

# ACTA BIOLOGICA CRACOVIENSIA

SERIES **BOTANICA**

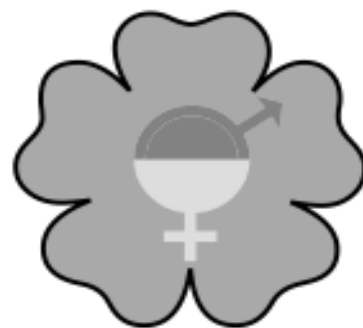
Vol. 47 suppl. 1

2005

ABSTRACTS

XII International Conference  
on Plant Embryology

September 5–7, 2005  
Cracow, Poland



**Polish Academy of Sciences – Cracow Branch**  
**Polish Academy of Arts and Sciences**

# **ACTA BIOLOGICA CRACOVIENSIA**

## **Series Botanica**

**The Official Publication  
of the Biological Commission of the Polish Academy of Sciences – Cracow Branch  
published jointly with the Polish Academy of Arts and Sciences**

**DEVOTED TO PLANT ANATOMY, MORPHOLOGY, CYTOLOGY, GENETICS, KARYOLOGY,  
EMBRYOLOGY, TISSUE CULTURE, PHYSIOLOGY AND BIOSYSTEMATICS**

**ESTABLISHED 1958**

**© Polish Academy of Sciences, Cracow 2005**

**ACTA BIOLOGICA CRACOVIENSIA Series Botanica is published annually  
by the Polish Academy of Sciences – Cracow Branch, ul. św. Jana 28, 31-018 Cracow, Poland**

The edition of this supplement is financed by the Polish Academy of Arts and Sciences

#### **EDITORIAL NOTE**

The abstracts have been printed as received, and no proofreading or corrections have been made. Thus, the contents of the abstracts are entirely the responsibility of the contributors. In the Index, the names of authors (in alphabetical order) are accompanied by the respective page numbers.

Set and printed by KON Tekst Publishing House, Bobrzeckiej 9, 31-216 Cracow, Poland

Technical editor: Wojciech Marcinek

Author of graphic: 

Lesław Przywara
-----------------

ACTA BIOLOGICA CRACOVIENSIA Series Botanica on the Internet  
The home page of *Acta Biologica Cracoviensia Series Botanica* can be found at  
<http://www.ib.uj.edu.pl/abc/abc.htm>

Indexed in *Science Citation Index*, *Current Contents (Agriculture, Biology & Environmental Sciences)*,  
*Biological Abstracts*, *BIOSIS Data*, *Polish Scientific Journals Contents – AGRIC. & BIOL. SCI.*,  
*AGRO-AGEN*.

# ACTA BIOLOGICA CRACOVIENSIA

## Series Botanica

### Editor

ELŻBIETA KUTA

*Department of Plant Cytology and Embryology, Jagiellonian University,  
ul. Grodzka 52, 31-044 Cracow, Poland, Tel./Fax: +48-12-422 81 07, e-mail: e.kuta@iphils.uj.edu.pl*

### Editorial Secretary

MARIA PAJAŁ

*Department of Plant Cytology and Embryology, Jagiellonian University  
ul. Grodzka 52, 31-044 Cracow, Poland, Tel./Fax: +48-12-422 81 07, e-mail: m.pajak@iphils.uj.edu.pl*

### Editorial Board

TATYANA B. BATYGINA. *Komarov Botanical Institute, Department of Embryology and Reproductive Biology, Prof. Popov St. 2, 197376 St. Petersburg, Russia, e-mail: batygina@tb1390.spb.edu*  
Plant embryology

JÓZEF BEDNARA. *Department of Plant Anatomy and Cytology, Maria Curie-Skłodowska University, ul. Akademicka 19, 20-033 Lublin, Poland, e-mail: ancyl@biotop.umcs.lublin.pl*  
Plant embryology

BORUT BOHANEC. *Biotechnical Faculty, University of Ljubljana, Jamnikarjeva 101, 1000 Ljubljana, Slovenia, e-mail: borut.bohanec@bf.uni-lj.si*  
Plant biotechnology

MAURO CRESTI. *Dipartimento di Biologia Ambientale, Sezione Botanica, Università di Siena, Via P. A. Mattioli 4, I-53100 Siena, Italy, Fax: 39-5 77-298860, e-mail: cresti@unisi.it*  
Sexual plant reproduction; pollen biology; pollen tube; pollen-stigma-style-ovule interaction; cytoskeleton

