

# CURRICULUM VITAE

## Personal Information

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## Education

**1999-2003** **Ph.D. in biophysics**, "St. Kliment Ohridski" University of Sofia, Faculty of Biology, Department of Biophysics and Radiobiology.  
*Three-year full-time studentship supported by a state grant.*  
*Dissertation title:* Application of prompt and delayed chlorophyll fluorescence for analysis of the action of photosynthetic herbicides in intact leaves and thylakoid membranes of pea  
*Supervisor:* Assoc. Prof. Dr. Vassilij Goltsev  
*Dissertation defended on 2 February 2004; voted 20 out of 20.*

**1993-1998** **M.Sc. in molecular biology**, "St. Kliment Ohridski" University of Sofia, Faculty of Biology, Department of Biophysics and Radiobiology.  
*Full-time studentship supported by a state grant.*  
*Specialty:* Biophysics and Radiobiology  
*Overall grade:* Very good (5.26 out of 6.00)  
*Thesis title:* Investigation of the action of low and high temperatures on the herbicide-induced changes in the luminescent properties of pea leaves  
*Supervisor:* Assoc. Prof. Dr. Vassilij Goltsev  
*Thesis defended on 19 July 1998 with grade Excellent (6.00 out of 6.00).*

**1989-1993** National High School of Mathematics and Natural Sciences  
"Acad. L. Chakalov" - Sofia  
*Specialty:* Biotechnology with enhanced English learning  
*Overall grade:* Excellent (5.72 out of 6.00)

## Work Experience

**2002-** **Biologist**, Bulgarian Academy of Sciences, Institute of Biophysics  
Present work: Utilisation of patch-clamp and imaging techniques to study lipid-protein and lipid-DNA interaction in artificial lipid bilayers and giant liposomes.

**2000-2002** **Collaborative research outside the scope of the Ph.D. thesis:**

- Luminescence characterization of tobacco mutants and lichens (Dr. Detelin Stefanov, Inst. Plant Physiology, Sofia)
- Prolonged action of residual atrazine concentrations on the photosynthetic characteristics in pea (Acad. Emanuil Karanov, Dr. Sergei Ivanov, Inst. Plant Physiology, Sofia)
- Effects of DTT applied in vivo on the prompt and delayed fluorescence (Prof. Ivan Yordanov, Inst. Plant Physiology, Sofia)
- Effects of different light, temperature, and CO<sub>2</sub> regimes on the photosynthesis of bean plants (Dr. Tsonko Tsonev, Maya Lambreva, Inst. Plant Physiology, Sofia)
- Effects of heavy-metal poisoning in green algae (Dr. Kaloyan Christov, Inst. Plant Physiology, Sofia)
- Effects of PEG treatment on the fluorescence properties of different barley cultivars (Dr. Georgi Georgiev, Konstantina Kocheva, Inst. Plant Physiology, Sofia)
- Characterization of herbicide-resistant transgenic tobacco mutants (Dr. Veneta Kapchina, Biological Faculty, Sofia)
- Resistance to cold stress in tobacco plants transformed to accumulate osmoprotectants (Dr. Dimitar Djilianov, Dr. Daniela Parvanova, AgroBioInstitute, Kostinbrod)

### Other experience (part-time)

**2002-2003** **System administrator**, RIP Internet Café, Sofia

**2001-2002** **Network administrator**, "St. Kliment Ohridski" University of Sofia, Faculty of Biology

**2000** **Computer operator**, PRINTEX ART, Sofia

**1995-1998** **Self-employed**, VISIA – Petar Lambrev, Sofia (desktop publishing)

**1994** **Computer operator**, CONTRACT, Sofia

**1993** **Computer operator**, MEDIPRINT, Sofia

## Teaching Experience

(Gained at "St. Kliment Ohridski" University of Sofia, Faculty of Biology)

