



**Kornelia Polok**

**PhD in Biology, Plant Genetics**

# **PORTFOLIO**

**Department of Genetics  
University of Warmia and Mazury in Olsztyn**

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**Address:** 19a Hozjusza Street  
11-041 Olsztyn  
Poland

**Tel:** +48 89 523 44 29

**Mobile:** 692 401 481

**Email:** [kpolok@uwm.edu.pl](mailto:kpolok@uwm.edu.pl)  
<http://www.uwm.edu.pl/katgenbiol>

## Personal statement

*Genetics is not only a set of tools but it is a coherent and fruitful way of thinking. Genetics is our past and our future. This evolutionary perspective enables to understand different backgrounds, manage resources and set new directions.*

## Education

- 1996** PhD in Biology, Genetics. Faculty of Biology and Environmental Protection, Silesian University, Katowice, Poland.  
**PhD thesis:** "Application of doubled haploids of *Hordeum vulgare* L. to select homozygotes of a heterotic hybrids' phenotype".  
**Supervisor:** Dr. hab. Iwona Szarejko  
**Reviewers:** Prof. dr. hab. Tadeusz Adamski, Prof. dr. hab. Roman Zielinski  
**Abstract:** Doubled haploids derived from heterotic F<sub>1</sub> generations of crosses between mutants were used to explain mechanisms of heterosis in barley. Development of DH lines yielded at the level of heterotic hybrids excluded the overdominance as the underlying mechanism. Distributions, genetic parameters and effective factors indicated clearly that heterosis was caused by additive interaction of dominant alleles from different loci.
- 1989** MSc in Biology, Faculty of Biology and Environmental Protection, Silesian University, Katowice, Poland.  
**MSc thesis:** "Analysis of isoenzyme variation in callus cultures of *Arabidopsis thaliana* (L.) Heynh".  
**Supervisor:** Dr. Malgorzata Gaj  
**Review Committee:** Prof. dr hab. Tadeusz Czechowicz, Prof. dr hab. Lesław Badura  
**Abstract:** Callus, regenerated plants (R<sub>1</sub>) and their offspring (R<sub>2</sub>, R<sub>3</sub>) obtained by two culture systems were assessed using seven enzymatic systems. Most variation observed in callus and regenerants was epigenetic, the extent of changes depended on a culture system. However, 20-30% changes were heritable in further generations thus representing somaclonal variation. A shift in citric dehydrogenase was lethal and existed only in heterozygotes.
- 1984-1989** Biological studies, Faculty of Biology and Environmental Protection, Silesian University, Katowice, Poland. The Diploma with a reward.

## Fellowships and Awards

- 2011** **2 weeks.** Tatra National Park.  
**Host:** Dr. Pawel Skawinski. Dr. Marcin Guzik  
**Area:** Management of natural resources.  
**Financed by:** Structural Funds, Human Resources "Extending and improving of educational potential as well as increasing teaching levels and staff competencies.

## Fellowships and Awards

- 2011**      **2 weeks.** University of Ljubljana, Biotechnical Faculty, Slovenia.  
**Host:** Prof. Ivan Kreft  
**Area:** Research and educational co-operation.  
**Financed by:** Structural Funds, Human Resources “Extending and improving of educational potential as well as increasing teaching levels and staff competencies.
- 2008**      **2 months.** Foundation for Research and Technology Hellas (FORTH) and the University of Crete, Greece.  
**Supervisor:** Prof. Mike Kokkinidis  
**Area:** Bioinformatics with special emphasis on protein modelling.  
**Financed by:** 6 Framework Programme, Marie Curie Transfer of Knowledge.
- 2008**      **2 months.** Plant Molecular Biology Laboratory, Wageningen University, Netherlands.  
**Supervisor:** Prof. Rene Geurts  
**Area:** Identification of genes in pea, nodulation, expression analysis.  
**Financed by:** 6 Framework Programme, Marie Curie Transfer of Knowledge.
- 2007, 2008** **5 months.** Life Science Research Biocentre, University of Dundee, Invergowrie, Dundee, UK.  
**Supervisor:** Prof. Hans-Jorg Jacobsen  
**Area:** Transgenic peas.  
**Financed by:** 6 Framework Programme, Marie Curie Transfer of Knowledge.
- 2005, 2006** **2 months.** Life Science Research Biocentre, University of Dundee, Invergowrie, Dundee, UK.  
**Supervisor:** Prof. Andrew Flavell  
**Area:** Development of transposon technology in *Lolium* and *Pinus*.  
**Financed by:** 6 Framework Programme, Marie Curie Transfer of Knowledge.
- 1997**      **5 months.** Plant Molecular Biology Laboratory, Institute of Bioorganic Chemistry PAN, Poznan.  
**Supervisor:** Prof. Andrzej B. Legocki, Dr Jan Podkowinski  
**Area:** Molecular techniques in general – PCR, sequencing, transformation.  
**Financed by:** Polish Network of Cell and Molecular Biology UNESCO/PAN.

## Specialized Training and Certificates

- Computer**    Basic programming
- English**    First Certificate in English (FCE), Test of English as Foreign Language (TOEFL)
- French**     Certificate d'études de langue française – 1<sup>st</sup> degree of the Paris School

## Employment History

- 1998-2012 Assistant Professor.** Department of Genetics, University of Warmia and Mazury in Olsztyn, Poland.  
**Department Head:** Prof. dr. hab. Roman Zielinski ([rzielin@uwm.edu.pl](mailto:rzielin@uwm.edu.pl))  
**Achievements:** Coordinated research, established international co-operation, managed fellows visiting a lab, organized and managed laboratories, organized field experiments, developed a plan of experimental activities, standardized protocols and research work, trained younger staff, established and taught 9 courses, managed finances and developed a Department budget.
- 1996-1998 Assistant Professor.** Department of Genetics, Szczecin University, Szczecin, Poland.  
**Department Head:** Prof. dr. hab. Roman Zielinski ([rzielin@uwm.edu.pl](mailto:rzielin@uwm.edu.pl))  
**Achievements:** Coordinated a research project on grasses, developed a molecular laboratory, set up international cooperation, applied for projects within INCO-COPERNICUS (4 Framework Programme), taught Genetics, supervised students.
- 1989-1996 Biologist.** Department of Genetics, Silesian University, Katowice, Poland.  
**Department Head:** Prof. dr. hab. Mirosław Maluszynski  
**Achievements:** Developed barley DH lines, studied mechanisms of heterosis, prepared materials for classes, made electrophoretic analyses, made *in vitro* cultures (anther, microspores, somatic tissues, protoplasts), taught Genetics, prepared conference materials (1994).
- 1987-1989 Technician.** Department of Genetics, Silesian University, Katowice, Poland.  
**Department Head:** Prof. dr. hab. Mirosław Maluszynski  
**Achievements:** Developed *in vitro* cultures of *Arabidopsis thaliana*, prepared materials for students, took part in administration activities.

## Honours

- 2008** The Dean of the Faculty of Biology Award for scientific achievements.
- 2003** The Rector of Warmia and Mazury University Award for supervising the Student's Association of geneticists "GENIUS".
- 2002** "Centre of Excellence in Modern Biotechnology" - the Ministry of Science Award for achievements in scope of European Framework Programmes.
- 1996** The 2<sup>nd</sup> degree Individual Award of the Rector of the Silesian University for research on heterosis in scope of the doctoral thesis.

## Research Profile

- **Areas**
  - ① Molecular Evolution and Phylogenesis of Plants.
  - ② Population Genetics and Genomics.
  - ③ Plant Biotechnology and Genomics with special emphasis on:
    - Genome Mapping
    - Inheritance of Quantitative Characters
    - Induced Genetic variation
    - Genetic Improvement of Underutilized Crops.
  - ④ Technology development including new molecular marker systems, new methodological approaches, optimizing existing protocols (e.g., transposons), Bioinformatics.

- **Research Objects**
  - ① **Bacteria:** *Mycobacterium tuberculosis*
  - ② **Animals:**
    - Mollusks: *Dreissena polymorpha*
    - Leeches: 12 species from Glossiphoniidae, Haementeriinae, Theromizinae, Piscicolinae, Erpobdellinae

### PLANTS

- ③ **Hepathophyta:**
  - Liverworts from the genus *Pellia* (7 species) and *Aneura* (4 species)
  - Mosses from the genus *Sphagnum* (3 species)
- ④ **Coniferophyta:** *Pinus sylvestris*, *P. mugo*, *P. uliginosa*, *P. uncinata*, *P. cembra*, *P. pumila*.
- ⑤ **Magnoliophyta:**
  - Fabaceae: *Pisum sativum*, *Medicago truncatula* (as a model in studies on *P. sativum*)
  - Poaceae: *Lolium* (7 species), *Hordeum vulgare*, *Avena strigosa*; in comparative studies also *Festuca pratensis*, *Poa pratensis*, *Calamagrostis arundinacea*, *Triticum aestivum*, *Secale cereale*, *Triticale*, *Avena sativa*
  - Others: *Polygonatum* (3 species), *Rosa* (13 species), *Arabidopsis thaliana* (earlier studies on *in vitro* cultures, at present as a model in comparative analyses)

- **Techniques**
  - ① **Classical Genetics:** Crossing experiments, field experiments, mutagenic treatment (chemical and physical)
  - ② **Molecular Genetics and Genomics:** Protein electrophoresis (starch, PAGE), DNA and RNA isolation, Southern blotting, PCR, DNA markers (RFLP, RAPD, ISJ, SSR, AFLP, SSAP, STS, B-SAP), DNA sequencing, gene isolation, library construction, primer design, transformation, genetic mapping, comparative mapping, expression analysis (cAFLP, RT-PCR), recently has been working on establishment microarray technology in the Department of Genetics, UWM
  - ③ **Quantitative Genetics:** Field experiments in randomized and non-randomized designs, heterosis breeding, estimation of genetic parameters based on different populations (m, l, d, h, l), simple and composite interval mapping of QTLs
  - ④ **Cytogenetics:** Mitotic and meiotic chromosome staining, *in situ* hybridization (FISH, GISH), cytophotometry
  - ⑤ **In vitro cultures:** Callus cultures from somatic tissues (leaves, stems), somatic embryogenesis in *A. thaliana*, immature embryos (cereals, legumes), some experience in protoplast cultures (*Datura*, *Nicotiana*), doubled haploid production through anther cultures and wide crosses in cereals, microspore cultures in cereals, cultures of *Pellia*
  - ⑥ **Statistics:** Basic statistics, multiple regression, ANOVA/MANOVA, multivariate exploratory techniques (cluster analysis, multidimensional scaling, PCA, canonical analysis), general linear models, data mining, probability
  - ⑦ **Bioinformatics:** DNA and protein alignments, protein structure predictions, gene annotation
  - ⑧ **Software:**
    - Basic programmes: MS Office Professional, MS Publisher, Open Office, Java, html and CSS
    - Graphic: Corel Graphic Suite, Corel Technical Designer, Right Hemisphere
    - Statistic: MCSTAT, STATISTICA with own macros
    - Mapping: MapMaker, MAPL98, Carthagene, WinQTL-Carthographer, JoinMap, MapDisto, MapDraw, AFLmap, CC2
    - Population genetic: POPGENE, NTSYS, MANTEL, NJ, Arlequin, AFLSim
    - Evolutionary: Phylip, CLUSTAL, GenDoc, BLAST
    - Molecular: FastPCR, WinSerialCloner, OLIGO, Cn3D, Modeller, RasMol.
    - Bases: NCBI, Gramene, SwissProt

•Most important results

① **Evolution of the genus *Lolium* L:**

- Using a battery of 2894 molecular markers clarified timing and phylogenesis of species within the genus. Demonstrated the origin from the *Schedonorus*, division into two clades, Perenne and Temulentum and provided data about independent evolution of self-pollination within both clades.
- Based on genetic diversity analyses, genetic map and QTL mapping demonstrated that there are no reproductive barriers between *L. multiflorum* and *L. perenne* and they should be classified as subspecies. Diversification of both taxa is driven by transposons and domestication of *L. multiflorum*.
- 52 QTLs related with domestication process of *L. multiflorum* were identified and they are located within so called domestication syndrome regions flanked by transposons.

② **Evolution of selected species:**

- Demonstrated that *P. mugo* is a dwarf mutant of *P. uliginosa*.
- Identified cryptic species within *Pellia endiviifolia*. Demonstrated DNA markers differentiating cryptic species in *Aneura pinguis*.
- For the first time assessed genetic differentiation among selected leech species in terms of commonly used parameters of genetic identities and genetic diversities.

③ **Conservation biology and population genetics:**

- Using DNA markers demonstrated that *P. sylvestris* fo. *turfosa* is a relict Scots pine ecotype.
- Demonstrated that *P. cembra* from the Koscieliska valley in the Tatras is not a strange element in the Tatra flora and therefore it does not have to be cut down.
- Using B-SAP markers demonstrated routes of migration of *P. sylvestris* in Europe.

④ **Genetic mapping and QTL mapping:** constructed the high resolution genetic map in *L. multiflorum* x *L. perenne*. The map covers 86% of the genome, average distance is 2 cM and 145 QTLs are mapped.

⑤ **Heterosis:** Using barley as a model demonstrated that it is possible to develop homozygous lines (Doubled haploids) performing as well as heterotic hybrids (so called “fixation of heterosis”) and this way demonstrated that the overdominance is not an underlying mechanism of heterosis. Rather dominance with additive and non-additive interactions of non-allelic genes are responsible for heterosis in barley mutant crosses.

⑥ **Induced genetic variation:**

- Demonstrated high diversity of transposons in induced mutants of barley.
- Demonstrated quantitative and molecular diversity of transgenic peas.

⑦ **Underutilized crops:**

- Demonstrated that *Avena strigosa* (bristle oat) is a valuable species for sustainable agriculture.
- Demonstrated that *A. strigosa* belongs to the species most tolerant to aluminium.