ROMANA CZAPIK. *Department of Plant Cytology and Embryology, Jagiellonian University, ul. Grodzka 52, 31-044 Cracow, Poland, Tel./Fax: +48-12-422 81 07, e-mail: ubczapik@cyf-kr.edu.pl*  
Plant embryology; apomixis

MARIA CHARZYŃSKA. *Department of Plant Anatomy and Cytology, Warsaw University, ul. Miecznikowa 1, 02-096 Warsaw, Poland, e-mail: marlig@biol.uw.edu.pl*  
Cytoembryology of flowering plants; anther and pollen development (structural and molecular aspects)

MARTA DOLEŻAL. *Academy of Physical Education, Chair of Hygiene and Health Protection, Al. Jana Pawła II 78, 81-571 Cracow, Poland, Fax: +48-12-648 17 07*  
General and medical mycology; health promotion; medical microbiology

FRANCISZEK DUBERT. *Department of Plant Physiology, Polish Academy of Sciences, ul. Podłużna 3, 31-239 Cracow, Poland*  
Physiology of plant growth and development

OLGA ERDELSKÁ. *Institute of Botany, Slovak Academy of Sciences, Dúbravská 14, 84223 Bratislava, Slovak Republic*  
Plant embryology; developmental biology

JOHAN GREILHUBER. *University of Vienna, Institute of Botany, Rennweg 14, 1030 Vienna, Austria, e-mail: johann-greilhuber@univie.ac.at*  
Plant karyology

JOHN M. HERR, Jr. *University of South Carolina, Department of Biological Sciences, Columbia, South Carolina 29208, U.S.A., e-mail: herr@biol.sc.edu*  
Plant morphology; anatomy; embryology

BENGT E. JONSELL. *Bergius Botanic Garden, Box 50017, S-104 05 Stockholm, Sweden, e-mail: bengtj@bergianska.se*  
Plant taxonomy; biosystematics; plant geography

ANNA KOLTUNOW. *CSIRO Plant Industry, PO Box 350, Glen Osmond, SA 5064, Australia, e-mail: anna.koltunow@csiro.au*  
Plant reproduction, developmental biology – particularly seed and fruit (cellular and molecular aspects)

JOLANTA MAŁUSZYŃSKA. *Department of Plant Anatomy and Cytology, Silesian University, ul. Jagiellońska 28, 40-032 Katowice, Poland, e-mail: maluszyn@us.edu.pl*  
Plant cytology; cytogenetics

ELISABETH MATTHYS-ROCHON. *RDP, ENS Lyon, 46 Allée d'Italie, 69364 Lyon Cedex 07, France, e-mail: ematthysrochon@efree.fr*  
Plant gametes; pollination; cellular and molecular aspects of fertilization; in vitro development

MARIA OLSZEWSKA. *Department of Cytogenetics and Plant Molecular Biology, University of Łódź, ul. Banacha 12/16, 90-237 Łódź, Poland, e-mail: olszewsk@biol.uni.lodz.pl*  
Plant cytochemistry and cytogenetics

EUGENIA POGAN. *Department of Plant Cytology and Embryology, Jagiellonian University, ul. Grodzka 52, 31-044 Cracow, Poland*  
Plant cytology; embryology

VAL RAGHAVAN. *Department of Plant Biology, The Ohio State University, 318 West 12th Avenue, Columbus, Ohio 43210, USA, e-mail: raghavan@osu.edu*  
Embryology; developmental biology of plants

BARBARA SKUCIŃSKA. *Department of Plant Breeding and Seed Science, The Agricultural University of Cracow, ul. Łobzowska 24, 31-140 Cracow, Poland, e-mail: rrwarzec@cyf-kr.edu.pl*  
Plant tissue and organ culture

KRYSZYNA URBANSKA. *Geobotanisches Institut ETH, Zürichbergstrasse 38, CH-8044 Zürich, Switzerland, e-mail: urbanska@geobot.umnw.ethz.ch*  
Reproductive biology of plants; evolution

MICHIEL T. M. WILLEMSE. *Laboratory of Plant Cell Biology, Wageningen Agricultural University, Arboretumlaan 4, 6703 BD Wageningen, The Netherlands, e-mail: mtm.willemse@hccnet.nl*  
Sexual plant reproduction; biology of lower plants

HONG-YUAN YANG. *Key Laboratory of MOE for Plant Developmental Biology, Wuhan University, Wuhan 430072, China, e-mail: hyyang@whu.edu.cn*  
Experimental manipulation of sexual plant cells; cell and developmental biology; fertilization and embryogenesis

