K. (2010) siRNA-mediated methylation of Arabidopsis telomeres. PLOS GENETICS 6: e1000986 [IF = 8.517]

Zluvova J., Zak J., Janousek B., VYSKOT B. (2010) Dioecious Silene latifolia plants show sexual dimorphism in the vegetative stage. BMC PLANT BIOLOGY 10: e208 [IF = 4.354]