### Practical courses

2002-2003	Biophysical Methods - 160 hours
2001-2002	Photobiology - 30 hours
2001-2002	Mathematical Modelling in Biology - 30 hours
1999-2002	Biophysics and Radiobiology - 380 hours
	<i>Total: 600 hours</i>

### Graduate assistantship

2002	M.Sc. thesis assistantship <i>Graduate student:</i> Canko Markov <i>Thesis title:</i> Effects of PSII herbicides on the luminescent characteristics of pea leaves treated <i>in vivo</i>
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### Memberships

2003	Faculty Council of the Biological Faculty, "St. Kliment Ohridski" University of Sofia
2001-2003	General Assembly and Student Council of the Biological Faculty, "St. Kliment Ohridski" University of Sofia
2001-	Bulgarian Biomedical Society
2001-	Union of the Physicists in Bulgaria
2000-2003	Joint Research Project, SCOPES 2000-2003 Program, Swiss National Science Foundation

### Scientific grants and awards

2003	Best poster presentation award, X Jubilee Scientific Session of the Biological Faculty, "St. Kliment Ohridski" University of Sofia.
2003	Research project grant, National Science Fund, No. K-1303 <i>Title:</i> Transmembrane electrotransfer of anti-tumor agents and DNA <i>Co-ordinator:</i> Assoc. Prof. Dr. Yana Tsoneva
2000	Research project grant, Swiss National Science Foundation, No. 7BUPJ062408.00/1. <i>Title:</i> Heat-induced changes in susceptibility of PS2 to carbamide/triazine and phenol type herbicides as assessed by chlorophyll fluorescence (prompt and delayed) methods <i>Co-ordinator:</i> Prof. Reto J. Strasser.

# Professional Skills

## Chlorophyll fluorescence analysis

- Registration and interpretation of chlorophyll a fluorescence signals - induction kinetic curves; quenching analysis, quenching recovery; temperature curves
- JIP-test analysis
- Single- and multiple-turnover flash fluorescence spectroscopy
- Quantitative imaging of chlorophyll fluorescence
- Analysis of delayed fluorescence signals - induction curves of sub- and millisecond delayed fluorescence; dark decay kinetics in millisecond, second and minute time-domains; delayed fluorescence temperature curves

## Other biophysical and plant physiology methods

- Oxygen electrode measurements in liquid and gas phase
- Photosynthetic gas exchange
- Cell microelectrophoresis
- Absorption spectroscopy –  $\Delta A_{820}$  (PS1 activity),  $\Delta A_{505}$ ,  $\Delta A_{518}$
- Photoinduced light-scattering changes –  $\Delta A_{535}$

## Biochemical methods

- Isolation of thylakoid membranes
- Determination of chlorophyll and protein concentration, lipid peroxidation products

## Other

- General laboratory techniques
- Numerical and statistical data analysis

## Languages

Bulgarian (*native*)

English (*spoken and written*)

Russian (*spoken, ability to translate from*)

# Computer skills

*The software listed is mastered at an advanced or professional (\*) level.*

## Programming languages

Visual Basic

Visual Basic for Applications

C

C++

*Experience in developing software for acquisition and processing of spectroscopic data, relation databases, etc.*

## Image processing and analysis

Adobe Photoshop \*

*Professional experience in preparing images for press printing.*

## Word processing, page layout and prepress

Microsoft Word \*

Corel Draw \*

Adobe PageMaker \*

*Professional experience in pre-press preparation of books, scientific journals, high-school textbooks, dictionaries, technical literature, etc.*