MACIEJ ZENKTELER. *Laboratory of General Botany, Institute of Experimental Biology, Adam Mickiewicz University, Al. Niepodległości 14, 61-713 Poznań, Poland, Fax: +48-61-852 36 15 e-mail: maczen@amu.pl*  
Experimental embryology; plant tissue and organ culture



*XII INTERNATIONAL CONFERENCE  
ON PLANT EMBRYOLOGY  
5-7 SEPTEMBER 2005, CRACOW, POLAND*

---

**Conference organized by:**



The Jagiellonian University, Department of Plant Cytology and Embryology,  
Cracow, Poland

in co-operation with



The Plant Breeding and Acclimatization Institute, Radzików, Poland



The Crop Improvement Centre for Sustainable Agriculture (CICSA)  
at the Plant Breeding and Acclimatization Institute, Radzików, Poland



The Polish Botanical Society,  
Section of Plant Anatomy, Cytology and Embryology, Warsaw, Poland



The Polish Academy of Arts and Sciences,  
Commission of Morphology and Embryology, Cracow, Poland



*XII INTERNATIONAL CONFERENCE  
ON PLANT EMBRYOLOGY  
5-7 SEPTEMBER 2005, CRACOW, POLAND*

---

**Conference sponsored by:**

The Ministry of Sciences and Information Society Technologies, Poland  
The Jagiellonian University, Cracow, Poland  
The Crop Improvement Centre for Sustainable Agriculture (CICSA)  
at the Plant Breeding and Acclimatization Institute, Radzików, Poland  
Carl Zeiss Sp. z o.o., Poznań, Poland  
Olympus Polska Sp. z o.o., Warsaw, Poland  
PRECOPTIC Co., Warsaw, Poland

**Honorary Committee**

- |                           |  |
|---------------------------|--|
| <b>Szczepan Biliński</b>  | - Rector of the Jagiellonian University, Cracow, Poland  |
| <b>Kazimierz Krzemień</b> | - Dean of the Faculty of Biology and Earth Sciences<br>of the Jagiellonian University, Cracow, Poland  |
| <b>Edward Arseniuk</b>    | - Chairman of the Crop Improvement Centre for Sustainable Agriculture<br>(CICSA) and Director of the Plant Breeding and Acclimatization Institute,<br>Radzików, Poland |
| <b>Andrzej Białas</b>     | - President of the Polish Academy of Arts and Sciences, Cracow, Poland   |
| <b>Romana Czapik</b>      | - Professor of the Jagiellonian University, Cracow, Poland   |
| <b>Alicja Górską-Bryl</b> | - Professor of the Nicolaus Copernicus University, Toruń, Poland   |
| <b>Jerzy Haber</b>        | - President of the Polish Academy of Sciences, Cracow Branch,<br>Cracow, Poland  |
| <b>Wincenty Kilarski</b>  | - Chairman of the Division of Natural History of the Polish Academy<br>of Arts and Sciences, Cracow, Poland  |
| <b>Henryk Lach</b>        | - Chairman of the Biological Commission of the Polish Academy<br>of Sciences, Cracow Branch, Cracow, Poland  |
| <b>Zbigniew Mirek</b>     | - Director of the Institute of Botany of the Polish Academy of Sciences,<br>Cracow, Poland   |
| <b>Jerzy Wyrozumski</b>   | - Secretary General of the Polish Academy of Arts and Sciences,<br>Cracow, Poland  |
| <b>Adam Zajac</b>         | - Director of the Institute of Botany, Jagiellonian University,<br>Cracow, Poland  |



---

*XII INTERNATIONAL CONFERENCE  
ON PLANT EMBRYOLOGY  
5-7 SEPTEMBER 2005, CRACOW, POLAND*

---

### **International Advisory Committee**

- |                                 |   |
|---------------------------------|---|
| <b>Beáta Barnabás</b>           | - Hungarian Academy of Sciences, Martonvásár, Hungary             |
| <b>Borut Bohanec</b>            | - University of Ljubljana, Ljubljana, Slovenia                    |
| <b>Mauro Cresti</b>             | - University of Siena, Siena, Italy                               |
| <b>Jaroslava Dubová</b>         | - Masaryk University, Brno, Czech Republic                        |
| <b>Oľga Erdelská</b>            | - Slovak Academy of Sciences, Slovakia                            |
| <b>Anna Koltunow</b>            | - CSIRO Plant Industry, Glen Osmond, Australia                    |
| <b>Erhard Kranz</b>             | - University of Hamburg, Hamburg, Germany                         |
| <b>Elisabeth Matthys-Rochon</b> | - École Normale Supérieure de Lyon, Lyon, France                  |
| <b>Val Raghavan</b>             | - Ohio State University, Columbus, U.S.A.                         |
| <b>Scott D. Russell</b>         | - University of Oklahoma, Norman, U.S.A.                          |
| <b>Vipen K. Sawhney</b>         | - University of Saskatchewan, Saskatoon, Canada                   |
| <b>Meng-xiang Sun</b>           | - Wuhan University, Wuhan, Peoples Republic China                 |
| <b>Michiel Willemse</b>         | - Wageningen Agricultural University, Wageningen, The Netherlands |