⑧ **Marker systems:**

- Developed the new marker system (B-SAP) based on conservative bacterial sequences, mostly on bacterial *KatG* gene encoding catalase-peroxidase. The system proved to be useful in species delimitation and resolving postglacial migration routes. Tight linkage of *katG* based markers with peroxidases loci on *L. multiflorum* x *L. perenne* genetic map as well as sequencing provide data that some markers can identify plant peroxidases.
- Applied transposons to evolutionary studies in grasses from the genus *Lolium*, *Pinus* and liverworts.
- Elaborated a PCR assay for detecting a *pgip* transgene in pea (*Pisum sativum*)

## Publication Record

- **Books** 4 books in English. Two of them on molecular evolution and one on plant genetics and genomics with pedagogical elements, one on using bioinformatics tools. A book in Polish. All available on line. 3 chapters in books in English.
- **Articles** 35 articles in peer reviewed international journals (Cereal Res Commun, Plant Breeding, Pol Arch Hydrobiol, Cryptoganie Bryol, Ann Bot Fenn, Acta Soc Bot Pol, J App Genet, Silva Fennica).
- **Meetings** Participated in 41 academic conferences including 20 international meetings. Presented 7 invited, plenary lectures, 3 oral presentations and 29 posters. Presented 2 lectures to international workshops.
- **Patents** Prepared a patent application on stone pine conservation together with the Tatra National Park.
- **Expertises** Prepared 3 expertises for breeders, an expertise for the Szczecin Shipyard on investment in biotechnology and an expertise for the Police Station in Choczewo in a wheat seed theft case.
- **Reports** Prepared 6 reports.
- **Multimedia** Prepared a manual on protein modelling available on line.

*A detailed publication record is attached*

## Research Grants

- **National** Co-coordinated a grant financed by the **Polish Network of Cell and Molecular Biology UNESCO/PAN** and 2 grants by the **Polish Ministry of Sciences**. Principal investigator in 9 grants financed by the Polish Ministry of Sciences, participant in 2 grants.
- **European** Scientific co-ordinator (80% person-months) in the **EU project** GenCrop (MTKD-CT-2004-509834). Participated in the **COST Action FA0603**, the Member of the **Management Committee and National Representative**.

*A detailed record is attached*

## National and International Recognition

- **Invitations**
  - Invited to participate in international projects within COST and 7FP.
  - Invited to co-supervise a PhD programme by the University of Southampton
  - Invited to present achievements in the **EC booklet “Building Research Careers in Europe” – Success Stories**.
- **Reviews** Reviewer in international peer-review journals, 6 Framework programme, International Foundation for Science (Sweden), registered as an expert in EMBO, 7FP, Foresite National Programme.
- **Citations** In total, 20 papers **were cited 78 times** (3.9 per a paper). 41 citations were in ISI indexed journals (summary IF=57.8) such as Appl Radiat Isotopes, Plant Cell Tiss Org, *In vitro* Cell Dev B, Euphytica, Protoplasma, Plant cell Rep, J Plant Physiol, Cereal Res Commun, Russ J Genet, Plant Breeding, Acta Soc Bot Pol, Can J Microbiol, Mol Phylogenet Evol, Plant Sys Evol, Proc R Soc B, Mol Ecol, Freshwater Biol, Crit Rev Plant Sci, Folia Biol-Krakow, Zool Sci, Bryologist. 22 citations in peer reviewed journals in English (Afr J Biotechnol, Tr J Botany, Rev Bras Biol, Biodiv Res Conser) and books (Plant breeding reviews, Advances in haploid production in higher plants). 15 citations in other sources including journals (Acta Agriculturae Shanghai, Journal of Sichuan University), PhD theses, conferences and Internet sources.
- **Networking** Networking with 15 partners from Europe, 10 partners from Poland including end users such as the Tatra National Park and breeders.

*A detailed record is attached*

## Training and Teaching

- **Staff training** Trained 8 researchers experienced in the field (MSc, PhD, DSc) on molecular genetic and genomic methods. Routine training of younger staff in the Department (in total 8 persons) on molecular genetic and genomic methods, field experiments, management and teaching methods.
- **Tutoring** Tutoring the Student's Association of Geneticists "GENIUS" that resulted in presentation of 10 contributions to the International Seminars of the Students' Associations.
- **Supervising** Supervised 41 postgraduate (MSc) students and 3 undergraduate (BSc) students. Several theses were in the cooperation with the Leibniz Universität Hannover and the Tatra National Park. Reviewed 9 MSc theses and 25 BSc theses.
- **Teaching expertise** A broad experience in the field of Genetics and Evolutionary Biology in addition to employing innovative methods of teaching and complementary skills training.
- **Courses** Classes and Lectures from Molecular Biology, Molecular Genetics, Molecular Evolution, Plant Genomics, Inheritance of Quantitative Characters, Genome Annotations, Population Genetics, Mutagenesis. Classes from Genetics and Law Aspects in Biotechnology.

*A detailed record is attached*

## Administrative Responsibilities

- **Department** Co-organized Department of Genetics UWM, managed laboratories, optimized spatial organization, standardized procedures, managed finances, managed projects, consulted finances with the University services, wrote reports, organized field experiments, organized teaching courses, corresponded with EU services, wrote a complain to the European Ombudsman.
- **Faculty** Participated in the Faculty Committee for Biology Curricula
- **Business** Cooperated with breeders, Szczecin Shipyard, coordinated cooperation with the Tatra National Park

*A detailed record is attached*

**I thereby declare that information provided is correct**

**Olsztyn, 2011.12.19.**

(Date and Place)



**Kornelia Polok**

(Name and Signature)



## SUMMARY OF RESEARCH AND TEACHING ACTIVITIES

Type	Total (1989-2010)	Before PhD (1989-1996)	After PhD	
			1996 - 2011	Last 6 years (2005-2011)
<b>A) Books</b>	<b>8</b>	<b>1</b>	<b>7</b>	<b>7</b>
<b>B) Articles in journals</b>	<b>38</b>	<b>5</b>	<b>33</b>	<b>22</b>
•Refereed Articles	31	5	28	18
•Invited Reviews	2	-	2	1
•Accepted for publication	0	-	0	0
•Submitted	3	-	3	3
<b>C) Published contributions to Academic Conferences</b>	<b>41</b>	<b>3</b>	<b>38</b>	<b>30</b>
•Special presentations and invited lectures				
International	3	-	3	3
National	4	1	3	1
•Oral presentations				
National	3	-	3	1
•Posters				
International	15	-	15	12
National	14	2	12	11
•Presentations to workshop and training sessions	2	-	2	2
<b>D) Patents/ Implementations</b>	<b>1</b>	<b>-</b>	<b>1</b>	<b>1</b>
<b>E) Expertises for public and private bodies</b>	<b>5</b>	<b>-</b>	<b>4</b>	<b>1</b>
<b>F) Reports</b>	<b>6</b>	<b>-</b>	<b>5</b>	<b>5</b>
<b>G) Publications in multimedia</b>	<b>2</b>	<b>-</b>	<b>2</b>	<b>2</b>
<b>H) Research grants</b>	<b>16</b>	<b>-</b>	<b>12</b>	<b>5</b>
<b>I) International Recognition</b>	<b>37</b>	<b>-</b>	<b>37</b>	<b>37</b>
•Invitations	7	-	7	7
•Reviews	6	-	6	6
•Citations	<b>78</b>			
•Co-operation				
International	15	-	15	15
National	10	-	10	8
<b>J) Training and Teaching</b>	<b>100</b>	<b>1</b>	<b>99</b>	<b>77</b>
•Experienced researchers	16	-	16	11
•PhD (SOTON)	1	-	1	1
•MSc supervising	42	-	42	33
•BSc supervising	3	-	3	3
•Reviewing	34	-	32	27
•Number of courses	10	1	9	8



## DESCRIPTION OF SCIENTIFIC PRODUCTIVITY

### 1 LIST OF PUBLICATIONS

#### 1.1 Books

##### Original Books

1. **Polok K.** 2007. Molecular evolution of the genus *Lolium* L. Olsztyn: Studio Poligrafii Komputerowej "SQL". 317 p. ISBN 978-83-88125-52-2. Electronic version, 2009: <http://www.uwm.edu.pl/katgenbiol/grantsandpapers/papers.htm>; <http://books.google.pl>
2. **Polok K.** 2010. Genetics and evolution. Olsztyn: Studio Poligrafii Komputerowej "SQL". 112 p. ISBN 978-83-88125-91-1. (In Polish), <http://www.uwm.edu.pl/katgenbiol/education.htm>
3. **Polok K.** 2010. From DNA sequence to biological meaning. Olsztyn: Studio Poligrafii Komputerowej "SQL". 89 p. ISBN 978-83-88125-64-5. Electronic version: [From DNA Sequence...pdf](#)
4. **Polok K.** 2010. Methods in applied and evolutionary genetics. Olsztyn: Studio Poligrafii Komputerowej "SQL". 105 p. ISBN 978-83-88125-62-1.
5. **Polok K.** 2011. Plant genetics and Genomics in practice. Olsztyn: Department of Genetics UWM. 110 p. ISBN 978-83-932364-0-4 (in Press). Electronic version: <http://www.uwm.edu.pl/katgenbiol/education.htm>, under construction

##### Chapters in Books

6. Szarejko I, Maluszynski M, **Polok K**, Kilian A. 1991. Doubled haploids in the mutation breeding of selected crops. In: Plant mutation breeding for crop improvement. Proceedings of an international symposium on the contribution of plant mutation breeding to crop improvement jointly organised by IAEA and FAO; 1990 June; IAEA, Vienna, Austria, volume 2:355-378.
7. **Polok K**, Korniak T, Zielinski R. 2008. Contribution of molecular genetics for new crops development. In: Smartt J, Haq N, editors. New crops and uses – their role in a rapidly changing world. Southampton: Centre for Underutilised Crops. ISBN 978-08-54328-91-8. pp:36-56 (INVITED REVIEW)  
[Contribution of](#)
8. Zielinski R, Osmęda J, Urbaniak L, **Polok K**. 2009. Molecular characteristics of *Pinus sylvestris* ancient ecotype from the Gązwa peat bog reserve. In Mirek Z et al., editors. Rare, relict and endangered plants and fungi in Poland. Kraków: W. Szafer Institute of Botany, Polish Academy of Sciences. pp: 561-567.  
[Molecular characteristics... pdf](#)

## 1.2 Articles in Journals

### Refereed Articles

#### Journal Citation Reports

1. Szarejko I, **Polok K**, Maluszynski M, Falk DE. 1991. Isozyme analysis of anther culture derived plants in barley. *Cereal Res Commun* 19:239-244
2. Cai Q, Szarejko I, **Polok K**, Maluszynski M. 1992. The effect of sugars and growth regulators on embryoid formation and plant regeneration from barley anther culture. *Plant Breeding* 109:218-226.
3. **Polok K**, Szarejko I, Maluszynski M. 1997. Barley mutant heterosis and fixation of "F<sub>1</sub>-performance" in doubled haploid lines. *Plant Breeding* 116:133-140. [Barley mutant...pdf](#)
4. Szarejko I, Maluszynski M, **Polok K**, Zbieszczczyk J. 1997. Gene segregation in a barley DH population. *J Appl Genet* 38:415-424.
5. Szczecinska M, Sawicki J, **Polok K**, Hołdyński Cz, Zielinski R. 2006. Comparison of three *Polygonatum* species from Poland based on DNA markers. *Ann Bot Fennici* 43:379-388. [Comparison of... pdf](#)
6. Korzekwa K, **Polok K**, Zielinski R. 2006. Application of DNA markers to estimate genetic diversity of *Mycobacterium tuberculosis* strains. *Pol J Microbiol* 55:19-24 [Mycobacterium 2006 pdf](#)
7. Bączkiewicz A, Sawicki J, Buczkowska K, **Polok K**, Zielinski R. 2008. Application of different DNA markers in studies on cryptic species of *Aneura pinguis* (Jungermanniopsida, Metzgeriales). *Cryptogamie Bryol* 29:3-21.
8. Urbaniak L, Przybyła M, Pisarek W, Chudzińska E, Zieliński R, **Polok K**. 2009. Needle anatomy suggests hybridization between the relict *turfosa* form of *Pinus sylvestris* from the Gązwa peat-bog and typical Scots pine. *Acta Soc Bot Pol* 78:29-36. [Needle anatomy...pdf](#)
9. Androsiuk P, Zielinski R, **Polok K**. 2011. B-SAP markers based on bacterial *KatG* gene differentiate populations of *Pinus sylvestris* and provide new insights into postglacial history. *Silva Fennica* 45:3-18. [B-SAP](#)

#### Peer Reviewed in English

10. Gaj M, Kucharska M, Maluszynski M, **Polok K**. 1991. Isozyme variation in callus culture of *Arabidopsis thaliana* (L.) Heynh. *Genet Pol* 32:217-225.
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14. Zielinski R, **Polok K**, Wojcik-Pater I. 1997. Application of isoenzymes and RAPD-PCR in studies on genetic similarity of *Lolium perenne* L. and *L. multiflorum* Lam. In: Staszewski Z, Młyniec W, Osiński R, editors. Ecological aspects of breeding fodder crops and amenity grasses. Radzików: Plant Breeding and Acclimatization Institute. p 370-376.
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16. Piesik Z, Zielinski R, Wachowiak M, Ochman T, Soroka M, **Polok K**. 1998. Distribution, genetic structure and ecological role of *Dreissena polymorpha* (Pallas) in Lake Dąbie, Western Pomerania, Poland. *Baltic Coastal Zone* 2:25-46.
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27. **Polok K.**, Ciągło S, Cabrita L. 2006. AFLP analysis of genetic similarity between the species of the genus *Lolium*. Biodiv Res Conserv 3-4:232-234. [AFLP analysis... pdf](#)
28. **Polok K.**, Jacobsen H-J. 2011. PCR identification of *rpgip1* transgene in *Pisum sativum* L. Acta Agriculturae Slovenica 97:167-177. [Pisum 2011](#)
29. **Polok K.**, Zielinski R. 2011. Mutagenic treatment induces high transposon variation in barley (*Hordeum vulgare* L.). Acta Agriculturae Slovenica 97:179-189. [Barley transposons 2011](#)

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31. Polok K. 1997. Application of doubled haploid lines in studies of heterosis in barley. Zesz Prob Post N Rol 451:91-102. (In Polish, English abstract.)
32. Rylski M, **Polok K.** 2001. Molecular basis of isoniazid-resistance in *Mycobacterium tuberculosis*. Post Mikrobiol 41:21-35. (In Polish, English abstract.)
33. Chmiel J, Milewski T, **Polok K.** 2008. Protection of native stone pine (*Pinus cembra* L.) gene pool in the Tatras in the light of molecular studies. Roczniki Bieszczadzkie 16:215-232. (In Polish; English abstract, and summary.) [Protection...pdf](#)

### **Invited Reviews**

34. **Polok K.** 2001. Genetics and genetic engineering in plant breeding. In: Machinek M, editor. The eight day of Creation? Ethics against genetic engineering possibilities. Olsztyn: Studio Poligrafii Komputerowej "SQL" s.c. p 40-64. (In Polish; German abstract.)
35. **Polok K,** Zielinski R. 2005. Genetically modified organisms from health and environment points of view. Problems of Ecology 44:85-96. (In Polish.)