## Data analysis and graphing

Microsoft Excel \*

Microsoft Visio

Statsoft Statistica

Microcal Origin

SPSS SigmaPlot

ChemWindow

## Databases and bibliography software

Microsoft Access

Reference Manager

Endnote

## Multimedia

Adobe Premiere

MGI VideoWave

Pinnacle Studio

## Networking

Design, construction, and administration of Windows-based local networks

## Publications

1. **Lambrev, P., Goltsev, V., Maldonado-Rodrigues, R., Strasser, R. J.** Prompt and delayed chlorophyll fluorescence analysis of intact pea leaves treated with photosynthetic herbicides (Submitted to *Pestic. Biochem. Physiol.*)
2. **Kocheva, K. V., Busheva, M. C., Georgiev, G. I., Lambrev, P. H., Goltsev, V. N.** (2004) Influence of short term osmotic stress on the photosynthetic activity of barley seedlings. *Biol. Plant.* (In press)
3. **Parvanova, D., Popova, A., Zaharieva, I., Lambrev, P., Konstantinova, T., Taneva, S., Atanassov, A., Goltsev, V., Djilianov, D.** (2004) Low temperature tolerance of tobacco plants transformed to accumulate proline, fructans or glycine betaine. Variable fluorescence evidences. *Photosynthetica* (In press)
4. **Kocheva, K., Lambrev, P., Georgiev, G., Goltsev, V., Karabaliev, M.** (2004) Evaluation of chlorophyll fluorescence and membrane injury in the leaves of barley cultivars under osmotic stress. *Bioelectrochem.* **63**: 121-124
5. **Goltsev, V., Zaharieva, I., Lambrev, P., Yordanov, I., Strasser, R. J.** (2003) Simultaneous analysis of prompt and delayed chlorophyll a fluorescence in leaves during the induction period of dark to light adaptation. *J. Theor. Biol.* **225**: 171-183
6. **Lambrev, P., Ivanov, S., Goltsev, V.** (2003) Effects of prolonged action of sub-herbicide concentrations of atrazine on the photosynthetic function of pea plants. *Compt. Rendu. Acad. Bulg. Sci.* **56**: 59-62
7. **Goltsev, V., Yordanov, I., Stefanov, D., Zaharieva, I., Lambrev, P., Strasser, R. J.** (2001) Simultaneous analysis of variable and delayed chlorophyll fluorescence during induction period in photosynthetic apparatus. In: *Proceedings of the 12th International Congress of Photosynthesis*, CSIRO Publishing, Melbourne
8. **Lambrev, P., Goltsev, V.** (2001) pH dependence of the effects of diuron, atrazine and dinoseb on the luminescent properties of thylakoid membranes. *Bulg. J. Plant Physiol.* **27**: 85-100
9. **Lambrev, P., Goltsev, V.** (1999) Temperature affects herbicide-sensitivity of pea plants. *Bulg. J. Plant Physiol.* **25**: 54-66

## Contributions to scientific conferences

(The name of the presenting author is underlined)

1. Kocheva, K., Lambrev, P., Georgiev, G., Goltsev, V. The effect of PEG 8000 treatment on chlorophyll fluorescence and membrane injury in the leaves of two barley cultivars. *X Jubilee Scientific Session of the Biological Faculty, "St. Kliment Ohridski" University of Sofia*, 20-21 November 2003, Sofia, Bulgaria
2. Lambrev, P., Goltsev, V., Strasser R. J. The effect of temperature on the sensitivity of Photosystem 2 to the herbicide atrazine applied *in vivo*. *X Jubilee Scientific Session of the Biological Faculty, "St. Kliment Ohridski" University of Sofia*, 20-21 November 2003, Sofia, Bulgaria
3. Slavov, Ch., Lambrev, P., Strasser, R. J., Goltsev, V. Study of dynamics of temperature effect on PS II in barley leaves treated with diuron, atrazine and dinoseb. *X Jubilee Scientific Session of the Biological Faculty, "St. Kliment Ohridski" University of Sofia*, 20-21 November 2003, Sofia, Bulgaria
4. Goltsev, V., Zaharieva, I., Lambrev, P., Chernev, P., Slavov, Ch., Yordanov, I., Strasser, R. J. Analysis of millisecond dark relaxation kinetics of chlorophyll a delayed fluorescence in leaves during the induction period of dark to light adaptation. *13th Balkan Biochemical Biophysical Days and Meeting on Metabolic Disorders*, 12-15 October 2003, Kusadasi, Turkey
5. Lambrev, P., Goltsev, V., Strasser, R. J. Prompt and delayed chlorophyll fluorescence of intact leaves in the presence of photosynthetic herbicides. *13th Balkan Biochemical Biophysical Days and Meeting on Metabolic Disorders*, 12-15 October 2003, Kusadasi, Turkey
6. Kocheva, K., Georgiev, G., Goltsev, V., Lambrev, P., Karabaliyev, M. Evaluation of chlorophyll fluorescence and membrane injury in the leaves of barley cultivars under osmotic stress. *XVII International Symposium on Bioelectrochemistry and Bioenergetics*, 19-24 June 2003, Florence, Italy
7. Goltsev, V., Zaharieva, I., Lambrev, P., Maldonado-Rodrigues, R., Strasser, R. J. Luminescent control of biotic and abiotic stress effects in plants. *European Workshop on Environmental Stress and Sustainable Agriculture*, 7-12 September 2002, Varna, Bulgaria
8. Lambrev, P., Goltsev, V. Activity of photosynthetic herbicides in intact pea leaves measured by prompt and delayed chlorophyll fluorescence. *European Workshop on Environmental Stress and Sustainable Agriculture*, 7-12 September 2002, Varna, Bulgaria