### **Local Organizing Committee**

- |  |  |
|--|--|
| <b>Elżbieta Kuta (Chair)</b>           | - Jagiellonian University, Cracow, Poland;<br>Department of Plant Cytology and Embryology        |
| <b>Józef Bednara</b>                   | - Maria Curie-Skłodowska University, Lublin, Poland;<br>Department of Plant Anatomy and Cytology |
| <b>Elżbieta Bednarska</b>              | - Nicolaus Copernicus University, Toruń, Poland;<br>Department of Cell Biology                   |
| <b>Jerzy Bohdanowicz</b>               | - University of Gdańsk, Gdańsk, Poland;<br>Department of Genetics and Cytology                   |
| <b>Maria Charzyńska</b>                | - University of Warsaw, Warsaw, Poland;<br>Department of Plant Anatomy and Cytology              |
| <b>Romana Izmailow</b>                 | - Jagiellonian University, Cracow, Poland;<br>Department of Plant Cytology and Embryology        |
| <b>Andrzej Jankun</b>                  | - Jagiellonian University, Cracow, Poland;<br>Department of Plant Cytology and Embryology        |
| <b>Andrzej Joachimiak</b>              | - Jagiellonian University, Cracow, Poland;<br>Department of Plant Cytology and Embryology        |
| <b>Maria Kwiatkowska</b>               | - University of Łódź, Łódź, Poland; Department of Cytophysiology                                 |
| <b>Jolanta Maluszyńska</b>             | - Silesian University, Katowice, Poland;<br>Department of Plant Anatomy and Cytology             |
| <b>Anna Majewska-Sawka</b>             | - Plant Breeding and Acclimatization Institute, Bydgoszcz, Poland                                |
| <b>Maria Pająk</b>                     | - Jagiellonian University, Cracow, Poland;<br>Department of Plant Cytology and Embryology        |
| <b>Marzena Popielarska (Secretary)</b> | - Jagiellonian University, Cracow, Poland;<br>Department of Plant Cytology and Embryology        |
| <b>Jan J. Rybczyński</b>               | - Polish Academy of Sciences, Warsaw, Poland; Botanical Garden                                   |
| <b>Maciej Zenkteler</b>                | - Adam Mickiewicz University, Poznań, Poland;<br>Laboratory of General Botany                    |
| <b>Janusz Zimny</b>                    | - Plant Breeding and Acclimatization Institute, Radzików, Poland                                 |

# ACTA BIOLOGICA CRACOVIENSIA

## Series Botanica

### CONTENTS

Volume 47, suppl 1, 2005

#### **Lectures**

B. Barnabás, F. Bakos, A. Fehér, K. Jäger – Induced embryogenesis via egg cell activation in cereals	15
T. Dresselhaus, S. Amien, K. Srilunchang, E. Thiemann, M. L. Márton – Female gametophyte functions in maize involve pollen tube guidance and discharge	16
J.-M. Escobar-Restrepo, N. Huck, J. Gheyselinck, J. Moore, M. Federer, U. Grossniklaus – Cell-cell interactions during double fertilization	17
X. Gou, T. Yuan, X. Wei, S. D. Russell – Expressed gene products of the dimorphic sperm cells of <i>Plumbago zeylanica</i>	18
J. J. Harada, B. Le, A. Bui, L. Kwong, J. Pelletier, S. L. Stone, S. A. Braybrook, S. Park, R. L. Fischer, R. B. Goldberg – Regulatory genes that control embryo development	19
J. Jendroška – Legal framework for controlling GMOs	19
G. Jürgens – Apical-basal axis formation in <i>Arabidopsis</i> early embryogenesis	20
E. Kranz, H. Lörz, T. Okamoto – Gene- and protein expression in isolated gametes, zygotes, apical and basal cells of the two-celled embryo of maize	21
J. Kumlehn, U. Hähnel, L. Altschmied, H. Bäumlein – Studies on autonomous embryo formation from Salmon wheat egg cells	22
E. Matthys-Rochon – Secreted molecules and their role in embryo formation in plants	23
V. Raghavan – Somatic embryogenesis in <i>Arabidopsis</i> : Where do we go from here?	24
S. Romagnoli, G. Cai, M. Cresti – Trafficking of pollen tube organelles along the cytoskeleton	25
V. K. Sawhney, I. S. Sheoran, K. Sproule – Proteomics of anther and pollen development in tomato and <i>Arabidopsis</i>	26
R. J. Scott – Role of genomic imprinting in endosperm development	27
T. Twardowski – Legal and social aspects of biotechnology development	28
D. Twell, S.-A. Oh, A. Durbarry, A. Johnson, T. Wardle, A. Smertenko, P. Hussey, N. Rotman, J.-E. Faure, F. Berger – Regulating cell division events during male gametophyte development	29
M. Zenkteler, M. Wojciechowicz, A. Bagniewska-Zadworna – Recent embryological investigations of basket willow ( <i>Salix viminalis</i> ) as a source of biomass	30