### **Under Review (submitted)**

36. Bielecki A, **Polok K.** 2011. Genetic variation and species identification of leeches. Biochemical Genetics.
37. **Polok K,** Zielinski R. 2011. Genetic mapping of seedling root fluorescence in *Lolium multiflorum* and *L. perenne*. Plant Breeding.
38. **Polok K,** Zielinski R. 2011. High resolution genetic map of *L. multiflorum* x *L. perenne* demonstrate low species incompatibility . Theor App Genet.

### **Two Papers Evolved from the Doctoral Thesis**

**Doctoral thesis: 1996. Application of doubled haploids of *Hordeum vulgare* L. to select homozygotes of a heterotic hybrids' phenotype.**

- N°3 Polok K,** Szarejko I, Maluszynski M. 1997. Barley mutant heterosis and fixation of "F<sub>1</sub>-performance" in doubled haploid lines. Plant Breeding 116:133-140.
- N°27 Polok K.** 1997. Application of doubled haploid lines in studies of heterosis in barley. Zesz Prob Post N Rol 451:91-102. (In Polish, English abstract.)

## 1.3 Contributions to Academic Conferences

### Special Presentations and Invited Lectures

#### International

1. **Polok K.** 2007. Contribution of molecular genetics to new crops development. In Fifth International Symposium on New Crops and Uses: their role in a rapidly changing world; 2007 September; Southampton, UK. Available from: [Contribution...lecture.pdf](#)
2. **Polok K.** 2007. Inheritance of peroxidases in Poaceae and their use as molecular markers. In: Plant Proteomics for Europe. COST FA0603; 2007 September; Munich, Germany. p. 50. Abstract n°28. Available from: [Peroxidase -lecture.pdf](#)
3. **Polok K.** 2008. Contribution of genetics for evolutionary and applied studies. Achievements of the Department of Genetics UWM. Invited lecture held for the Department of Biology, University of Crete and FORTH; 2008 April; Iraklion, Greece.

#### National

4. **Polok K.** 1993. Insertional mutagenesis. In: Meeting of the Polish Genetics Society, division Katowice, Silesian University; 1993 December: Katowice, Poland. (In Polish.)
5. **Polok K.** 1996. Genetic bases of heterosis. In: Meeting of the Polish Genetics Society, division Szczecin, Agricultural University; 1996 December: Szczecin, Poland. (In Polish.)
6. **Polok K.** 2000. History of genetics and genetic engineering. In: First Interdisciplinary days of the Faculty of Theology, University of Warmia and Mazury in Olsztyn on ethics in genetic engineering; 2000 November; Olsztyn, Poland. p. 5. Abstract n°2. (In Polish.)
7. **Polok K.** 2011. Genetic methods in conservation biology. In: Tatra National Park Seminar. Invited lecture conducted for managing staff; 2011 November; Zakopane, Poland. (In Polish.)

### Oral Presentations

#### National

8. **Polok K.** Application of doubled haploids in studies of heterosis in barley. In: The 4<sup>th</sup> Polish Conference on genetics and breeding of grasses; 1997 March; Poznan, Poland. p. 9. (In Polish)
9. **Polok K.** 2004. Molecular evolution of *Lolium* species. In: The 20<sup>th</sup> anniversary of the Faculty of Biology, Adam Mickiewicz University; 2004 June; Poznań, Poland. p. 57. (In Polish.)
10. Bielecki A, Bogdańska D, Ciągło S, **Polok K.** 2009. Genetic similarity of parasitic leeches (Hirudinea). In: PTParazytol; 2009 September, Wrocław-Karpacz, Poland.

### Posters

#### International

11. Zielinski R, **Polok K.**, Wojcik-Pater I. Can *L. perenne* (L.) and *L. multiflorum* (Lam) be regarded as biological species. In: The 20<sup>th</sup> meeting of EUCARPIA, Fodder Crops and Amenity Grasses Section; 1996 November; Radzików, Poland. p. 181-182.
12. **Polok K.**, Zielinski R. Phylogenetic studies on *Lolium perenne* and *L. multiflorum* on the basis of different DNA markers. In: the 21<sup>th</sup> meeting of EUCARPIA, Fodder Crops and Amenity Grasses Section; 1997 September; Frauenfeld, Switzerland.
13. **Polok K.** 2000. Comparison of two *Pellia endiviifolia* sibling species on the base of RAPD and ISJ markers. In: International conference on genetic diversity and taxonomy of bryophytes; 2000 October; Poznań, Poland. Abstract.
14. Richter A, Muller M, Kiesecker H, **Polok K.**, Zielinski R, Jacobsen H-J. 2006. Expression analysis of recombinant antifungal genes in pea lines (*Pisum sativum* L.). In: IABTC&B 11<sup>th</sup> Congress; 2006 August;

Beijing, China.

15. Chmiel J, Milewski T and **Polok K**. 2007. Protection of the *Pinus cembra* in the Tatras in the light of molecular studies. In: 16<sup>th</sup> International meeting on Carpathian forests and their role in sustaining biodiversity; 2007 September; Ustrzyki, Poland. P.50. Abstract n°28. (In Polish)
16. **Polok K**, Ciągło S and Zielinski R. 2007. Molecular diversity of induced pea mutants. In: Sixth European conference on grain legumes - Integrating legume biology for sustainable agriculture; 2007 November; Lisbon, Portugal. Abstract n°174.
17. **Polok K**, Zielinski R. 2008. *Avena strigosa* – a new crop resistant to aluminium stress. In: Plant Proteomics for Europe. COST FA0603; 2008 February; Cordoba, Spain. p. 36-37. Abstract n°25.
18. **Polok K**. 2008. Protein markers in phylogenetic and applied studies. p. 60-61. In: Plant Proteomics for Europe. COST FA0603; 2008 February; Cordoba, Spain. p. 60-61. Abstract n°49.
19. **Polok K**, Ciągło-Androsiuk S, Jacobsen H-J. 2008. Analysis of *pgjp* gene and its putative protein modelling in transgenic pea. In: International Conference on proteomics in plants, microorganisms and environment - PROTEOMLUX 2008; 2008 October; Luxembourg. p. 66-67.
20. **Polok K**, Szandar K, Jacobsen H-J. 2009. Variation and expression profiles of polygalacturonase inhibiting protein in transgenic pea (*Pisum sativum* L). In: Technical aspects inherent to plant proteomics. Classical and novel approaches in plant proteomics; 2009 May; Viterbo, Italy. p. 113.
21. **Polok K**, Zielinski R. 2009. Genetic basis of aluminium resistance in *Avena strigosa*. 2009. In: Second International network of plant abiotic stress. Plant abiotic stress – from signaling to development; 2009 May; Tartu, Estonia. p.105
22. **Polok K**, Zielinski R. 2009. Drought tolerance of barley DH lines derived from mutant crosses. 2009. In: Second International network of plant abiotic stress. Plant abiotic stress – from signaling to development; 2009 May; Tartu, Estonia. p. 116.
23. **Polok K**, Zielinski R. 2009. Evolution of peroxidases in selected plant species. In: COST FA0603. "Plant proteomics in Europe", WG2 & MC meeting; 2009 October; Nitra, Slovakia. p. 58. (ISBN 978-80-89088-83-6).
24. **Polok K**, Jacobsen H-J. 2009. Stilbene synthase genes in transgenic pea and their evolution. In: COST FA0603. "Plant proteomics in Europe", WG2 & MC meeting; 2009 October; Nitra, Slovakia. p. 48. ISBN: 978-80-89088-83-6.
25. **Polok K**, Wolosz K, Zielinski R. 2011. Molecular evolution of abiotic stress tolerance genes in selected plant taxa. In: COST FA0603. "Plant proteomics in Europe" Where do we stand and where are we heading to; May 2011; Dijon, France.

#### National

26. Ximing L, Bielawska A, **Polok K**, Szarejko I, Maluszynski M. 1994. Influence of media and culture conditions on the efficiency of barley anther cultures. In The 7<sup>th</sup> Polish meeting of *in vitro* cultures on potential applications of *in vitro* cultures in modern plant breeding; 1994 September; Katowice, Ustron, Poland. p. 91. Abstract n°57. (In Polish)
27. Laib A, Szarejko I, **Polok K**, Maluszynski M. 1994. Barley anther culture for doubled haploid mutant production. In: The 3<sup>rd</sup> National seminar on cereals: anther cultures, immature embryos – potential applications; 1994 February; Poznan, Poland. p. 16. (In Polish.)
28. **Polok K**, Pisarek W, Urbaniak L, Korzekwa K, Zielinski R. 2004. Is the *turfosa* form a relict ecotype? In: The 20<sup>th</sup> anniversary of the Faculty of Biology; 2004 June; Poznań, Poland. p. 104. Abstract. (In Polish.)
29. Krzakowa M, Pietkiewicz J, **Polok K**. 2005. Polymorphism of *KatG* gene in *Calamagrostis arundinacea* (L.) Roth. In: Taxonomy, chorology and plant ecology in the age of biological diversity threats; 2005 September; Poznań, Poland. p. 182. Abstract n°PO12. (In Polish.)
30. **Polok K**, Haluscova J, Cabrita L, Ciągło S, Zielinski R. 2005. Genetic similarity of species from the genus *Lolium*. In: Taxonomy, chorology and plant ecology in the age of biological diversity threats; 2005 September; Poznań, Poland. p. 195. Abstract n°PO24. (In Polish.)
31. **Polok K**, Pietkiewicz J and Zielinski R. 2006. The origin of peat-bog pine, *Pinus uliginosa* Neumann in the light of molecular studies. In: Rare, disappearing and relict plants and fungi species. Problems, threatens and protection of Polish flora diversity; 2006 May; Kraków, Poland. p. 124. (In Polish.)

32. **Polok K**, Skierska S and Zielinski R. 2006. Genetic characteristics of hybrid species, *Pinus x rhaetica* from Bór na Czerwonem. In: Rare, disappearing and relict plants and fungi species. Problems, threatens and protection of Polish flora diversity; 2006 May; Kraków, Poland. p. 138. (In Polish.)
33. Zielinski R, Juchniewicz A, Ciągło S and **Polok K**. 2006. Molecular characteristics of dwarf pine, *Pinus mugo* Turra from the Tatra peat-bogs. In: Rare, disappearing and relict plants and fungi species. Problems, threatens and protection of Polish flora diversity; 2006 May; Kraków, Poland. p. 86. (In Polish.)
34. Zielinski R, Osmęda J and **Polok K**. 2006. Molecular characteristics of *Pinus sylvestris* relict ecotype from the Gązwa peat-bog. In: Rare, disappearing and relict plants and fungi species. Problems, threatens and protection of Polish flora diversity; 2006 May; Kraków, Poland. p. 118. (In Polish.)
35. **Polok K**, Nosarzewska D, Jezierska K, Zielinski R. 2008. Transposon diversity in barley mutants. In: Second National Conference on Genetics and genomics in crop improvement – from a model plant to a new cultivars; 2008 November; Poznań, Poland. p. 52. Abstract N°P8. (In English).
36. Ciągło-Androsiuk S, Zielinski R, **Polok K**. 2008. Root system characteristics of selected pea (*Pisum sativum* L) cultivars. In: Second National Conference on Genetics and genomics in crop improvement – from a model plant to a new cultivars; 2008 November; Poznań, Poland. p. 142. Abstract N°P38. (In English).
37. Polok K., Ciągło S., Bogdańska D., Bielecki A.. 2009. Genetic similarity of parasitic leeches (Hirudinea: Piscicolidae). In: PTZool. 2009 May, Olsztyn.
38. Chmiel J, **Polok K**, Straczek-Helios M. 2009. Growth of *Pinus cembra* on Swinska Turnia in the light of molecular studies and applications in active protection. In: Long-term changes in the nature and usage of the Tatra National Park; May 2009; Zakopane, Poland.
39. Chmiel J, **Polok K**. 2010. Genetic similarity of *Pinus cembra* L. populations from the Tatras and Siberia. In: the 4<sup>th</sup> Meeting “Nature of the Tatra National Park and Humans”: Science and management of the Tatras area and their environment; October 2010; Zakopane, Poland. p. 18-19 (ISBN 978-83-61788-24-9). (In Polish)

### **Presentations to Workshops and Training Sessions**

#### International

40. **Polok K**. 2005. Transposable elements and their use as molecular markers. In: First Annual meeting of GenCrop participants, partners and advisory board members; 2005 June; Olsztyn Poland.
41. **Polok K**. 2006. Transposons in pines. In: Second Annual meeting of GenCrop participants, partners and advisory board members; 2006 July; Olsztyn Poland.

## 1.4 Patents/ Implementations

1. Chmiel J, **Polok K**. 2008. Plan of Swiss stone pine (*Pinus cembra* L) protection in the Tatras. TPN Application.

## 1.5 Expertises for Public and Private Bodies

1. **Polok K**, Zielinski R. 1999. Yield improving in naked, winter barley. Expertise for Poznań Plant Breeders, Tulce, Poznań.
2. **Polok K**, Zielinski R. 2000. Biotechnological approaches for developing and breeding stiff-straw pea. Expertise for Poznań Plant Breeders SA, Tulce, Poznań.
3. **Polok K**. 2000. Investment in biotechnology in Poland - costs and possible profits of a hypothetical small biotechnological enterprise. Cash flows in a biotechnological company. An expertise for the Szczecin Shipyard.
4. **Polok K**, Zielinski R. 2003. Genetic similarity of *Poa pratensis* breeding lines. Expertise for the Plant Breeding and Acclimatization Station in Bartązek, Dr Jan Kaszuba
5. Zielinski R, **Polok K**. 2007. Report from comparisons of wheat samples provided by the Police Station in Choczewo in a seeds' theft case.

