

## CURICULUM VITAE

### prof. Ing. Jaroslav Doležel, DrSc.

Jaroslav Doležel was born on 22 July 1954 in Olomouc. Professor Doležel is an internationally acclaimed plant geneticist who was one of the first people in the world to develop a method for determining the size of the nuclear genome in plants using flow cytometry and who was crucially instrumental in its standardisation.

During his studies at a secondary school in Olomouc-Hejčín, Jaroslav Doležel and his friends pursued, among other things, beat music and together they founded a rock band.

However, his father, who was in charge of a gardening company in Dub nad Moravou and who worked with plant breeders, made it clear that he expected his son to pursue a different profession – plants. Because this was a time of real socialism, this soon-to-be graduate from secondary school understood that it would be very difficult to make his dreams become reality. As he did not really mind the idea of following in his father's footsteps, he enrolled to study at the University of Agriculture in Brno, present-day Mendel University in Brno.

Upon writing his diploma thesis under Professor Jan Lužný, he was accepted to the Institute of Experimental Botany in the former Czechoslovak Academy of Sciences in Olomouc, where he worked until 2021. The Academy of Sciences appealed to him with its creativity, opportunities to discover new things and communication with colleagues abroad. His interest in plants began to crystallise during his doctoral studies when he was researching hereditary information changes that occurred during in vitro cell cultivation. At this point, he became a professional geneticist. When writing his doctoral thesis on the tissue culture of garlic, he discovered that the properties of some plants acquired from cells grown in a test tube undergo changes. He began to study this variability and decided on what he wanted to pursue in the future.

In 1985 and 1986, he pursued a postdoctoral placement in the ENEA Research Centre in Rome. He then returned to the Institute of Experimental Botany in Olomouc, where he worked as a senior researcher from 1994 to 2013. During this time, he founded the Molecular Cytogenetics and Cytometry Laboratory, which was later renamed the Structural and Functional Plant Genomics Centre. During this period, he also successfully completed the habilitation procedure for the field of Botany at the Faculty of Science, Palacký University in Olomouc, with his habilitation thesis entitled 'The Use of Flow Cytometry for the Analysis of Plant Genomes'. The research carried out at the Structural and Functional Plant Genomics Centre has unravelled the organisation of the genetic information of plants and explained how it governs the growth and development of plants. He was in charge of the Centre between 2013 and 2021. In 2013, he was appointed professor in the field of Molecular Biology and Genetics at Masaryk University.

As well as conducting research at the Institute of Cell Biology, he has been the Research Director of the Haná Region Centre for Biotechnology and Agricultural Research since 2010. The Centre was established thanks to cooperation between Palacký University in Olomouc, the Olomouc divisions of the Crop Research Institute, v.v.i. and the Institute of Experimental Botany at the AS CR, v.v.i. Professor Doležel is, among other things, a member of several study boards of doctoral degree programmes and is active in various grant agencies both in the Czech Republic and abroad.

In addition to research activities, Professor Doležel pursues teaching activities, whether in the Faculty of Sciences at Palacký University in Olomouc, where he gives lectures on 'Genome Anatomy' and 'Cytometry Techniques', or in the Faculty of Sciences at Charles University, where he gives lectures on



'Cytometry'. He has participated in various fellowships in other countries and has taught specialised courses abroad.

He is one of the first people in the world to develop a method for determining the size of the nuclear genome in plants using flow cytometry. He has significantly contributed to the standardisation and wide application of the method, which includes plant genetics and physiology, systematics, taxonomy and population biology. This method has also found an important practical application in plant breeding. Together with his colleagues, he was the first to determine the size of the hereditary information of the banana plant, whose main export variety is currently endangered due to a fungal disease. His laboratory has been researching the hereditary information of the banana plant to this day. His team has significantly contributed towards the mapping of the genome of common wheat.

He established a new branch of genomics, i.e. chromosome genomics, which combines the isolation of chromosomes using flow cytometry and genomics processes. This is then widely applied in the study of the structure and evolution of the hereditary information of plants and during the mapping and isolation of important genes. The acquired knowledge is used by plant biologists and plant breeders, who, thanks to this, have a tool at their disposal that will make it possible in the future for farmers and humanity to produce crops that are more resistant to drought and pests.