## **Oral Presentation**

N. Ahmad, P. Martin – Floral development and embryology in <i>Lomandra longifolia</i>	33
V. Brukhin, A. Thomann, M. Dieterle, J. Gheyselinck, P. Genschik, U. Grossniklaus – The role of the ubiquitin/ 26S proteasome pathway in plant morphogenesis and embryogenesis	34
B. Chudzik, M. Kościńska-Pająk, R. Śnieżko – Immunodetection of arabinogalactan proteins (AGPs) in apomictic ovules of <i>Chondrilla juncea</i> L.	35
S. Coimbra, J. Almeida, L. Monteiro, L. G. Pereira, M. Sottomayor – Arabinogalactan proteins as molecular markers for generative cell differentiation and development in <i>Arabidopsis thaliana</i>	36
R. Czapik – Non-functional embryo sacs in apomictic and sexually reproducing plants	36
A. Dobrovolskaya, G. Rodionova, V. Rakitin, L. Kovaleva – Sporophyte control of petunia ( <i>Petunia hybrida</i> L.) male gametophyte development	37
J. Dubová, H. Ryšavá, M. Hájková, B. Brzobohatý – Development of <i>Arabidopsis</i> and tobacco seedling shoot apical meristem after <i>ipt</i> Transcriptional activation IN pOp/LhG4 system	38
N. Dupláková, D. Reňák, D. Svoboda, D. Twell, D. Honys – Arabidopsis Gene Family Profiler – a new easy-to-use family-oriented gene expression database	39
T. Eeckhaut, S. Werbrouck, J. Wielowska, J. van Huylbroeck – <i>Araceae</i> embryos as tools for ploidy manipulation and somatic fusion	40
A. Folck, H. Wieser, H. Lörz, D. Becker – Silencing the [alpha]-Gliadins in wheat	40
N. Imin, M. Nizamidin, N. Schultz, P. Holmes, J. J. Weinman, T. Kerim, F. de Jong, K. E. Nolan, R. J. Rose, B. G. Rolfe – <i>Medicago truncatula</i> : A model plant for studying somatic embryogenesis and organogenesis in legumes	41
J. C. Jiménez-López, S. Morales, J. de Dios Alché, M. I. Rodríguez-García – Profilin variability in olive ( <i>Olea europaea</i> L.) pollen cultivars	41
S. de F. Maraschin, G. Gaussand, M. Caspers, A. Pulido, A. Olmedilla, A. Graner, M. Wang – Androgenic switch in barley microspores	42
A. Mięka, A. Fiuk, J. J. Rybczyński – Induction, maintenance and preservation of embryogenic competence of <i>Gentiana cruciata</i> L. cultures	43
R. Mól – How pollination affects the egg cell maturation in maize?	43
A. Noble, A. Górská-Brylarska – Different categories of cytoplasmic "nucleoloids" in larch microsporocytes involved in pre-rRNA processing and pre-mRNA splicing	44
A. Pulido, A. Hernando, F. Bakos, E. Méndez, M. Devic, B. Barnabás, A. Olmedilla – Hordeins are present in the gametophytic development and in pollen embryogenesis of <i>Hordeum vulgare</i> L.	44
R. Rawat, A. K. Bhatnagar – Flowering and pollination in <i>Garcinia indica</i>	45
J. Rojek, E. Kuta, J. Bohdanowicz – In vitro culture promotes partial autonomous endosperm development in unfertilized ovules of wild-type <i>Arabidopsis thaliana</i> var. Columbia	46
S. Sprunck, B. Bellmann, M. Gebert, U. Baumann, T. Dresselhaus – From wheat to <i>Arabidopsis</i> : discovery and analysis of novel egg cell specific genes	47
M. Tersí, I. N. Xynias, E. Gouli-Vavdinoudi, D. G. Roupakias – Effect of colchicine application on anther culture response in F <sub>1</sub> durum × bread wheat hybrids	48
E. Wiśniewska, A. Majewska-Sawka – Protoplast regeneration into plants: do the cell walls play any role?	48