## 1.6 Reports

1. Szarejko I, Falk D, Maluszynski M, Di-Umba U, **Polok K**, Zbieszczyk J. 1991. Induction and Evaluation of barley anther culture derived doubled haploids (DHs). In: Use of induced mutations in connection with haploids and heterosis in cereals. Report of the third FAO/IAEA research co-ordination meeting; 1990 July: Vienna, Austria: IAEA 312.D2.RC.351.3. p 91-94.
2. **Polok K**, Zielinski R. 2005. Genomic approaches for crop improvement. The 1<sup>st</sup> TOK periodic activity report. 30 p.
3. **Polok K**, Zielinski R. 2006. Genomic approaches for crop improvement. The 2<sup>nd</sup> TOK periodic activity report. 55 p.
4. **Polok K**, Zielinski R. 2007. Genomic approaches for crop improvement. The 3<sup>rd</sup> TOK periodic activity report. 56 p.
5. **Polok K**, Zielinski R. 2008. Genomic approaches for crop improvement. The 4<sup>th</sup> TOK periodic activity report. 48 p.
6. **Polok K**, Zielinski R. 2008. Genomic approaches for crop improvement. [The final activity report. 69 p.](#)

## 1.7 Publications in Non-print/multimedia

1. **Polok K**. 2008. Protein prediction methods. Manual for biology and biotechnology students. Available from: [Protein prediction...pdf](#)
2. **Polok K**. 2009. Plant genetics and genomics education at Scitable nature education. A collaborative learning space for science. <http://www.nature.com/scitable/view-profile/Kornelia-Polok-2262041>

## 1.8 Press

1. **Polok K**. 2009. Czech shop with masters. Pathologies in Polish higher education. Wprost 47:4

## 2 RESEARCH GRANTS

### 2.1 International – funded by European Union

1. Genomic approaches for crop improvement. Gen Crop. Marie Curie Host Fellowships for the Transfer of Knowledge. 2004-2008. Contract N° MTKD-CT-2004-509834. **Scientific co-ordinator. Dedicated 80% of person-months.** Described in the EU booklet “Building research careers in Europe”. **Final report and the booklet available at:** <http://www.uwm.edu.pl/katgenbiol/grantsandpapers/grants.htm>
2. Plant Proteomics in Europe. EPP. 2007-2011. COST Action FA0603. Domain: Food and Agriculture. Coordinator: Dr Jenny Renaut, Centre de Recherche Public – Gabriel Lippmann Department of Environment and Agrobiotechnologies (EVA), Luxembourg. **Member of the Management Committee, National Representative.** <http://www.costfa0603.org>

### 2.2 International – co-funded by Polish Ministry of Sciences

3. *Lolium perenne* and *L. multiflorum* as a new model for prediction of genetic engineering threats. 2001-2002. Polish Ministry of Science. Contract N° 2871/E-383/SPB-M/DZ65/2001. **Principal Investigator.**
4. *Avena strigosa* as a new species for sustainable agriculture. 2001-2002. Polish Ministry of Science. Contract N° 2871/E-383/SPUB-M/Współpraca z 5.PR UE/DZ 65/2001. **Principal Investigator.**
5. Genomic and proteomic approaches for understanding molecular basis of yield in barley. 2002-2003. Polish Ministry of Science. Contract N° 2871/E-383/SPB/Współpraca z 5.PR//DZ 149/2002. **Principal Investigator.**
6. Development of stiff-straw pea ideotype by combination of enabling technologies. 2002-2003. Polish Ministry of Science. Contract N° 2871/E-383/SPB/Współpraca z 5.PR//DZ 75/2002. **Principal Investigator.**
7. High protein plants – a network. 2002-2003. Polish Ministry of Science. Contract N° 2871/E-383/SPB/Współpraca z 5.PR//DZ 515/2002. **Principal Investigator.**
8. Centre of excellence in modern biotechnology of plants. 2002-2003. Polish Ministry of Science. Contract N° 2871/E-383/SPB/Współpraca z 5.PR//DZ 528/2002. **Coordinator**
9. Application of genomics in population and evolutionary genetics. 2004-2005. Polish Ministry of Science. Contract N° 2871/E-383/Współpraca z PR UE/DIE 250/2004. **Coordinator.**
10. Molecular basis of heterosis. 2004-2005. Polish Ministry of Science. Contract N° 2871/E-383/Współpraca z PR UE/DIE 2510/2004. **Principal Investigator.**
11. Genomic approaches for crop improvement. 2004-2008. Polish Ministry of Science. Contract N° 2871/E-383/Współpraca z PR UE/DIE 481/2004. **Principal Investigator.**

## 2.3 National

12. Estimation of genetic variation in *Dreissena polymorpha* var. *polymorpha* based on cytogenetic analyses. 1994-1996. Contract N° 6PO4C 10106. **Participant.**
13. Grant to carry research in the Institute of Bioorganic Chemistry, Polish Academy of Sciences in Poznań. 1997. Polish Network of Cell and Molecular Biology UNESCO/PAN. **Coordinator.**
14. Species specific markers and analysis of genetic resources in *Lolium perenne* (L.) and *L. multiflorum* (Lam.) by means of RAPD-PCR. 1996-1999. Contract N° 6PO4C 00511. **Principal Investigator.**
15. Genetic diversity of *Mycobacterium tuberculosis* with special reference to isoniazid and rifampicine resistance. 1998-1999. Contract N° 6PO4C 09614. **Participant.**
16. Introgression of effective mildew resistance sources with help of DNA markers. **Principal Investigator.** Coordinator: dr Maria Kucharska. 1999–2002. SGGW
17. Evolution of selected plant taxa. 2001-2009. University of Warmia and Mazury in Olsztyn. Contract N° 0207.202. **Investigator.**
16. Genetic improvement of crops. 2001-2011. University of Warmia and Mazury in Olsztyn. Contract N° 0207.802. **Investigator.**

## 2.4 Submitted in 2011

17. Towards legume roots tolerant to abiotic stress – targeted integrated approach. LegRoot. Call FP7-KBBE-2011-5-CP-CSA. Project N°FP7 289602. **Coordinator.**
18. Innovative functional food products based on the use of underutilized crops rich in bioactive health beneficial compounds. Call FP7-KBBE-2011-5-CP-CSA. Project N°FP7 289590. **Participant.**

## 3 NETWORKING AND PARTNERSHIPS

### 3.1 International Co-operation

N°	Partner	Thematic area	Results and joint experiments
1.	<b>ARCADIA International, Belgium</b> Dr Rodolphe de Borchgrave	Re-introduction of <i>Avena strigosa</i>	<ul style="list-style-type: none"> <li>• Joint proposals submitted to 5FP</li> <li>• Partner in the GenCrop project financed by EU</li> <li>• Economic evaluation of <i>A. strigosa</i></li> </ul>
2.	<b>Foundation for Research and Technology Hellas, University of Crete, Greece</b> Prof. Michael Kokkinidis	Molecular modelling, structural characterization of protein structures, proteomics	<ul style="list-style-type: none"> <li>• Two joint proposals submitted to 5FP</li> <li>• Joint proposals to 7FP, NuPath and LegRoot</li> <li>• Partner in the GenCrop project financed by EU</li> <li>• Kornelia Polok spent two months in the FORTH</li> <li>• Protein modelling, bioinformatics</li> </ul>
3.	<b>University of Dundee, UK Life Science Research Biocentre</b> Dr Andrew Flavell	Transposons in the genus <i>Lolium</i> and pines	<ul style="list-style-type: none"> <li>• Two joint proposals submitted to 5FP</li> <li>• Partner in the GenCrop project financed by EU</li> <li>• Two visits in Poland as an expert</li> </ul>
4.	<b>The Leibniz Universität Hannover, Germany</b> Institute of Plant Genetics Abt. II Biotechnology Unit Prof. Hans-Jörg Jacobsen, Dr Andrea Richter	Transgenic pea, analysis of expression of foreign genes	<ul style="list-style-type: none"> <li>• Five joint proposals submitted to FPs, recently LegRoot</li> <li>• Partner in the GenCrop project financed by EU</li> <li>• Visits of four researchers from Hannover as experts</li> <li>• Research on transgenic plants: agronomic performance of GM pea, gene flow, molecular characterization of GM pea, cytogenetics</li> <li>• Co-supervised master theses</li> <li>• Four co-authored posters and one paper</li> </ul>
5.	<b>Universidade do Algarve, Portugal</b> Prof. Jose Leitao Dr Luis Cabrita	Genetic mapping using AFLP	<ul style="list-style-type: none"> <li>• Two joint proposals submitted to 5FP, one to 7FP.</li> <li>• A fellowship of Dr Luis Cabrita in Poland within the GenCrop.</li> <li>• AFLP analysis of genetic diversity of Poaceae</li> <li>• AFLP analysis of pea cultivars</li> </ul>
6.	<b>Wageningen University, Netherlands</b> Dr Rene Geurts	Identification of genes responsible for stem development in pea based on a model legume, <i>Medicago truncatula</i>	<ul style="list-style-type: none"> <li>• Two joint proposals submitted to 5FP, two to 7FP</li> <li>• Partner within GenCrop programme financed by EU</li> <li>• A visit in Poland as an expert</li> <li>• Providing sequences of <i>M. truncatula</i> genes, strains of <i>Rhizobium</i>, consultation on expression analyses in pea, <i>Rhizobium</i> symbiosis</li> </ul>
7.	<b>University of Southampton, International Centre for Underutilised Crops</b> Dr Nazmul Haq	Genetic improvement of underutilised crops	<ul style="list-style-type: none"> <li>• Three joint proposals submitted to FPs, recently LegRoot.</li> <li>• An expert within GenCrop programme financed by EU</li> <li>• Provided data about commodity chains, uses of underutilized crops, networks, economic aspects</li> <li>• Co-supervised PhD project on QTL mapping in <i>Brassica juncea</i></li> </ul>
8.	<b>Institute of Plant Genetics and Crop Plant Research; IT Breeding Bridging the Science and Plant Genetics, Germany</b> Dr Lars-Gernot Otto Dr Ludmila Malyszeva-Otto	Hybridisation <i>in situ</i> in selected species, High-throughput molecular markers	<ul style="list-style-type: none"> <li>• Two fellowships in our Department within GenCrop programme financed by EU</li> <li>• Kornelia Polok – supervised analyses using high-throughput marker technologies (AFLP, SSAP)</li> <li>• Dr L-G Otto – an expert of <i>in situ</i> hybridization, help in purchasing the fluorescent microscope (Nikon), establishment of methodology of <i>in situ</i> hybridization (FISH) for pea and grasses, establishment of genomic <i>in situ</i> hybridization for a model species, <i>Triticale</i> and then <i>Pellia</i> sp.</li> <li>• Joint proposal to 7 FP, LegRoot – legume roots resistant to abiotic stress – a common knowledge platform.</li> </ul>
9.	<b>University de Poitier, Bat Botanique, France</b> Dr Dawid Glissant	Genome annotation, micro-array technology	<ul style="list-style-type: none"> <li>• A fellowship in our Department within GenCrop programme financed by EU</li> <li>• Dr D. Glissant – searches for genes encoding dwarfism, and searches for genes encoding peroxidases, alignment and primers design, teaching of microarray technology and methods of microarray data analyses, help in planning microarray experiments</li> </ul>
10.	<b>University of Mexico State</b> Dr Eulogio de la Crus Torres	Underutilised crops	<ul style="list-style-type: none"> <li>• Kornelia Polok was invited to be a partner in INCO programme within 7 Framework Programme</li> </ul>

N°	Partner	Thematic area	Results and joint experiments
11.	<b>Centre de Recherche Public, Gabriel Lippman</b> Dr Jenny Renaut	Plant Proteomics in Europe	<ul style="list-style-type: none"> <li>•Kornelia Polok was invited to participate in the Cost Action</li> <li>•Participation in the Management Committee of the Action</li> </ul>
12.	<b>Tartu University, Estonia</b> Dr Hannus Kollist	Plant Proteomics in Europe	<ul style="list-style-type: none"> <li>•Joint participation in COST Action</li> <li>•Joint participation in a project to 7FP</li> </ul>
13.	<b>Eufomatics Oy, Finland</b> Dr Christophe Roos	Legume Roots resistant to Abiotic stress.	<ul style="list-style-type: none"> <li>•Joint proposal to 7 FP, bioinformatics platform, metadata analysis.</li> </ul>
14.	<b>PGG Wrightson Seeds, New Zealand</b> Dr Allan Steward	Evolution of grasses.	<ul style="list-style-type: none"> <li>•Seed exchange</li> <li>•Joint experiments on evolution of the genus <i>Lolium</i>. Application of transposons and nuclear genes.</li> <li>•Joined publications (under preparation)</li> </ul>
15.	<b>University of Ljubljana, Biotechnical Faculty, Chair of Genetics, plant Breeding and Statistics</b> Prof. dr. Ivan Kreft	Functional food and sustainable agriculture	<ul style="list-style-type: none"> <li>•Joint proposals to FPs on genetic improvement of <i>Avena strigosa</i>. Recently, a proposal employing cereals and pseudocereals in functional food.</li> <li>•Kornelia Polok provided materials for genetic classes – barley and pea genotypes – mutants and genetic stocks</li> <li>•Kornelia Polok had two-weeks scientific mission at the University of Ljubljana</li> </ul>