Even though his lifelong interest has lain in research, he has always tried to find a practical application for the results obtained. That was part of the reason behind his conception of one of the most successful AV21 Strategy programmes called 'Food for the Future', of which he is the coordinator. The aim of this programme is to popularise scientific results and make the transfer of results into practice faster.

Since 2004, Professor Doležel has been a member of the Learned Society of the Czech Republic. In 2014, he received an award from the Minister of Education, Youth and Sports of the Czech Republic for his extraordinary achievements in research, experimental development and innovation. In 2018, he was given one of the most prestigious Czech awards in the field of science, i.e. the Czech Head for his lifetime contribution to the development of plant genetics and the application of acquired results in practice.

## Structured CV

**Date of birth:** 22 July 1954, Olomouc

### Education

1973 – 1978 The University of Agriculture in Brno, the Faculty of AgriSciences  
1979 – 1983 The Institute of Experimental Botany at the CSAS – research assistantship in the field of Genetics – title CSc.  
2001 AS CR – defence of a doctoral dissertation in the field of Genetics – title DrSc.  
2001 Palacký University in Olomouc, the Faculty of Science – habilitation in the field of Botany  
2013 Masaryk University in Brno, the Faculty of Science – appointed professor – the field of Molecular Biology and Genetics

### Employment history

1983 – 1985 The Institute of Experimental Botany at the CSAS, Olomouc, the Department of Breeding Biotechnologies, research staff member  
1985 – 1986 ENEA Research Institute, C.R.E. Casaccia, Rome, Italy, study stay  
1986 – 1996 The Institute of Experimental Botany at the CSAS / AS CR, the Department of Breeding Biotechnologies in Olomouc, senior research staff member  
1994 – 2013 Molecular Cytogenetics and Cytometry Laboratory, IEB, Head  
1997 – 2021 The Institute of Experimental Botany at the AS CR (IEB), Head of the Olomouc Unit  
2013 – 2021 Structural and Functional Plant Genomics Centre, IEB, Head  
1992 – present Palacký University in Olomouc, the Department of Cell Biology and Genetics at the FSc, secondary employment  
2010 – present The Haná Region Centre for Biotechnology and Agricultural Research, Olomouc, Research Director

### Fellowships abroad

1987 National Nuclear Research Institute, Accra, Ghana (6 weeks)  
1988 Tree Improvement Research Centre, Kitwe, Zambia (4 weeks)  
1989 National Nuclear Research Institute, Accra, Ghana (6 weeks)  
1990 ENEA, C.R.E. Casaccia, Rome, Italy (4 months)  
1993 ENEA, C.R.E. Casaccia, Rome, Italy (3 months)  
1993 Tree Improvement Research Centre, Kitwe, Zambia (3 weeks)  
1994 ENEA, C.R.E. Casaccia, Rome, Italy (3 weeks)  
1996 Universidad Nacional Autonoma de Mexico, Mexico (2 x 3 weeks)  
1997 Malaysian Institute for Nuclear Technology Research, Bangi, Malaysia (3 weeks)  
1999 International Institute of Tropical Agriculture, Ibadan, Nigeria (2 weeks)  
2007 International Institute of Tropical Agriculture, Ibadan, Nigeria (1 week)  
2007 International Institute of Tropical Agriculture, Kampala, Uganda (1 week)

### Pedagogical work

1992 – present Palacký University in Olomouc, FSc, 'Cytotaxonomy and Cytogenetics' semester lecture  
2005 – present Palacký University in Olomouc, FSc, 'Cytometry Techniques' semester lecture  
2005 – present Palacký University in Olomouc, FSc, 'Genome Anatomy' semester lecture  
2015 – present Charles University, Prague, FSc, 1/3 of 'Cytometry' semester lecture