## Posters

- T. B. Batygina, G. E. Titova, I. I. Shamrov, E. A. Bragina, V. E. Vasilyeva, I. V. Rudsky – Plant stem cells in terms of embryology 51
- P. T. Bednarek, R. Orłowska, R. M. D. Koebner, J. Zimny – A general approach to uncover the origin of tissue culture-induced variation in barley (*Hordeum vulgare* L.) 51
- A. Biskup, R. Izmailow – Nuclear endosperm and endosperm haustoria in *Linum usitatissimum* L. 52
- I. Smykalova, P. Smirous jr., M. Kubosiova, N. Gasmanova, M. Griga – Dihaploid production via anther culture in Czech breeding lines of caraway (*Carum carvi* L.) 52
- M. Błocka-Wandas, K. Odrzywól, A. J. Joachimiak – Pollen development in *Rumex acetosa* L., a plant with XX/XY<sub>1</sub>Y<sub>2</sub> sex chromosome system and female-biased sex ratio 53
- A. Chuda, D. Madej, A. Adamus – Obtaining interspecific hybrids of *Allium cepa* and *Allium roylei* via embryo rescue techniques 54
- J. Feciková, D. Reňák, D. Honys, V. Čapková – Association of stored messenger ribonucleoprotein particles with the cytoskeleton in tobacco male gametophyte 54
- M. A. Germanà, M. Micheli, A. Standardi – Preliminary results on ex-vitro conversion of encapsulated somatic embryos of *Citrus reticulata* Blanco (cv. Mandarino Tardivo di Ciaculli) 55
- H. Golczyk, R. Hasterok, A. Joachimiak – Chromosome arrangement in meiotic and mitotic cells of the ring-forming varieties of *Rhoeo spathacea* (Swartz) Stearn. 56
- G. Góralski, M. Popielarska, H. Ślesak, D. Siwińska, M. Batycka – Organogenesis in in vitro culture of *Actinidia deliciosa* L. cv. Hayward endosperm 56
- A. Grabowska-Joachimiak, E. Śliwińska, U. Skomra – Male and female genome size in two *Humulus* species 57
- C. M. Grilli, R. Zanier – Self incompatibility in different *Crocus* species and in *Hermodactylus tuberosus* (Iridaceae) 57
- T. Hazubska, K. Bojarczuk – Micropropagation of *Picea abies* (L.) Karst and *P. omorika* (Pancić) Purk. by somatic embryogenesis 58
- D. Honys, S.-A. Oh, B. Šolcová, J. A. Johnson, R. Boudová, J. Douda, D. Twell – New tools for the manipulation of microspore gene expression 58
- B. Jungmannová, J. Řepková – Identification of interspecific barriers in the genus *Lotus* 59
- I. Karcz, E. Kuta – Female gametophyte development of *Leucanthemum ircutianum* DC in unpolinated ovules cultured in vitro 60
- J. Karcz, B. Kolano, J. Małuszyńska – SEM studies on fruit and seed of some *Chenopodium* L. species (Chenopodiaceae) 61
- S. Kawano, Y. Kazama, A. Koizumi, A. Ageez, W. Uchida – Floral modification and expression of floral homeotic genes in the smut-infected female plants of *Silene latifolia* 62
- T. Kawashima, X.-J. Wang, Y. Bi, K. Weterings, R. B. Goldberg – Cis-regulatory regions responsible for suspensor-specific transcription 62
- D. Kazlauskienė – Relationship between pre-anthesis development and seed formation in spring rape (*Brassica napus* L.) 63
- N. Skrbo, M. Nowack, A. Schnittger, G. Jürgens, M. Hülskamp, R. B. Aalen, P. E. Grini – Genetic analysis of gametophytic parental effect mutants in *Arabidopsis* 63
- K. Kellner, E. Kuta – Is *Viola tricolor* L. from calamine waste heaps in the vicinity of Olkusz (Southern Poland) a metal-tolerant taxon? 64