### 3.2 National Co-operation

N°	Partner	Thematic area	Results – Role of Kornelia Polok
1.	<b>Szczecin Shipyard</b> (1996-2001)	Investment in biotechnology in Poland	<ul style="list-style-type: none"> <li>• Provided an expertise on possibilities to invest in biotechnology in Poland and set up a small enterprise operated in the field of biotechnology</li> <li>• Estimated the set up and running costs. The latter include consumables, patenting, human resources etc</li> <li>• Predicted cash flows over ten years of activity taking into account different scenarios (credit, own sources, possibilities of selling goods and services)</li> <li>• Estimated possibilities to make profits in Polish environments and possibilities to enter the European market</li> </ul>
2.	<b>Plant Breeding and Acclimatisation Station Bartązek</b> Dr Jan Kaszuba (up to 2005)	Breeding of grasses, hybrid development, molecular breeding ( <i>Poa pratensis</i> )	<ul style="list-style-type: none"> <li>• Participated in two proposals submitted to 5FP</li> <li>• Estimated origin of <i>Poa pratensis</i> clones based on DNA and enzymatic markers</li> <li>• <b>Bartązek</b> developed <i>Lolium</i> hybrids and F<sub>2</sub> populations for molecular studies, provided <i>Lolium perenne</i> and <i>Festuca pratensis</i> seeds for evolutionary studies</li> </ul>
3.	<b>Poznań Plant Breeders</b> Dr Dżdzisław Paszkiewicz	Breeding of grasses, pea and cereals	<ul style="list-style-type: none"> <li>• Participated in three proposals submitted to 5FP</li> <li>• Provided expertise on possibilities of production of stiff straw pea</li> <li>• <b>Plant Breeders</b> provided seeds of pea and barley</li> </ul>
4.	<b>Department of Genetics Adam Mickiewicz University in Poznań</b> Prof. dr hab. Lech Urbaniak	Population genetics and evolution of <i>Pinus sylvestris</i>	<ul style="list-style-type: none"> <li>• Trained the Professor's PhD student, Piotr Androsiuk on molecular techniques</li> <li>• Co-authored papers on <i>P. sylvestris</i>, <i>P. mugo</i> and <i>P. rhaetica</i> and <i>P. cembra</i> resulting from joined experiments</li> <li>• Kornelia Polok made molecular analyses, and prepared a text</li> <li>• <b>L. Urbaniak</b> – made morpho-anatomical analyses, in particular analyses of needle characters</li> </ul>
5.	<b>Department of Genetics Adam Mickiewicz University in Poznań</b> Dr Alina Bączkiewicz, Dr Katarzyna Buczkowska	Molecular identification of cryptic species in <i>Aneura pinquis</i>	<ul style="list-style-type: none"> <li>• Trained two fellows on molecular markers</li> <li>• Made molecular analyses</li> <li>• <b>A. Bączkiewicz, Dr K. Buczkowska</b> responsible for material collection and species identification by the means of enzymes</li> <li>• A co-authored paper</li> </ul>
6.	<b>Department of Botany Medical University in Lublin</b> Dr. hab. Renata Nowak	Genetic similarity among roses from Caninae section	<ul style="list-style-type: none"> <li>• Trained on molecular techniques, especially molecular markers in taxonomic studies</li> <li>• Made for molecular analyses</li> <li>• <b>R. Nowak</b> – responsible for material collection and identification</li> <li>• A co-authored paper</li> </ul>
7.	<b>The Tatra National Park Zakopane</b> Mgr Jan Chmiel	Population genetics and evolution of <i>Pinus cembra</i>	<ul style="list-style-type: none"> <li>• Made molecular analyses, wrote papers</li> <li>• Jan Chmiel collected and identified materials from the area of the Tatras, Siberia and Alps</li> </ul>
8.	<b>The Tatra National Park Zakopane</b> Mgr Tadeusz Zwijacz Dr Tomasz Zwijacz-Kozica	Origin of the hybrid species <i>Pinus x rhaetica</i>	<ul style="list-style-type: none"> <li>• Planned experiments and made molecular analyses of <i>Pinus x rhaetica</i></li> <li>• <b>Tadeusz Zwijacz</b> – collected materials from the area of Podczerwone, analyses morpho-anatomical characters of needles and provide ecological description of the peat bog Podczerwone</li> <li>• <b>Tomasz Zwijacz</b> – provided <i>Pinus uncinata</i> from the Pyrenees, described <i>P. mugo</i> specimens suspected to be <i>Pinus x rhaetica</i></li> </ul>
10.	<b>Department of Zoology Faculty of Biology UWM, Olsztyn</b> Dr. hab. Aleksander Bielecki	Genetic diversity and phylogenesis of leeches	<ul style="list-style-type: none"> <li>• Analyzed species with molecular markers (RAPD, ISJ, B-SAP, SSAP, STS) in population genetic and evolutionary studies on leeches, wrote a paper</li> <li>• <b>A. Bielecki</b> – collected material, identified material, prepared for isolation, provided data about structure, occurrence and practical importance of leeches</li> </ul>

### 3.3 Participation in International Research Consortia

1. **Title:** Genomic and proteomic approaches for understanding yield basis in barley. QTL-BAR.  
**Programme:** FP5 1999, N°QLRT-1999-31388; FP5 2001, N°QLRT-2001-01107; Contract N° 2871/E-383/SPB/Współpraca z 5.PR//DZ 149/2002.  
**Partners:** Department of Genetics, University of Warmia and Mazury, Poland (co-ordinator), Saaten-Union Resistenzlabor GmbH, Germany; Instituto Sperimentale per la Cerealcoltura, Italy; Agricultural Research Institute of the Hungarian Academy of Sciences, Hungary; Foundation for Research and Technology Hellas, Greece; CSIS Division of Food, Biological and Chemical technologies, South Africa; Poznan Plant Breeders, Poland; Biotechnology Department Bio-Tech, Poland  
**Role:** Member of the co-ordinating team  
**Tasks:** Participated in project planning (Pert and Gantt charts, WP arrangements), provided methodology part, provided know-how related with genetic basis of heterosis, managed research priorities, co-ordinated QTL analysis.
  
2. **Title:** *Lolium perenne* and *L. multiflorum* as a new model for prediction of genetic engineering threads. LolMod.  
**Programme:** FP5 2001, N°QLRT-2001-01982; Contract N° 2871/E-383/SPB-M/DZ65/2001  
**Partners:** Department of Genetics, University of Warmia and Mazury, Università degli Studi di Udine, Italy; University of Tartu, Estonia; National Environmental Research Institute, Denmark; Union "Green Earth", Georgia; Plant Breeding and Acclimatization Station BARTAZEK, Poland; Poznan Plant Breeders, Poland; Biotechnology Department Bio-Tech, Poland  
**Role:** Member of the co-ordinating team  
**Tasks:** Participated in project planning (Pert and Gantt charts, WP planning, overall planning) and co-ordination, provided know-how related with *Lolium* species, population analyses and genetic mapping; research management.
  
3. **Title:** *Avena strigosa* as a new crop for functional food and sustainable agriculture. Strigosa.  
**Programme:** FP5 2000, N°QLRT-2000-01954; FP5 2001, N°QLRT-2001-01978; Contract N° 2871/E-383/SPUB-M/Współpraca z 5.PR UE/DZ 65/2001.  
**Partners:** Department of Genetics, University, Poland of Warmia and Mazury (co-ordinator), Agricultural Research Centre of Finland, Finland; Universitat de Barcelona, Spain; Vyskumny Ustav Rastlinnej Vyroby, Slovakia; Biotechnical Faculty, University of Ljubljana, Slovenia; Arcadia International, Belgium; Biotechnology Department Bio-Tech, Poland  
**Role:** Member of the co-ordinating team  
**Tasks:** Participated in project planning, responsible for contacts with partners, provided know-how related with chemical mutagenesis, genetic mapping and genetic resources, administrative and research management.
  
4. **Title:** Development of stiff-straw ideotype by combination of enabling technologies. SSPea.  
**Programme:** FP5 2001, N°QLRT-2001-01085; Contract N° 2871/E-383/SPB/Współpraca z 5.PR//DZ 75/2002.  
**Partners:** Department of Genetics, University of Warmia and Mazury, Poland (co-ordinator), Wageningen University, Netherlands; Universidade do Algarve, Portugal; Leibniz Universität Hannover, Germany; Université Catholique de Louvain, Belgium; Institute of Plant and Crop Plant Research, Germany; Johann Wolfgang Goethe-Universität, Germany; Poznan Plant Breeders, Poland; Biotechnology Department Bio-Tech, Poland  
**Role:** Member of the co-ordinating team  
**Tasks:** Participated in project planning, responsible for contacts with partners, provided know-how related with chemical mutagenesis, inheritance of quantitative traits and QTL mapping, administrative and research management.
  
5. **Title:** Centre of excellence in modern biotechnology of plants. Bio-Gene  
**Programme:** FP5 2002, N°QLAM-2001-00400; N° 2871/E-383/SPB/Współpraca z 5.PR//DZ 528/2002.  
**Partners:** Department of Genetics, University, Poland of Warmia and Mazury (co-ordinator), Leibniz Universität Hannover, Germany; Dundee University, UK; Arcadia International, Belgium  
**Role:** Co-ordinator  
**Tasks:** Co-ordinated project planning, responsible for contacts with partners, prepared consortium agreement, managed research priorities and adjustments, provided an intellectual property policy, created implementation plan and monitoring rules, provided know-how related with barley, ryegrasses and oats.

6. **Title:** Population genomics – new tools for population and evolutionary genetics. PopGenom.  
**Programme:** FP6 2003, N°FP6-004887; Contract N° 2871/E-383/Współpraca z PR UE/DIE 250/2004.  
**Partners:** Department of Genetics, University of Warmia and Mazury, Università degli Studi di Udine, Italy; University of Tartu, Estonia; Union “Green Earth”, Georgia; Plant Breeding and Acclimatization Station BARTAZEK, Poland; Poznan Plant Breeders, Poland; Biotechnology Department Bio-Tech, Poland  
**Role:** Co-ordinator  
**Tasks:** Co-ordinated project planning, organized consortium and ensured contacts among partners, prepared consortium agreement, adjusted research tasks, provided an intellectual property policy, created implementation plan and monitoring rules, provided know-how related with population genetics in ryegrasses.
7. **Title:** The mystery of heterosis – the molecular basis of phenomenon. Heterosis.  
**Programme:** FP6 2003, N°FP6-005986; Contract N° 2871/E-383/Współpraca z PR UE/DIE 2510/2004.  
**Partners:** Department of Genetics, University of Warmia and Mazury, Poland (co-ordinator), Istituto Sperimentale per la Cerealcoltura, Italy; Agricultural Research Institute of the Hungarian Academy of Sciences, Hungary; Foundation for Research and Technology Hellas, Greece; CSIS Division of Food, Biological and Chemical technologies, South Africa; Biotechnology Department Bio-Tech, Poland  
**Role:** Member of the co-ordinating team  
**Tasks:** Participated in project planning, prepared and agreed state of art and methodology part, provided know-how related with heterosis in barley, quantitative inheritance and QTL mapping.
8. **Title:** Genomic approaches for crop improvement. GenCrop.  
**Programme:** FP6 2004-2008, N°FP6-509834; N°MTKD-CT-2004-509834  
**Partners:** Department of Genetics, University of Warmia and Mazury, Poland (co-ordinator), Arcadia International, Belgium; Life Science Research Biocentre, University of Dundee UK; Leibniz Universität Hannover, Germany, Foundation for Research and Technology Hellas, Greece; Wageningen University, Netherlands; University of Southampton, UK  
**Role:** Scientific co-ordinator  
**Tasks:** Participated in project planning, prepared and agreed state of art and methodology part, prepared technical annex involving detail work plan for four thematic areas, prepared consortium agreement including intellectual properties, co-ordinated work of incoming fellows, joined collaborating partners, kept electronic contacts, created the management discipline and capabilities to monitor the project, prepared activity and management reports, controlled finances, prepared documents.
9. **Title:** Plant proteomics in Europe. EPP.  
**Programme:** COST 2007-2011; FA0603  
**Partners:** Jenny Renault, Centre de Recherche Public Luxembourg; Luxembourg (co-ordinator) and 23 partners from Europe  
**Role:** Member of the Management Committee, National Representative  
**Tasks:** Provided part related with application of genetic methods at the stage of project planning and submitting (short and full version of proposal), provided data about project achievements in Poland, participated in report assessments, participated in deciding about reimbursed participants from Poland.
10. **Title:** Evolutionary genomics for conservation biology and crop improvement. Evolunomics.  
**Programme:** FP7-People-ITN-2008, N°245206  
**Partners:** Department of Genetics, University of Warmia and Mazury, Poland; Universidade do Algarve, Portugal; Universitat de Barcelona, Spain; Foundation for Research and Technology Hellas, Greece; Leibniz Universität Hannover, Germany; University of Ljubljana, Slovenia; University of Southampton, UK; University of Tartu, Estonia; Wageningen University, Netherlands; University of Warwick, UK; Instituto Nacional de Investigaciones Nucleares, Mexico; Tatra National Park, Poland; Babiogorski National Park, Poland; Poleski National park, Poland; Poznan Breeders Ltd, Poland; Silesian University, Poland  
**Role:** Member of the Management Committee, National Representative  
**Tasks:** Provided and wrote scientific part of the project, responsible for contacts with partners, task planning and workpackage preparation.

- 11. Title:** Soil microbial influence on optimizing food crop drought resistance in novel cropping systems. Micro-DRINK  
**Programme:** FP7 2009; N°245206  
**Partners:** School of Civil Engineering and the Environment, University of Southampton, UK (co-ordinator); University of Wageningen, Netherlands; Department of Genetics, University of Warmia and Mazury, Poland; Leibniz Universität Hannover, Germany; Foundation for Research & Technology Hellas, Greece; University of Barcelona, Spain; Univesidade do Algarve, Portugal; University of Ghent, Belgium; Universite Ibn Tofail; Instituto Nacional de Investigaciones Nucleares, Mexico.  
**Role:** Member of the consortium  
**Tasks:** Provided part related with mapping of QTLs responsible for drought tolerance in the presence and absence of advantageous soil microorganisms.
- 12. Title:** Nucleases for efficient engineering of secondary metabolite pathways in plants. NuPath.  
**Programme:** FP7 2009; N°255104  
**Partners:** Foundation for Research & Technology Hellas, Greece (co-ordinator); Justus-Liebig Universitaet, Germany; Technological Educational Institute of Crete, Greece; Department of genetics, University of Warmia and Mazury, Poland; Swedish University of Agricultural Sciences, Sweden; Synvolux Therapeutics BV; Fundation Canaria del Instituto Canario de Investigation del Cancer; National and Kapodistrian University of Athens, Greece; Universite of Strasbourg, France; Frutarom Ltd  
**Role:** Member of the consortium  
**Tasks:** Responsible for identification of pine genes encoding selected secondary metabolites.
- 13. Title:** Genome based detection of GMO-related antibiotic resistance in soil bacteria. GMO-ABR.  
**Programme:** NATO, Science for Peace 2009.  
**Partners:** Laboratory of Molecular Biology, Armenian State Agrarian University, Armenia; Section of Food Security, International Association for Human and Animal Health Improvement, Armenia; Durmishidze Institute of Biochemistry and Biotechnology, Georgia; Leibniz Universität Hannover, Germany; University of Warmia and Mazury, Poland  
**Role:** Member of the consortium  
**Tasks:** Responsible for assessing horizontal gene transfer by microarrays.
- 14. Title:** Towards legume roots tolerant to abiotic stress – targeted integrated approach. LegRoot.  
**Programme:** Call FP7-KBBE-2011-5-CP-CSA. Project N°FP7 289602  
**Partners:** Department of Genetics, University of Warmia and Mazury, Poland (co-ordinator), University of Southampton, UK; University de Barcelona, Spain; Foundation for Research & Technology Hellas, Greece; Leibniz Universität Hannover, Germany; Univesidade do Algarve, Portugal; Eufomatics Oy, Finland; IT-Breeding, Germany  
**Role:** Co-ordinator  
**Tasks:** Responsible for project writing, co-ordinated scientific part, co-ordinated workpackages, prepared administrative part, ideas of the project have been developing, some of them were published in “From DNA sequence to biological meaning”.
- 15. Title:** Innovative functional food products based on the use of underutilized crops rich in bioactive health beneficial compounds. FunFood  
**Programme:** Call FP7-KBBE-2011-5-CP-CSA. Project N°FP7 289590  
**Partners:** University of Ljubljana, Slovenia (co-ordinator) and 24 partners from France, Finland, Germany, Hungary, Germany, Italy, Poland, Russia, Slovenia, Spain and UK  
**Role:** Member, representative of the Department of Genetics, Poland  
**Tasks:** provided know-how related with genetic improvement of *Avena strigosa*, provided Department description and administrative data

## 4 INTERNATIONAL RECOGNITION (ESTEEM FACTOR)

### 4.1 Invitations

1. **2006.** Invitation to take part in the COST Action FA0603, Plant Proteomics in Europe. A member of the Management Committee, national representative.
2. **2007.** Invitation to participate in a proposal prepared by the University of Mexico State related with underutilised crops (invited by Elogio de la Crus Torres).
3. **2007.** Presentation in the European Commission booklet "Building research careers in Europe". Directorate-General for Research. [EU Booklet.pdf](#)
4. **2008.** Invitation to participate in the proposal to 7 Framework Programme entitled "Soil microbial influence on optimizing food crop drought resistance in novel cropping systems", Micro-Drink co-ordinated by School of Civil Engineering and the Environment, University of Southampton, UK (Prof. Nazmul Haq).
5. **2008.** Invitation to participate in the proposal to 7 Framework Programme entitled "Nucleases for efficient engineering of secondary metabolite pathways in plants", NuPath co-ordinated by the Foundation for Research & Technology Hellas, Greece (Prof. Michael Kokkinidis).
6. **2010.** Invitation to collaborate on QTL mapping in *Brassica juncea*, the PhD project at the Southampton University (Prof. Nazmul Haq).
7. **2010.** Invitation to collaborate with IT-Breeding, Germany (Dr Lars Gernot Otto).