9. **Katerova, Z., Ivanov, S., Lambrev, P., Goltsev, V., Karanov, E.** Effect of residual atrazine concentrations on chlorophyll fluorescence parameters, growth and chlorophyll content of pea plants (*Pisum sativum* L.). *13th Congress of FESPP*, 1-6 September 2002, Heraclion, Greece
10. **Lambrev, P., Markov, C., Goltsev, V.** Influence of light on the herbicide effect of diuron by in vivo treatment. *9th Scientific Session of the Biological Faculty, "St. Kliment Ohridski" University of Sofia*, 29-30 November 2001, Sofia, Bulgaria
11. **Goltsev, V., Yordanov, I., Stefanov, D., Zahareiva, I., Lambrev, P., Strasser, R. J.** Simultaneous analysis of variable and delayed chlorophyll fluorescence during induction period in photosynthetic apparatus. *12th International Congress on Photosynthesis*, 18-23 August 2001, Brisbane, Australia
12. **Lambrev, P., Goltsev, V.** pH-induced changes in the herbicide activity of atrazine, diuron and dinoseb in pea thylakoid membranes. *5th National Congress on Biochemistry, Biophysics and Molecular Biology*, 29-31 March 2001, Sofia, Bulgaria
13. **Lambreva, M., Tsonev, Ts., Lambrev, P.** Changes in the parameters of chlorophyll fluorescence kinetics in bean plants subjected to different regimes of temperature, light intensity and CO<sub>2</sub> concentration. *5th National Congress on Biochemistry, Biophysics and Molecular Biology*, 29-31 March 2001, Sofia, Bulgaria
14. **Lambrev, P., Goltsev, V.** On the effect of temperature on herbicide sensibility of the photosynthetic apparatus in pea leaves. *8th Scientific Session of the Biological Faculty, "St. Kliment Ohridski" University of Sofia*, 27-28 May 1999, Sofia, Bulgaria
15. **Doltchinkova, V., Georgieva, M., Lambrev, P.** Effects of valinomycin on ionic-exchange processes and surface charge density in pea thylakoids. *7th Scientific Session of the Biological Faculty, "St. Kliment Ohridski" University of Sofia*, 29-30 May 1999, Sofia, Bulgaria

## Scientific Interests

- **Photosynthesis:** mechanisms of the light reactions; photosynthesis as stress indicator; kinetic and thermodynamic modelling of photosynthetic reactions.
- **Plant stress:** Plant response to environmental stress conditions; acclimation and adaptation mechanisms.
- **Biophysical methods in photosynthesis research:** Chlorophyll fluorescence and delayed fluorescence; use of luminescence methods for quantification of photosynthetic stress responses; use of luminescence methods to study herbicide action; imaging techniques.

## References

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