R. Konieczny, J. Świerczyńska, A. Czaplicki, J. Bohdanowicz – Temporal and spatial distribution of pectin and arabinogalactan epitopes during androgenesis from wheat anther callus	65
A. Kormuták, G. Libiaková, J. Salaj, J. Libantová, J. Moravčíková, B. Vooková – SDS-PAGE protein profiles of developing seeds of <i>Abies concolor</i>	65
D. Korzonek, M. Klein – Application of fluorescent method to fast evaluation of interspecific crossing ability in <i>Rhododendron</i>	66
M. Kościńska-Pajak, B. Chudzik, B. Zarzyka, J. Pawelec – Structural and biochemical changes in the micropylar region of <i>Chondrilla juncea</i> apomictic ovule	66
S. F. Koval, V. S. Koval – Near isogenic lines for study spike morphology in bread wheat	67
J. Kozdój – The length of anther as an indicator of pollen developmental stage of triticale ( $\times$ <i>Triticosecale</i> Wittmack)	67
M. Kozieradzka-Kiszkurno, J. Świerczyńska, J. Bohdanowicz – Microtubular cytoskeleton of embryo-suspensor in <i>Sedum acre</i> L.	68
D. Krzyżanowska, U. Kowalska, W. Kiszczak, K. Górecka – Culture of carrot isolated microspores – induction of divisions	68
E. U. Kurczyńska, A. Ujczak, M. D. Gaj – Histological analysis of direct somatic embryogenesis of <i>Arabidopsis thaliana</i> (L.) Heynh.	69
B. H. Le, A. Q. Bui, J. Pelletier, L. Kwong, Z. Fang, S. Horvath, G. N. Drews, R. L. Fischer, J. K. Okamoto, J. J. Harada, R. B. Goldberg – Identification of seed-specific transcription factors from a global analysis of gene activity during the <i>Arabidopsis</i> life cycle	70
J. Leśniewska, B. Och, M. Charzyńska – Tapetal raphides of <i>Tradescantia bracteata</i> : the strategy of their transport from anther to stigma	70
Ch.-Y. Liang, K.-F. Xia, X.-L. Ye – Calcium distribution in anthers of non-pollen type male-sterile rice ( <i>Oryza sativa</i> L.) and its maintaining line during anther development	71
J. Ning, M. Sun – Identification of genes differentially expressed in tobacco egg and zygote suggests zygotic genome activation occurs soon after fertilization	71
J. Marciniuk – Characteristics of chosen species pollen of genus <i>Taraxacum</i> Wigg.	72
M. Maślanka, A. Bach – Effect of abscissic acid on the morphology of tulip ( <i>Tulipa</i> L.) somatic embryos	73
F. Matzk, S. Prodanovic, A. Czihal, J. Tiedemann, D. Koszegi, F. Arzenton, F. Blattner, J. Kumlehn, L. Altschmied, I. Schubert, A. Johnston, U. Grossniklaus and H. Bäumlein – Apomixis – preliminary lessons from wheat egg cells, <i>Poa pratensis</i> , <i>Hypericum perforatum</i> and <i>Arabidopsis thaliana</i>	73
M. Mosiolek, A. Pedrosa-Harand, D. Schweizer, A. J. Joachimiak – Sex chromatin and Y chromosomes in dioecious species, <i>Rumex acetosa</i> L.	74
K. Musiał, M. Kościńska-Pajak, E. Śliwińska, T. Ilnicki – Embryo and endosperm in <i>Rudbeckia bicolor</i> Nutt. – resumption of study	75
A. Niklas-Nowak, P. Nowaczyk – Hybrids of <i>Capsicum frutescens</i> L. $\times$ <i>Capsicum annuum</i> L. as a material for androgenic haploids production	75
P. Nowaczyk, A. Kisiąła, D. Olszewska – In vitro anther culture of <i>Capsicum frutescens</i> L. red- and yellow-fruited forms	76
P. Nowaczyk, L. Nowaczyk – Polyembryonic seeds of tomato ( <i>Lycopersicon esculentum</i> Mill.) as a source of homozygous diploids?	76