### 4.2 Reviews

1. **March-April 2005.** Proposal evaluation for the Sixth Framework Programme of RTD within thematic priority "Food Quality and Safety, topics T5.4.1.1-5.4.8.4, call identifier FP6-2004-Food-3-A.
2. **2007.** Invitation to be a project evaluator in International Foundation for Science, Sweden (invited by Jean-Marc Leblanc).
3. **2008, 2011.** Acta Physiologiae Plantarum – Reviewer
4. **2011.** African Journal of Agriculture – Reviewer
5. **2011.** Acta Agriculturae Slovenica – Reviewer
6. **Registered** as an expert in 7 FP, EMBO, National Foresite Programme

### 4.3 Citations

- In total, 20 papers **were cited 78 times** (3.9 per a paper).
- **41 citations were in ISI indexed journals** (summary IF=57.8) such as Appl Radiat Isotopes, Plant Cell Tiss Org, *In vitro* Cell Dev B, Euphytica, Protoplasma, Plant cell Rep, J Plant Physiol, Cereal Res Commun, Russ J Genet, Plant Breeding, Acta Soc Bot Pol, Can J Microbiol, Mol Phylogenet Evol, Plant Sys Evol, Proc R Soc B, Mol Ecol, Freshwater Biol, Crit Rev Plant Sci, Folia Biol-Krakow, Zool Sci, Bryologist.
- **22 citations in peer reviewed journals in English** (Afr J Biotechnol, Tr J Botany, Rev Bras Biol, Biodiv Res Conser) **and books** (Plant breeding reviews, Advances in haploid production in higher plants).
- **15 citations in other sources** including journals (Acta Agriculturae Shanghai, Journal of Sichuan University), PhD theses, conferences and Internet sources.

### 4.4 Memberships

- Scitable, Nature Education website (since 2010)
- Bioinformatics Organisation (since 2009).
- UPS-agrobiodiversity (since 2007)
- Registered in European Molecular Biology Organization (since 2002)

## 5 TRAINING AND TEACHING

### 5.1 Training Experienced Researchers in the Field

N°	Researcher	Duration	Host Institution	Areas and methods
<b>Younger Staff of the Department of Genetics UWM</b>				
1.	Karol Korzekwa, MSc	1998-2003	<ul style="list-style-type: none"> <li>•Molecular methods (DNA isolation, PCR – standard and real time, molecular markers, gene isolation, expression analysis, genetic mapping)</li> <li>•Population genetic and phylogenetic analyses</li> <li>•Bioinformatics tools including protein modelling, phylogenetic analyses based on DNA and protein sequences</li> <li>•Field experiments and basis of quantitative traits analysis including advanced statistical methods</li> <li>•Teaching methods including problem solving approach in genetics, experimental classes</li> <li>•Project management</li> </ul>	
2.	Katarzyna Lewandowska, MSc	1998-2001		
3.	Sylwia Ciaglo, MSc	2000-2004		
4.	Katarzyna Kubiak, MSc	2000-2004		
5.	Lukasz Nadolski, MSc	2004-2005		
6.	Kamil Szandar, MSc	2004-2008		
7.	Katarzyna Jezierska, MSc	2005-2008		
8.	Katarzyna Wolosz, MSc	2010-2011		
<b>Experienced Researchers Visiting the Department of Genetics UWM</b>				
1.	Piotr Androsiuk, PhD	2 years (split) 2003-2005	Department of Genetics, Adam Mickiewicz University, Poznan	<ul style="list-style-type: none"> <li>•Genetic diversity and migration in Scots pines</li> <li>•Methods: DNA isolation, RAPD, ISJ, AFLP, B-SAP, PCR-RFLP</li> </ul>
2.	Alina Bączkiewicz, PhD Katarzyna Buczkowska, PhD	1 month 2006	Department of Genetics, Adam Mickiewicz University, Poznan	<ul style="list-style-type: none"> <li>•Identification of cryptic species in bryophytes</li> <li>•Methods: DNA isolation, RAPD, ISJ, B-SAP, phylogenetic and population genetic software</li> </ul>
3.	Dominika Bogdanska, MSc	6 months 2009	Department of Zoology, University of Warmia and Mazury, Olsztyn	<ul style="list-style-type: none"> <li>•Identification and evolution of leeches</li> <li>•Methods: DNA isolation, RAPD, phylogenetic and population genetic software</li> </ul>
4.	Katarzyna Kruk, PhD	2 months 2009	Department of Genetics, Agriculture University, Lublin	<ul style="list-style-type: none"> <li>•Transposon in crops – application to genetic mapping and diversity analysis, mutagenesis</li> <li>•Methods: RNA isolation, SSAP, analysis of transgenes, isolation of DNA bands from gels, preparation for sequencing, digestion by restriction enzymes, alignment (BLAST, CLUSTAL), protein modelling</li> </ul>
5.	Renata Nowak, DSc	1 month 2003	Department of Pharmaceutical Botany, Medical University, Lublin	<ul style="list-style-type: none"> <li>•Phylogenesis of roses</li> <li>•Methods: DNA isolation, B-SAP, ISJ, phylogenetic and population genetic software</li> </ul>
6.	Jakub Sawicki, PhD	a year (split) 2004-2005	Department of Botany and Nature Protection, University of Warmia and Mazury, Olsztyn	<ul style="list-style-type: none"> <li>•Genetic diversity and evolution of <i>Sphagnum</i></li> <li>•Methods: DNA isolation, RAPD, B-SAP, ISJ, PCR-RFLP, ITS, phylogenetic and population genetic software</li> </ul>
7.	Monika Szczecińska, PhD	a year (split) 2004-2005	Department of Botany and Nature Protection, University of Warmia and Mazury, Olsztyn	<ul style="list-style-type: none"> <li>•Genetic diversity of <i>Polygonatum</i></li> <li>•Methods: DNA isolation, RAPD, B-SAP, ISJ, phylogenetic and population genetic software, field experiments in random blocks, ANOVA</li> </ul>
8.	Lech Urbaniak, DSc.	1 year (split) 2003-2007	Department of Genetics, Adam Mickiewicz University, Poznań	<ul style="list-style-type: none"> <li>•Genetic diversity and migration of Scots pine. Inheritance of quantitative characters</li> <li>•Methods: population genetic programmes, statistical analyses, EU project management</li> </ul>

## 5.2 Students tutoring within the Student's Association of Geneticists "GENIUS" as emphasized by participation at international seminars

1. **The 22<sup>nd</sup> International seminar of Students' Associations; 2003 May, Olsztyn, Poland.**  
Liverworts from the genus *Pellia* as an object of genetic studies – past and present. Abstract p. 117-118.  
Authors: Kryniecka Beata, Laskowska Urszula, Nadolski Lukasz, Madejska Angelika, Szandar Kamil, Banacka Magdalena, Buzon Beata, Gersztyn Aneta, Osnowska Karina, Węglarz Agnieszka
2. **The 22<sup>nd</sup> International seminar of Students' Associations; May 2003, Olsztyn, Poland.**  
*Sphagnum girgensohnii* Russ. as an object of genetic studies. Abstract p. 140-141.  
Authors: Sawicki Jakub, Laskowska Urszula, Kryniecka Beata, Madejska Angelika, Nadolski Lukasz, Szandar kamil, Szczecińska Monika
3. **The 23<sup>rd</sup> International seminar of Students' Associations; May 2004, Olsztyn, Poland.**  
Genetic similarities among members of the family Poaceae. Abstract p. 34-35.  
Authors: Florkiewicz Beata, Nadolski Lukasz, Szandar Kamil, Laskowska Urszula, Madejska Angelika, Banacka Magdalena, Buzon beata, Gersztyn Aneta, Osnowska Karina, Węglarz Agnieszka, Śliwiecka Anna
4. **The 23<sup>rd</sup> International seminar of Students' Associations; May 2004, Olsztyn, Poland.**  
The preliminary estimation of *Pinus sylvestris* tolerance to aluminium. Abstract p. 42-43.  
Authors: Madejska Angelika, Laskowska Urszula, Ciągło Sylwia
5. **The 24<sup>th</sup> International seminar of Students' Associations; May 2005, Olsztyn, Poland.**  
Application of DNA markers in identification of hybrids between wheat and rye. Abstract p. 41-42.  
Authors: Dubiel Anna, Jezierska Katarzyna, Skierska Sabina, Osmenda Joanna, Banaszek Karolina, Juchniewicz Agnieszka, Hościk Michał, Nadolski Lukasz
6. **The 24<sup>th</sup> International seminar of Students' Associations; May 2005, Olsztyn, Poland.**  
Optimisation of mutagen doses in barley and wheat. Abstract p. 41-42.  
Authors: Jezierska Katarzyna, Dubiel Anna, Hościk Michał, Skierska Sabina, Osmenda Joanna, Juchniewicz Agnieszka, Banaszek Karolina, Nadolski Lukasz
7. **The 25<sup>th</sup> International seminar of Students' Associations; May 2006, Olsztyn, Poland.**  
Origin of peat bog pine, *Pinus uliginosa* Neumann in the light of molecular studies. Abstract  
Authors: Pietkiewicz Joanna, Gromczynska Monika, Smug Katarzyna, Góralczyk Anna, Kamińska Aldona, Błażewicz Ewa
8. **The 26<sup>th</sup> International seminar of Students' Associations; May 2007, Olsztyn, Poland.**  
Optimisation of PCR conditions in pea using STS from *Medicago truncatula*. Abstract.  
Authors: Krupska Hanna, Omielczenko Paulina, Nosarzewska Dorota, Mystkowski Szymon
9. **The 27<sup>th</sup> International seminar of Students' Associations; May 2008, Olsztyn, Poland.**  
Gene flow in *Pinus x rhaetica* based on organellum DNA and transposons. Abstract p. 86.  
Authors: Omielczenko Paulina, Szczygłowska Karolina, Krupska Hanna.
10. **The 28<sup>th</sup> International seminar of Students' Associations; May 2008, Olsztyn, Poland.**  
PGIP expression and cytogenetic analysis of transgenic plants. Abstract p. 86.  
Authors: Kaczynski Piotr, Konert Grzegorz, Wolosz Katarzyna, Richter Andrea, Otto Lars-Gernot.
11. **Sixty years of Student's Associations activities. University of Warmia and Mazury in Olsztyn. 2011.**  
Description of the Student's Association "GENIUS". p. 44-45.

## 5.3 Supervising

### Master theses (MSc)

1. **Kulesza M. 2001.** Induced mutagenesis and optimization of mutagen doses in *Lolium multiflorum* and *L. perenne*. Department of Genetics, Major Biotechnology. Faculty of Biology UWM, Olsztyn, Poland.
2. **Skrobek M. 2001.** Estimation of somatic effects of mutagens in *Lupinus* sp. Department of Genetics, Major Biotechnology. Faculty of Biology UWM, Olsztyn, Poland.
3. **Wojciechowicz J. 2001.** Optimisation of mutagen doses in dry pea, *Pisum sativum*. Department of Genetics, Major Biotechnology. Faculty of Biology UWM, Olsztyn, Poland.

4. **Banacka M. 2004.** Inheritance of leaf morphology in *Lolium perenne* and *L. multiflorum*. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
5. **Gersztyn A. 2004.** Searches for molecular markers correlated with quantitative characters in *Lolium multiflorum* Lam. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
6. **Jasińska K. 2004.** Genetic characteristics of M<sub>4</sub> mutants lines of *Hordeum vulgare* L. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
7. **Nadolski L M. 2004.** Inheritance of selected quantitative traits in *Lolium perenne* L. and *L. multiflorum* Lam. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
8. **Śliwecka A. 2004.** Genetic similarity of among selected species of the family Poaceae. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
9. **Węglarz A. 2004.** Analysis of seedling root fluorescence in *Lolium perenne* and *L. multiflorum*. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
10. **Jezińska K. 2005.** Evaluation of heterosis effects in mutant crosses of *Hordeum vulgare* L. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
11. **Osmęda J. 2005.** Searches for molecular markers correlated with quantitative traits in *Lolium perenne* L. and *L. multiflorum*. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
12. **Skierska S. 2005.** Analysis of QTL inheritance in the F<sub>2</sub> derived from a cross between *Lolium multiflorum* and *Lolium perenne*. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
13. **Błażewicz E. 2006.** Biometrical and molecular characteristics of M<sub>2</sub> and M<sub>3</sub> generations of bristle oat, *Avena strigosa* Schreb. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
14. **Caliński B. 2006.** Molecular characteristics of peat bog Scots pine from the Gązwa reserve. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
15. **Gromczyńska M. 2006.** Estimation of genetic similarities of the *Pellia endiviifolia* species complex. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
16. **Kamińska A. 2006.** Genetic characteristics of M<sub>2</sub> and M<sub>3</sub> generations of bristle oat, *Avena strigosa*. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
17. **Grabowska M. 2007.** Molecular analysis *Hordeum vulgare* mutants. Department of Genetics, Major Biotechnology, Faculty of Biology UWM, Olsztyn, Poland.
18. **Jabłoński W. 2008.** Application of bioinformatics and molecular methods for the analysis of polycormic genes in pines. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
19. **Krupska H. 2008.** Analysis of aluminium resistance in mutant lines of bristle oat. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
20. **Kulik A. 2008.** Searches for transposons in pines. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Co-operation with the Tatra National Park, Jan Chmiel**
21. **Masłowska U. 2008.** Analysis of transposons in transgenic pea, *Pisum sativum* L. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Co-operation with the Leibniz Universität Hannover**
22. **Mystkowski Sz. 2008.** Characteristics of transgenic lines of pea, *Pisum sativum* L. and preliminary estimation of transgene flow. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Co-operation with the Leibniz Universität Hannover**
23. **Nosarzewska D. 2008.** Molecular characteristics of selected barley (*Hordeum vulgare* L) mutants. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
24. **Przygoda K. 2008.** Application of bioinformatics and molecular methods for the analysis of dwarf genes in pines. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Bioinformatic tools were employed in this thesis.**
25. **Adamkowska A. 2009.** QTL mapping in F<sub>2</sub> derived from the cross MRS x brachytic in *Hordeum vulgare* L. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
26. **Batia M. 2009.** Efficiency of selected cpDNA and mtDNA in tracking migration routes of *Pinus sylvestris* L. Department of Genetics, Major Biotechnology, Faculty of Biology UWM, Olsztyn, Poland.