### **Teaching specialised courses abroad**

1993	12th FAO/IAEA Interregional Training Course on the Induction and Use of Mutations in Plant Breeding, Seibersdorf, Vienna, Austria
1994	13th FAO/IAEA Interregional Training Course on the Induction and Use of Mutations in Plant Breeding, Seibersdorf, Vienna, Austria
1994	Theoretical and Practical Course on Plant Flow Cytometry, ENEA, C.R.E. Casaccia, Rome, Italy
1995	14th FAO/IAEA Interregional Training Course on Advances in Plant Mutation Techniques, Seibersdorf, Vienna, Austria
1997	Workshop on DNA Flow Cytometry, Malaysian Institute for Nuclear Technology Research, Bangi, Malaysia
1997	15th FAO/IAEA Interregional Training Course on Advances in Technologies for Induced Mutations in Crops, Seibersdorf, Vienna, Austria
1998	2nd International School of Cytometry, Jagiellonian University, Krakow, Poland
2002	19th National School of Cytometry, Urbino, Italy
2003	Modern Approaches on the Principles and Applications of Cell Sorting and Flow Cytometry, Instituto de Investigaciones Biológicas Clemente Estable, Montevideo, Uruguay
2008	26th National School of Cytometry, Urbino, Italy
2010	Flow Cytometry for Research in Plant Science, Faculty of Science, Mahidol University, Bangkok, Thailand
2013	Flow Cytometry in Plant Science, Namik Kemal University, Faculty of Agriculture, Tekirdag, Turkey
2016	Workshop Plant Cytogenetics, Cytogenomics, Gene Discovery and Crop Improvement, Nanjing Agricultural University, Nanjing, China
2017	Frontiers in Genomics, Center for Genomic Sciences, National Autonomous University of Mexico, Cuernavaca, Mexico

### **Membership in Studies Boards of Doctoral Degree Programmes**

2004 – present	Biophysics doctoral degree course, FSc at Palacký University in Olomouc
2007 – present	Botany doctoral degree course, FSc at Palacký University in Olomouc
2009 – present	Molecular Biology doctoral degree course, FSc at Palacký University in Olomouc
2010 – present	The Anatomy and Physiology of Plants doctoral degree course, FA at Mendel University in Brno
2013 – present	Life Sciences doctoral degree programme, Masaryk University, the Central European Institute of Technology, Brno
2014 – present	Experimental Biology doctoral degree course, FSc at Palacký University in Olomouc

### **Activity in grant agencies**

1995 – 1999	GA CR (a member of the evaluation panel, a member of the studies committee, chair of the sub-studies committee, a member of the sub-studies committee, chair of the sub-studies committee)
2005 – 2013	GA CR (chair of the studies committee, deputy chair of the studies committee, a member of the studies committee, chair of the evaluation panel, deputy chair of the evaluation panel, a member of the evaluation panel)
2016 – present	NAAR, the Ministry of Agriculture's Applied Research Programme working group, a member
2016 – present	MEYS, a specialised advisory body of the Inter-Excellence programme, the Inter-COST sub-programme (a member)
2017 – 2018	ERC (a member of the 'Advanced Grants' evaluation panel)

2018 – present GA CR (chair of the Scientific Board)  
2020 – present GAGJM (a member of the Board)  
2021 – 2022 ERC (chair of the 'Starting Grants' evaluation panel)

#### **Activity in professional associations**

1990 – present The Czech Society for Histo- and Cytochemistry, Brno (a member)  
1997 – present International Society for Analytical Cytology, Northbrook, USA (a member)  
1999 – present European Cytogeneticists Association, Clermont-Ferrand, France (a member)  
2001 – present The Czech Society for Analytical Cytology, Brno (a founding member, chair, deputy chair)  
2005 – present The Genetics Society of America, Bethesda, Maryland USA (a member)  
2006 – present International Society for Horticultural Science, Leuven, Belgium (a member)

#### **Editor of specialised subject books**

Molnár-Láng, M., Ceoloni, C., Doležel, J. (eds.): Alien Introgression in Wheat. Pp. 381. Springer International Publishing, Heidelberg, 2015.  
Leitch, I.J., Greilhuber, J., Doležel, J., Wendel, J.F. (eds.): Plant Genome Diversity, Volume 2. Pp. 353. Springer-Verlag, Wien, 2013.  
Wendel, J.F., Greilhuber, J., Doležel, J., Leitch, I.J. (eds.): Plant Genome Diversity, Volume 1. Pp. 279. Springer-Verlag, Wien, 2012.  
Doležel, J., Greilhuber, J., Suda, J. (eds.): Flow Cytometry with Plant Cells. Pp. 454. Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, 2007.