D. Olszewska, I. Jędrzejczyk, P. Nowaczyk – Androgenesis in soft – flesh <i>Capsicum frutescens</i> L. genotypes	77
J. Pietrusiewicz, M. Domaciuk, J. Bednara – Different pathways of embryo sac development in <i>Galinsoga parviflora</i> Cav.	77
M. Pilarska, E. Kuta – Reproductive processes in the yellow zinc violet [ <i>Viola lutea</i> Huds. ssp. <i>calaminaria</i> (Ging.) Nauenb.] – a metal-tolerant taxon	78
B. Płachno, P. Świątek, A. Jankun – Special placenta structures of <i>Utricularia sandersonii</i> Oliver	79
Z. Põnya, W. Wang, M. Cresti – A technique to study polarity issues during early steps of zygote development in wheat ( <i>Triticum aestivum</i> L.)	79
A. Pulido, J. A. Traverso, A. Chueca, M. I. Rodríguez-García, A. Olmedilla – First approaches to the characterization of one h-type thiorredoxin possibly involved in Olive ( <i>Olea europaea</i> L.) tree pollen-pistil interaction	80
D. Reňák, N. Dupláková, D. Honys – Role of transcription factors in early male gametophyte development of <i>Arabidopsis thaliana</i>	80
M. Siwek, R. Izmailow – Embryo development in <i>Cardaminopsis arenosa</i> (L.) Scop. from polluted sites	81
D. Skálová, N. Gasmanová, A. Lebeda, B. Navrátilová – Interspecific hybridization between <i>Cucumis sativus</i> and wild <i>Cucumis</i> species through embryo culture	81
V. Sokolov, T. Tarakanova, I. Belova, E. Abdyrahmanova – Genome imprinting, development of grains and seed-setting in apomictic maize × gamagrass hybrids	82
M. P. Solntseva – More about the sources of polyembryony	82
C. G. Suárez, P. Barral, J. de Dios Alché, R. Rodríguez, M. I. Rodríguez-García – Ole e 10, a 1,3-β-glucanase from olive pollen, co-localizes to callose during pollen tube growth	83
C. Suárez, I. Serrano, H. F. Rapoport, A. Olmedilla, M. I. Rodríguez-García – Behaviour of stigma before and after pollination in olive tree ( <i>Olea europaea</i> L.)	83
E. Szczuka, E. Skórzyńska-Polit, B. Pawlikowska-Pawłęga, J. Sobieska, A. Gawron – Immunolocalization of lipoxygenase in the anther of <i>Gagea lutea</i> (L.) Ker.-Gaw.	84
T. Szkutnik – Tendency towards facultative apomixis in breeding lines of sugar beet ( <i>Beta vulgaris</i> L., <i>Chenopodiaceae</i> )	84
J. Ślusarczyk, A. Wierzbicki, T. Tykarska, A. Jerzmanowski, M. Kuraś – The sporogenous tissue and tapetum of transgenic tobacco plants ( <i>Nicotiana tabacum</i> L.) with different levels of the histone H1 variants	85
T. Takáč, A. Preťová – Changes in isoenzyme pattern of chosen enzymes during flax zygotic embryogenesis	86
S. Talwar, A. K. Bhatnagar – Pollination biology of <i>Terminalia chebula</i>	86
A. Trojanowska, A. Ujczak, M. D. Gaj, M. Mędrak – Searching for <i>Arabidopsis thaliana</i> (L.) Heynh. hormone-response mutants impaired in somatic embryogenesis	87
A. Ujczak, M. Kwaśniewski, M. D. Gaj – Expression of <i>LEAFY COTYLEDONS</i> genes during somatic embryogenesis induced in <i>Arabidopsis thaliana</i> (L.) Heynh.	87
M. K. Wojciechowicz, J. Krysiuk, M. Zenkteler, E. Zenkteler, A. Bagniewska-Zadworna – Callus induction on leaves of <i>Salix viminalis</i> clones	88
X.-L. Ye, Ch.-H. Wu, Ch.-Y. Liang – In vitro embryo sac development via ovule cultures in <i>Doritis pulcherrima</i>	88

X.-L. Ye, Q.-W. Zeng, Y.-Q. Wang, Ch.-Y. Liang – Embryo sac development on facultative apomixis in <i>Wooyoungia septentrionalis</i> (Dandy) Law	89
N. A. Zhinkina – Towards embryology of Campanulaceae in connection with family systematics	89
K. Zienkiewicz, D. J. Smoliński, E. Bednarska – Distribution of poly(A)RNA and splicing machinery elements in mature pollen grains and <i>in vitro</i> growing pollen tubes of <i>Hyacinthus orientalis</i> L.	90
I. Żur, E. Dubas, M. Filek, J. Biesaga-Kościelniak, E. Golemiec, M. Wędzony – Influence of growth regulators level on the initial phases of androgenic induction in isolated microspore culture of triticale ( $\times$ <i>Triticosecale</i> Wittm.)	91