27. **Judycka S. 2009.** Origin of *Pinus x rhaetica* Bruggen based on molecular studies. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Co-operation with the Tatra National Park, Tadeusz Zwijacz**
28. **Kaczynski P. 2009.** Morphological and molecular analysis of offspring of transgenic peas, *Pisum sativum* L. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Co-operation with the Leibniz Universität Hannover**
29. **Konert G. 2009.** Analysis if transposons from the CACTA family in Poaceae. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Bioinformatic tools were employed in this thesis.**
30. **Kuzma K. 2009.** Evolution of peroxidases genes in selected plant species. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Bioinformatic tools were employed in this thesis.**
31. **Lisowski B. 2009.** Morphological and molecular characteristics of *Pisum sativum* mutants derived from Gottschalk collection. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Co-operation with the Leibniz Universität Hannover**
32. **Paukzto L. 2009.** Molecular phylogenetics of Poacea based on *Pgip* and *Vst* genes. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Bioinformatic tools were employed in this thesis.**
33. **Pelszynski B. 2009.** Transposon analysis of liverworts from the genus *Pellia*. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
34. **Szymanski K. 2009.** Characteristics of transposon sequences, *Lolcopia1* and *Lolcopia2*. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Bioinformatic tools were employed in this thesis.**
35. **Wolosz K. 2009.** Transposon diversity in *Pinus mugo* Turra in elevation transect. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Co-operation with the Tatra National Park, Tadeusz Zwijacz**
36. **Kowalska M. 2010.** Hepatophyta phylogeny based on known DNA sequences. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Bioinformatic tools were employed in this thesis.**
37. **Martyniak I. 2010.** Phylogenesis of *Avena* based on selected DNA sequences. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Bioinformatic tools were employed in this thesis.**
38. **Matusiak E. 2010.** Biometrical characteristics of root system in pea mutants and bioinformatic studies of responsible genes. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Co-operation with the Leibniz Universität Hannover**
39. **Narozna B. 2010.** Genetic analysis of mapping population of barley, *Hordeum vulgare* L. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
40. **Sierpinski P. 2010.** Biometrical comparisons of mutants and transgenic lines of pea and bioinformatics analysis of genes responsible for *Rhizobium* symbiosis. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Co-operation with the Leibniz Universität Hannover**
41. **Szewczak J. 2011.** Evolution of class I peroxidases in plants. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Bioinformatic tools were employed in this thesis.**
42. **Stelmach A. 2011.** Analysis of genes responsible for arsenic tolerance in plants. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland. **Bioinformatic tools were employed in this thesis.**

### **Bachelor theses (BSc)**

1. **Dominiak E. 2008.** Application of molecular cytogenetics in basic research and plant breeding. Department of Genetics, Major Biotechnology. Faculty of Biology UWM, Olsztyn, Poland.
2. **Wrocławska A. 2008.** Transposons in plants and their role. Department of Genetics, Major Biotechnology. Faculty of Biology UWM, Olsztyn, Poland.
3. **Matysiewicz M. 2009.** Technology of DNA sequencing and microarrays. Department of Genetics, Major Biotechnology. Faculty of Biology UWM, Olsztyn, Poland.

## 5.4 Reviewing

### Master theses (MSc)

1. **Płonka K. 2003.** Genetic diversity of *Avena strigosa* ecotypes. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
2. **Dąb K. 2008.** Biometrical and molecular characteristics of a pea mapping population derived from the cross between *arthritic* mutant (WT16125) and Piast cultivar. Department of Genetics, Major Biotechnology, Faculty of Biology UWM, Olsztyn, Poland.
3. **Kuzia J. 2008.** Biometrical analysis of barley (*Hordeum vulgare* L) mapping populations and correlation between molecular markers and grain weight from a plant. Department of Genetics, Major Biotechnology, Faculty of Biology UWM, Olsztyn, Poland.
4. **Omieczenko P. 2008.** Phylogenetic relationships in the genus *Pellia* based on DNA markers. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
5. **Starostka M. 2008.** Analysis of correlation between DNA markers and morphological characters of *Hordeum vulgare* L.. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
6. **Szczygłowska K. 2008.** Assessment of gene flow in Scots and mugho pine in Bor na Czerwonym. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
7. **Zalewska M. 2008.** Biometrical and molecular characteristics of a pea mapping population derived from the cross between *ramosus* mutant (WT15141) and Piast cultivar. Department of Genetics, Major Biotechnology, Faculty of Biology UWM, Olsztyn, Poland.
8. **Krom J. 2009.** Biometrical analysis of pea mapping populations in F<sub>2</sub> derived from crosses 002K x Sokolik and 002K x Kwesor Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
9. **Tkaczuk M. 2009.** Genetic diversity of *Pinus cembra* L based on DNA markers. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.

### Bachelor theses (BSc)

1. **Bartwicki D. 2003.** Role of restriction enzymes in biotechnology. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
2. **Czarzynska E. 2003.** Cloning of mammals – perspectives and threatens. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
3. **Lipowski M. 2003.** Point mutations, origin and reparation mechanisms. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
4. **Suwińska B. 2003.** Overview of bacterial genetics. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
5. **Szulborska B. 2003.** Genetic basis of cancerogenesis. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
6. **Turowska J. 2003.** Regulation of gene expression in Eucaryota. Department of Genetics, Major Biotechnology, Faculty of Biology UWM, Olsztyn, Poland.
7. **Bartnikowska M. 2008.** DNA markers and their applications. Department of Genetics, Major Biotechnology, Faculty of Biology UWM, Olsztyn, Poland.
8. **Dobkowska J. 2008.** Genetic diversity of invasive plant and animal species. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
9. **Kaim M. 2008.** Spontaneous and induced mutagenesis in plants. Department of Genetics, Major Biotechnology, Faculty of Biology UWM, Olsztyn, Poland.
10. **Kolwicz S. 2008.** Biological and taxonomic species. Department of Genetics, Major Biotechnology, Faculty of Biology UWM, Olsztyn, Poland.
11. **Kowalska M. 2008.** Role of polyploidization in plant evolution. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.

12. **Matusiak E. 2008.** Mutagenesis and its application in plant breeding. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
13. **Godlewska A. 2008.** Genetic and physical mapping and their uses. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
14. **Uliszewska K. 2008.** Human genetic diseases caused by chromosome mutations. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
15. **Kucharska M. 2009.** Barley, *Hordeum vulgare* L as a crop and model in genetics. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
16. **Stelmach A. 2009.** Liverworts from the genus *Pellia* – state of art. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
17. **Wojnicz P. 2009.** Genetics of *Pinus cembra* – state of art. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
18. **Wojnicz S. 2009.** Phylogenesis of grasses. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
19. **Żabińska I. 2009.** Dwarf genes and their evolution in plants. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
20. **Andrulewicz Edyta. 2010.** Use of transgenic plants to produce edible vaccines. Department of Genetics, Major Biotechnology, Faculty of Biology UWM, Olsztyn, Poland
21. **Cichocka Joanna. 2010.** Systematics, biology and genetics of leeches (Clitellata: Hirudinea). Department of Genetics, Major Biotechnology, Faculty of Biology UWM, Olsztyn, Poland.
22. **Jarosinska Marta. 2010.** Development of plant mutants and their characteristics. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
23. **Puza izabela. 2010.** Achievements of genetics in the treatment of the type 1 diabetes. Department of Genetics, Major Biotechnology, Faculty of Biology UWM, Olsztyn, Poland.
24. **Smulska Natalia. 2010.** Influenza virus and its genetic modifications. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.
25. **Wygnał Justyna. 2010.** Medicinal plants - origin, genetic characteristics and uses. Department of Genetics, Major Biology, Faculty of Biology UWM, Olsztyn, Poland.

## 5.5 Teaching Expertise

1. A range of courses from classical and molecular genetics and genomics based on own data and experimental protocols.
2. A range of topics from evolutionary biology and molecular evolution based on comprehensive own data in addition to literature.
3. Topics from applied genetics and biotechnology including traditional plant breeding methods, mutagenesis, transgenesis, *in vitro* cultures and molecular breeding,
4. Inheritance and mapping of quantitative characters, field experiments.
5. Employing routine and modern software including analyses of a number of sequences. Demonstrating and modelling different evolutionary scenarios.
6. Gene annotation and protein modelling. Application of data bases in genetic and evolutionary studies.
7. Topics involved law aspects of genetic engineering, GMO introduction and tracking in the environment, ethical aspects of genome sequencing.
8. Experience in implementation of innovative methods including own research projects, dissemination in a form of posters or short papers, problem oriented approach and practical aspects of research.
9. Experience in quality management, courses standardization related with implementation of 6FP projects.
10. Complementary skills including project writing, communication with stakeholders, standardization, good laboratory practice.

## 5.6 Teaching Experience - Courses

N <sup>o</sup>	Course title Major/Level/Status	Time Place	Type of activity Language	Curriculum	Role in course development
1.	<b>GENETICS</b> Biology/BSc/Obligatory Biotechnology/BSc/Obligatory	<b>1996-1997</b> Szczecin University <b>1998-2001</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<b>Classes</b> Polish <b>Selected lectures</b> Polish	Classical genetics (Mendel laws, linkage), Cytogenetics, Genetics of quantitative characters, Genetic markers and applications, Molecular genetics – replication, transcription, translation, gene expression, structure of genes and genomes, genetic variation, population genetics	<ul style="list-style-type: none"> <li>•Prepared genetic problems to solved (about 100)</li> <li>•Prepared about 50% of lecture presentations</li> <li>•Standardized classes and evaluation system</li> <li>•Developed plant materials</li> <li>•Gave lectures on mutagenesis, GMO and quantitative inheritance</li> <li>•Combined courses for biology and biotechnology into a single standard</li> </ul>
2.	<b>LAW ASPECTS IN BIOTECHNOLOGY</b> Biotechnology/MSc/Obligatory	<b>1998-2000</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<b>Classes</b> Polish	Bioethics, Experiments on humans and animals, Cloning, Gene therapy, release of GMO	<ul style="list-style-type: none"> <li>•Prepared tests of GMO acceptance</li> <li>•Prepared classes, protocols on release of GMO</li> <li>•Organized “students’ notification committees”</li> </ul>
3.	<b>MOLECULAR BIOLOGY</b> Biology/BSc/Obligatory	<b>2008-2011</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<b>Classes</b> Polish <b>Lectures</b> Polish	Techniques used in molecular biology - PCR technology, molecular markers, Genetic, cytogenetic and physical mapping, Gene and genome sequencing, Structure of genes and genomes, Gene expression	<ul style="list-style-type: none"> <li>•Gave lectures based on own experimental data (50%) and literature</li> <li>•Prepared classes, experimental protocols, problems</li> <li>•Introduced classes in research planning, cost calculation, proposal writing, good laboratory practice</li> <li>•Introduced student’s projects as a part of classes</li> </ul>
4.	<b>MOLECULAR GENETICS</b> Biology/MSc/Elective Biology/MSc/Obligatory (from 2006)	<b>2002-2011</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<b>Classes</b> Polish <b>Lectures</b> Polish/English	Structure and evolution of plant genomes, Recombination, Transposons, Evolution of genes, Genome sequencing, Molecular basis of stress resistance, Molecular breeding of underutilized crops (molecular markers, genetic mapping, transgenic crops), QTL mapping and cloning	<ul style="list-style-type: none"> <li>•Gave lectures based on own experimental data (80%) from genetic mapping, genome analysis, transposon studies</li> <li>•Developed of thematic areas for classes, prepared experimental protocols, problems to solve</li> <li>•Introduced simply experimental procedures and experiment modelling, research managing</li> <li>•Standardized evaluation system</li> </ul>
5.	<b>MOLECULAR EVOLUTION</b> Biology/MSc/Elective Biology/MSc/Obligatory (from 2008)	<b>2002-2011</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<b>Classes</b> Polish/English <b>Lectures</b> Polish/English	Evolution and methods of investigation (evolutionary thinking, experimental procedures, bioinformatics), Molecular basis of evolution, Evolution of phenotypic traits, Hybridizations and Introgression, Speciation, Evolution of genes and genomes, Evolutionary genomics	<ul style="list-style-type: none"> <li>•Gave lectures based on own studies (80%) on grasses, pines and liverworts, supplied with literature data</li> <li>•Developed classes, prepared protocols and challenging problems to solve by students</li> <li>•Introduced exercises in predicting evolutionary scenarios, with emphasis on evolutionary significance of transgenic crops</li> <li>•Introduced research proposal based classes – students plan a project, make experiments, prepare poster or short publication</li> </ul>