#### **Membership in the editorial board of a book series**

2001 – 2008 A member of the editorial board of the book series: Plant Genome: Biodiversity and Evolution, Sharma, A.K. and Sharma A. (Eds.). Science Publishers, Inc., Enfield, USA. Volume 1, Part A: Phanerogams (2003), Volume 1, Part B: Phanerogams (Higher Group) (2005), Volume 1, Part C: Phanerogams (Angiosperm-Dicotyledons) (2006), Volume 1, Part D : Phanerogams (Gymnosperm) and (Angiosperm-Monocotyledons) (2006), Volume 1, Part E: Phanerogams – Angiosperms (2008), Volume 2, Part A: Lower Groups (2004) a Volume 2, Part B: Lower Groups (2006).

#### **Editor of special editions of international science journals**

2004 Genome Analysis using Flow Sorted Chromosomes, Doležel, J., Carter, N., Ferguson-Smith, M. (Eds.), Chromosome Research, Vol. 12, No. 1, 2004.  
2010 Genome Size, Greilhuber, J., Doležel, J., Leitch, I.J., Loureiro, J., Suda, J. (Eds.), Journal of Botany, Vol. 2010, 2010.  
2014 Green for Good II, Frébort, I., Doležel, J. (Eds.), Biotechnology Advances, Vol. 32, No. 1, 2013.

#### **Membership in editorial boards of international journals**

1998 – 2013 Biologia Plantarum, Institute of Experimental Botany, Prague  
1995 – 2013 Chromosome Research, Springer, Heidelberg, Germany  
2006 – 2018 International Journal of Plant Genomics, Hindawi Publishing Corp., New York, USA  
2002 – present Journal of Applied Genetics, Institute of Plant Genetics, Poznan, Poland  
2006 – present The Nucleus, Central Institute of Medicinal & Aromatic Plants, Lucknow, India  
2008 – present Genes and Genetic Systems, The Genetics Society of Japan, Mishima, Japan

## Publication activities

More than 350 articles in science journals and more than 40 chapters in science books. To date, these publications have been cited on more than 20,000 occasions  
(h-index: 67)

## Other activities

1987 – 1997	An FAO/IAEA expert in the field of plant genetics and biotechnologies, programmes of technology collaboration with developing countries, Vienna, Austria
1998 – 2007	Chair of the Genetics and Breeding Working Group under the Global Programme for Banana Improvement (PROMUSA), Montpellier, France
2000 – 2006	A member of the Scientific Board of the Genetics and Breeding Department at the Crop Research Institute, Prague
2005 – present	A member of the Steering Committee of the Musa Genomics Consortium, Montpellier, France
2005 – present	A member of the Coordinating Committee of the International Wheat Genome Sequencing Consortium
2006 – present	A member of the Scientific and Educational Board for Biology and Ecology, FSc at Palacký University in Olomouc
2007 – 2011	Deputy chair of the Institute of Experimental Botany Board at the Czech Academy of Sciences, Prague
2007 – 2021	A member of the Institute of Biophysics Board at the AS CR, Brno
2007 – 2021	An elected member of the Academic Assembly of the AS CR
2008 – present	A member of the AS CR Commission for the Defence of Dissertations to be awarded a 'Doctor of Science' degree in the fields of Plant Botany and Physiology
2010 – present	A member of the AS CR Commission for the Defence of Dissertations to be awarded a 'Doctor of Science' degree in the fields of Genetics and Genomics
2013 – 2021	A member of the Biology Centre Board at the AS CR, České Budějovice
2013 – 2021	A member of the Scientific Board of the AS CR, Prague
2014 – present	A member of the Scientific Board of the FSc at Palacký University in Olomouc
2014 – present	A member of the Scientific Board of Mendel University in Brno
2015 – present	Coordinator of the 'Food for the Future' AV21 Strategy programme at the AS CR

## Awards

1999	An award from the Learned Society of the Czech Republic
2004	A bronze medal For Merit in the Development of Palacký University in Olomouc
2004	Elected a full member of the Learned Society of the Czech Republic
2012	The 'Praemium Academiae' award from the AS CR
2013	The 'Leadership Award' from the International Wheat Genome Sequencing Consortium (Bethesda, Maryland, USA)
2014	An award from the Minister of Education, Youth and Sports of the Czech Republic for extraordinary achievements in research, experimental development and innovation in 2014
2018	Czech Head (National Award by the Czech Government)
2021	A special award by the Czech Society for Analytical Cytometry, recognising longtime work leading to fulfilling the goals of the Society