N°	Course title Major/Level/Status	Time Place	Type of activity Language	Curriculum	Role in course development
6.	<b>PLANT GENOMICS</b> Biology/MSc/Elective	<b>2002-2010</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<b>Classes</b> Polish/English <b>Lectures</b> Polish/English	Genomics – structural, functional, comparative, High-resolution mapping and genome sequencing, Gene expression and EST sequencing, Identification of QTLs and cloning, Proteomics, Transgenic plants	<ul style="list-style-type: none"> <li>•Gave lectures based on own studies (60%) on the genus <i>Lolium</i>, barley and pea</li> <li>•Developed classes, prepared plant materials for demonstration, developed experimental protocols for students</li> <li>•Introduced classes on GMO release – from research proposal to notification and predicting risks, safety issues, measures in a case of accident</li> </ul>
7.	<b>INHERITANCE OF QUANTITATIVE CHARACTERS</b> Biology/MSc/Elective	<b>2006-2010</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<b>Classes</b> Polish/English <b>Lectures</b> Polish/English	Quantitative traits and methods of analysis, Basic of statistical analyses, Heterosis, Genetic parameters and their estimation, QTL mapping and cloning, markers assisted selection, role of QTLs in evolution, domestication	<ul style="list-style-type: none"> <li>•Gave lectures based on own studies (90%) on heterosis and quantitative inheritance in grasses, role of QTLs in domestication of <i>Lolium</i></li> <li>•Developed protocols for computer analyses, estimation of genetic parameters, QTL number</li> <li>•Supervised younger staff with respect to classes</li> </ul>
8.	<b>GENOME ANNOTATION</b> Biology/BSc/Elective Biology/MSc/Elective	<b>2006-2011</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<b>Classes</b> Polish/English <b>Lectures</b> Polish/English	Genome sequencing projects, EST sequencing, Data bases, NCBI structure and related software, gene searches and sequence alignment, protein modelling	<ul style="list-style-type: none"> <li>•Gave lectures and classes with extensive computer work</li> <li>•Developed protocols aimed at understanding the bioinformatics tools and their application in biology</li> <li>•Prepared demo materials – how to predict protein structure, how to align sequences</li> <li>•Prepared an exam based on computer work</li> </ul>
9.	<b>MUTAGENESIS</b> Biology/MSc/Elective Biotechnology/MSc/Obligatory (from 2008)	<b>2006-2010</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<b>Classes</b> Polish <b>Lectures</b> Polish/English	Spontaneous and induced mutagenesis, DNA reparation, Mutation analysis and mapping, Insertion mutagenesis, Somaclonal and gametoclonal variation, Mutagenesis in plant breeding	<ul style="list-style-type: none"> <li>•Gave lectures based on own data on chemical mutagenesis (60%), FAO materials (20%) and literature (20%)</li> <li>•Developed mutants in barley, oat and pea</li> <li>•Introduced standard test (FAO) of assessment of mutagenic effects</li> <li>•Supervised classes conducted by younger staff</li> </ul>
10.	<b>POPULATION GENETICS</b> Biology/MSc/Elective Biology/MSc/Obligatory (from 2008)	<b>2002-2010</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<b>Classes</b> Polish <b>Lectures</b> Polish	Population structure, Genetic diversity, Selection, Mutations, Genetic drift, Microevolutionary processes, Species concept, Conservation biology, Gene flow with emphasis of GMO	<ul style="list-style-type: none"> <li>•Gave lectures based on own data from grasses, liverworts, pine, mollusks, leeches (80%)</li> <li>•Developed protocols on population genetic problems and process modelling</li> <li>•Introduction of predicting risks related with GMO</li> <li>•Standardized evaluation system</li> </ul>

## 6 ADMINISTRATION RESPONSIBILITIES

N°	Activity title Activity co-ordinator	Time Place	Kornelia Polok		
			Duties	Initiative and achievements	Gained experience
<b>6.1 Works for Former Departments</b>					
1.	<b>FAO/IAEA COURSES</b> "Genetic basis of mutation techniques for crop improvement" Prof. Mirosław Maluszynski	<b>1990-1994</b> Department of Genetics, Silesian University, Katowice, Poland	<ul style="list-style-type: none"> <li>•Prepared materials for participants</li> <li>•Prepared materials for visiting experts</li> <li>•Supported participants</li> <li>•Helped in experiments conducted by participants</li> </ul>	<ul style="list-style-type: none"> <li>•Prepared protocols for mutagenic treatment</li> <li>•Contacted with the Faculty of Chemistry to use <math>\gamma</math> source</li> </ul>	<ul style="list-style-type: none"> <li>•Organization of international courses</li> <li>•Contacts with people from abroad</li> <li>•Discussing problems with experts</li> </ul>
2.	<b>CONFERENCE</b> "Potential application of in vitro cultures in modern plant breeding" Prof. Mirosław Maluszynski	<b>1994 (July-August)</b> Department of Genetics, Silesian University, Katowice, Poland	<ul style="list-style-type: none"> <li>•Prepared and abstract book, compiled data from all participants</li> </ul>	<ul style="list-style-type: none"> <li>•Technical aspects of conference organization</li> </ul>	
3.	<b>NEW MOLECULAR METHODS</b> Prof. Roman Zielinski	<b>1996</b> Department of Genetics Szczecin University, Poland	<ul style="list-style-type: none"> <li>•Purchased equipment</li> <li>•Established new molecular laboratory</li> <li>•Established a growth chamber</li> </ul>	<ul style="list-style-type: none"> <li>•Introduced new methods of DNA isolation</li> <li>•Introduced new PCR methods</li> </ul>	<ul style="list-style-type: none"> <li>•Negotiating with sellers</li> <li>•Team working</li> </ul>
4.	<b>INTERNATIONAL PROJECTS</b> Prof. Roman Zielinski	<b>1997-1998</b> Department of Genetics Szczecin University, Poland	<ul style="list-style-type: none"> <li>•Organized international co-operation</li> <li>•Searched for international funding possibilities</li> </ul>	<ul style="list-style-type: none"> <li>•Prepared a project to 4 Framework Programme (INCO/COPERNICUS)</li> <li>•Set up contacts with two European teams</li> </ul>	<ul style="list-style-type: none"> <li>•Project writing</li> <li>•Discussing with partners</li> </ul>

N°	Activity title Activity co-ordinator	Time Place	Kornelia Polok		
			Duties	Initiative and achievements	Gained experience
<b>6.2 Works for the Present Department</b>					
5.	<b>ORGANIZATION OF THE DEPARTMENT OF GENETICS</b> Prof. Roman Zielinski	<b>1998-2000</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<ul style="list-style-type: none"> <li>•Managed an organization of laboratories</li> <li>•Consulted purchase of equipment</li> <li>•Launched research projects and teaching courses</li> </ul>	<ul style="list-style-type: none"> <li>•Optimized spatial organization of laboratories to reduce unnecessary transfer of materials</li> <li>•Standardized equipment uses</li> </ul>	<ul style="list-style-type: none"> <li>•Negotiating with equipment and reagent sellers</li> <li>•Finding alternative solution</li> <li>•Building research activity from beginnings</li> </ul>
6.	<b>MANAGEMENT OF THE DEPARTMENT OF GENETICS</b> Prof. Roman Zielinski	<b>2000-2010</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<ul style="list-style-type: none"> <li>•Managed finances</li> <li>•Supervised laboratory and field experiments</li> <li>•Supervised teaching courses (up to 2008)</li> </ul>	<ul style="list-style-type: none"> <li>•Eliminated unnecessary costs</li> <li>•Enhanced equipment uses</li> <li>•Prepared, standardized laboratory protocols and information flow</li> <li>•Prioritized experimental work</li> <li>•Standardized teaching courses</li> </ul>	<ul style="list-style-type: none"> <li>•Consulting people</li> <li>•Training people, demonstrating facilitates, assisting younger staff</li> <li>•Maximizing effects with limited financial resources</li> </ul>
7.	<b>FP PROJECT WRITING DEPARTMENT OF GENETICS</b> Prof. Roman Zielinski	<b>2000-2010</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<ul style="list-style-type: none"> <li>•Prepared administrative documents</li> <li>•Edited B and C parts according to FP rules</li> <li>•Participated in writing scientific and management parts</li> <li>•Prepared cost calculation</li> </ul>	<ul style="list-style-type: none"> <li>•Outlined necessity of multidisciplinary co-operation at European level</li> <li>•Prioritized tasks to cope with deadlines</li> <li>•Scheduled tasks in proposals</li> <li>•Coordinated communication</li> </ul>	<ul style="list-style-type: none"> <li>•Negotiating within international and interdisciplinary teams</li> <li>•Proposal writing according to FP</li> <li>•Knowledge about administrative demands of EU</li> <li>•Understanding EU documents</li> </ul>
8.	<b>GENCROP – EU PROJECT MANAGEMENT</b> Prof. Roman Zielinski	<b>2004-2008</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<ul style="list-style-type: none"> <li>•Managed expert visits</li> <li>•Co-coordinated research programme of experts with project goals</li> <li>•Wrote reports to EC and submitted in SESAM – activity, and management</li> </ul>	<ul style="list-style-type: none"> <li>•Prepared documents for experts based on European Code for Researchers</li> <li>•Established co-operation between staff and experts</li> <li>•Designed a form of reports</li> </ul>	<ul style="list-style-type: none"> <li>•Communication with people from different countries, finding common solutions</li> <li>•Working in international environment</li> <li>•Communication with EC services</li> <li>•Coping with deadlines</li> </ul>
9.	<b>GENCROP – EU PROJECT FINANCIAL MANAGEMENT</b> Prof. Roman Zielinski	<b>2004-2008</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<ul style="list-style-type: none"> <li>•Managed finances</li> <li>•Consulted with University services</li> <li>•Co-coordinated audit</li> <li>•Wrote financial reports and submitted in SEZAM</li> </ul>	<ul style="list-style-type: none"> <li>•Computed, recorded and documented costs</li> <li>•Prepared documentation for an external auditor</li> </ul>	<ul style="list-style-type: none"> <li>•Maximizing financial efficiency</li> <li>•Interpreting financial information</li> <li>•Presenting costs according to EC rules</li> <li>•Calculation direct, indirect costs, eligible and ineligible</li> </ul>
10	<b>THE EUROPEAN OMBUDSMAN COMPLAIN AGAINST EC DEPARTMENT OF GENETICS</b> Prof. Roman Zielinski (Complain accepted, 2010)	<b>2009</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<ul style="list-style-type: none"> <li>•Analysed documents</li> <li>•Prepared documents to complain against maladministration in European Commission</li> <li>•Wrote a complain</li> </ul>	<ul style="list-style-type: none"> <li>•Designed a form of a complain</li> <li>•Found wrong functionalities in EU project management by EC staff</li> <li>•Pointed at lack of standards in work of EU officers</li> </ul>	<ul style="list-style-type: none"> <li>•Writing to EU institutions</li> <li>•Knowledge how the EC functions</li> <li>•Knowledge about EU citizens rights</li> <li>•Knowledge about European Code of Good administrative Practice</li> </ul>

N <sup>o</sup>	Activity title Activity co-ordinator	Time Place	Kornelia Polok		
			Duties	Initiative and achievements	Gained experience
<b>6.3 Works for the Present Faculty</b>					
11.	<b>FACULTY COMMITTEE FOR BIOLOGY CURRICULA</b> Prof. Genowefa Kotwica	<b>2000-2008</b> Faculty of Biology, University of Warmia and Mazury in Olsztyn, Poland	<ul style="list-style-type: none"> <li>•Assessment of courses curricula for major biology, BSc and MSc level</li> <li>•Alignment curricula with Ministry of Education standards</li> </ul>	<ul style="list-style-type: none"> <li>•Proposed courses in molecular genetics, molecular evolution, plant genomics, mutagenesis, genome annotation</li> <li>•Proposed courses in English</li> <li>•Screening courses curricula in European and USA Universities</li> </ul>	<ul style="list-style-type: none"> <li>•Evaluating programmes</li> <li>•Teaching trends in World universities and aligned own courses with these trends</li> <li>•Recognizing weak sides of education and what has to be changed</li> <li>•Full consciousness of the reasons underlying the low level of Polish students</li> </ul>
<b>6.4 Works for Business and End-Users</b>					
12.	<b>PORTA-BIOGENE SZCZECIN SHIPYARD</b> Dr. Kornelia Polok	<b>1998-2001</b> Szczecin Shipyard S.A., Szczecin, Poland	<ul style="list-style-type: none"> <li>•Planned activities</li> <li>•Analysed start up costs, cash flows in a 10 year period</li> <li>•Risk analyses</li> </ul>	<ul style="list-style-type: none"> <li>•Demonstrated relatively high start up-costs and running costs.</li> <li>•Demonstrated the difficulties in financing from the bank loans</li> <li>•Demonstrated that such an enterprise should be a brand on a bigger activity</li> </ul>	<ul style="list-style-type: none"> <li>•Cost calculation of biotechnological activity from research to selling goods</li> <li>•Costs of knowledge-protection</li> <li>•Research management</li> <li>•Human resources management</li> <li>•Consulting people, negotiating</li> </ul>
13.	<b>EXPERIMENTAL STATION BARTAZEK</b> Dr. Jan Kaszuba Dr. Kornelia Polok	<b>1998-2006</b> IHAR Experimental Station in Bartazek, Poland	<ul style="list-style-type: none"> <li>•Assessed genetic similarity of <i>Poa pratensis</i> breeding lines</li> <li>•Prepared a report</li> </ul>	<ul style="list-style-type: none"> <li>•Demonstrated distinctiveness of breeding lines, Ba1018, Ba1036, Ba2090, Ba2250, Ba2254 and Limousine cultivar</li> <li>•Confirmed the possibility of line registration</li> <li>•Assessed which lines were apomictic</li> </ul>	<ul style="list-style-type: none"> <li>•Breeding methods</li> <li>•Cultivar registration – law aspects</li> </ul>
14.	<b>POLICE STATION IN CHOCZEWO</b> Prof. Roman Zielinski Dr. Kornelia Polok	<b>20070</b> Police Station Choczewo, Poland	<ul style="list-style-type: none"> <li>•Analyzed wheat samples</li> <li>•Prepared a report</li> </ul>	<ul style="list-style-type: none"> <li>•Proposed methodology to differentiate samples</li> <li>•Demonstrated AFLP and SSAP fingerprints of control and suspected materials</li> <li>•Demonstrated that suspected materials were not stolen materials</li> </ul>	<ul style="list-style-type: none"> <li>•Importance of genetic analyses in forensic science</li> </ul>
15.	<b>TATRA NATIONAL PARK</b> Mgr Jan Chmiel, Mgr Tadeusz Zwijacz Dr Tomasz Zwijacz-Kozica Dr. Kornelia Polok	<b>2004-2011</b> Tatra National Park Zakopane, Poland	<ul style="list-style-type: none"> <li>•Co-coordinated collaboration with respect to pine conservation (<i>Pinus cembra</i>, <i>P. mugo</i>, <i>P. rhaetica</i>)</li> <li>•Employed molecular methods to conservation programmes</li> <li>•Popularized molecular methods of conservation through seminars</li> </ul>	<ul style="list-style-type: none"> <li>•Protected <i>P. cembra</i> in the Koscieliska valley from cutting down because it is not a strange element for the Tatras</li> <li>•Research on <i>P. rhaetica</i> growing on the Polish-Slovakia border to prepare and application for legal protection</li> </ul>	<ul style="list-style-type: none"> <li>•Needs of National Parks with respect to biodiversity protection</li> <li>•Knowledge about legal aspects of genetic resources protection</li> <li>•Knowledge about the NATURA 2000 protection programme</li> </ul>