Curriculum vitae

Name: Alexei E. Solovchenko

Born: December 31, 1977, Michurinsk, Russia

Place of Work: Dept. Bioengineering, Faculty of Biology, Moscow State University, Moscow GSP-1 119234, Russia;

Position: Lead researcher at Dept. of Bioengineering, Faculty of Biology, Moscow State University.

Academic background:

9/1994 - 7/1999	Graduate student, Biology, diploma with excellence Biology and Chemistry, Michurinsk State Pedagogical Institute
10/1999 - 11/2002	Ph. D. student
11/2002 -	Ph.D. degree in Plant Physiology and Biochemistry
12/2002 - 06/2003	Training in International Training Centre for Biotechnology, Moscow State University.
12/1999 - 2006	Post-doctoral student at Dept. Physiology of Microorganisms, Faculty of Biology, Moscow State University.
01/2005 - 2009	Senior researcher at Dept. of Physiology of Microorganisms, Faculty of Biology, Moscow State University.
09/2009 - 2010	Senior researcher at Dept. of Biotechnology, Faculty of Biology, Moscow State University.
06/05/2009	Doctor of Science Degree in Plant Physiology and Biochemistry
12/2010 - present	Lead researcher at Dept. of Biotechnology, Faculty of Biology, Moscow State University.

Honours and Academic Awards:

04.1995–1999	- the ***Soros Student*** grant
11.2001	- the ***Stipend of Russian Government*** for distinguished students
11.2002	- the ***Stipend of President of Russia*** for outstanding achievements
12.2003, 01.2006	- the ***Honorarium*** from Jacob Blaushtein Institute of Desert Research, Ben-Gurion University of Negev (Israel).
10.2005	- the **Grant of the President's of Russia Support for Young Scientists**

01.2006 - **Personal Fellowship of Moscow State University for outstanding young scientists**

10.2008 - the **Grant of the President's of Russia Support for Young Scientists**

11.2009 Annual **Prize by International Academic Publishing Company "Nauka/ Interperiodica"** (Biology) for articles published in Russian Journal of Plant Physiology in 2008; with M.N. Merzlyak and O.B. Chivkunova

2. **Research interests**

- Photophysiology of microalgae and plants
- Bio-optical spectroscopy
- Microalgal biotechnology and phycoremediation
- Pigment and lipid metabolism
- Biofuel and carotenoids from microalgae

3. **Selected publications** (total of 152)

Books

1. **Solovchenko A.E.** Photoprotection in Plants - Optical Screening-based Mechanisms. Springer Series in Biophysics. Vol. 14. Springer. 2010. 1st Edition., 2010, X, 167 p. ISBN: 978-3-642-13886-4.

Book chapters

2. **Alexei Solovchenko**, Inna Khozin-Goldberg, Olga Chivkunova. Real-time spectral techniques for detection of the buildup of valuable compounds and stress in microalgal cultures: implications for biotechnology. In: Microalgae: Biotechnology, Microbiology and Energy. Ed.: Melanie N. Johansen. Nova Science Publishers. Hauppauge, NY. 2011. 251-276. ISBN: 978-1-61324-625-2

3. Inna Khozin-Goldberg, **Alexei Solovchenko**, Dipasmita Pal, Zvi Cohen, Sammy Boussiba. Omega-3 and omega-6 LC-PUFA from photosynthetic microalgae: studies on Parietochloris incisa and Nannochloropsis sp. In: Polyunsaturated Fatty Acids: Sources, Antioxidant Properties and Health Benefits. Ch. 1. Ed.: A. Catala. Nova Science Publishers. Hauppauge, NY. 2013. P. 1-22. ISBN 978-1-62948-151-7.

4. **Alexei Solovchenko**, Konstantin Chekanov. Production of carotenoids using microalgae cultivated in photobioreactors. In: Production of Biomass and Bioactive Compounds Using Bioreactor Technology. K.-Y. Paek et al. (eds.), Springer Science+Business Media Dordrecht, 2014. DOI 10.1007/978-94-017-9223-3_4 *In press.*

List of selected full papers

Review papers

1. **Solovchenko A.E.**, Merzlyak M.N. Screening of the visible and UV radiation as a photoprotective mechanism in plants. **Russian Journal of Plant Physiology**. 2008. 55(6). P. 1–19.

2. **A. E. Solovchenko** Physiological Role of Neutral Lipid Accumulation in Eukaryotic Microalgae under Stresses. **Russian Journal of Plant Physiology**. 2012. 59 (2). 167–176.

3. **Alexei Solovchenko**, Inna Khozin-Goldberg. High-CO_2 tolerance in microalgae: possible mechanisms and implications for biotechnology and bioremediation. Biotechnology Letters. 2013. 35 (11). 1745-1752. DOI: 10.1007/s10529-013-1274-7

4. **Solovchenko A.E.** Physiology and Adaptive Significance of Secondary Carotenogenesis in Green Microalgae. Russian Journal of Plant Physiology. 2013. Vol. 60(1). P. 1-13. DOI: 10.1134/S1021443713010081

Selected experimental reviewed papers

1. Merzlyak M.N., Chivkunova O.B., Gorelova O.A., Reshetnikova I.V., **Solovchenko A.E.**, Inna Khozin-Goldberg and Zvi Cohen. Effect of nitrogen starvation on optical properties, pigments and arachidonic acid content of the unicellular green alga *Parietochloris incisa* (Trebouxiophyceae, Chlorophyta). **Journal of Phycology**. 2007. 43. 833–843.

2. **Solovchenko A.E.**, Khozin-Goldberg I., Didi-Cohen S., Cohen Z. and Merzlyak M.N. Effects of light intensity and nitrogen starvation on growth, total fatty acids and arachidonic acid in the green microalga *Parietochloris incisa*. **Journal of Applied Phycology**. 2008. 20 (3). 245–225. DOI 10.1007/s10811-007-9233-0

3. Merzlyak M.N., Chivkunova O.B., Maslova I.P., Naqvi K.R., **Solovchenko A.E.**, Klyachko-Gurvich G.L. Light absorption and scattering by cell suspensions of some cyanobacteria and microalgae. **Russian Journal of Plant Physiology.** 2008. 55(3). 420–425. DOI: 10.1134/S1021443708030199

4. **A.E. Solovchenko**, I. Khozin-Goldberg, S. Didi-Cohen, Z. Cohen, and M.N. Merzlyak. Effects of light and nitrogen starvation on the content and composition of carotenoids of the green microalga *Parietochloris incisa*. **Russian Journal of Plant Physiology**. 2008. 55(4). 507–515. DOI: 10.1134/S1021443708040043

5. Mark N. Merzlyak, Olga B. Chivkunova, **Alexei E. Solovchenko**, K. Razi Naqvi. Light absorption by anthocyanins in juvenile, stressed and senescing leaves. **J. Exp. Bot. 2008.** 59 (14). 3903-3911.

6. **Solovchenko A.E.**, Khozin-Goldberg I., Cohen Z., Merzlyak M.N. Carotenoid-to-chlorophyll ratio as a proxy for assay of total fatty acids and arachidonic acid content in the green microalga Parietochloris incisa. **Journal of Applied Phycology.** 2009. 21(3). 361–366.

7. **Alexei Solovchenko**, Inna Khozin-Goldberg, Zvi Cohen, Sammy Boussiba, Mark Merzlyak. Coordinated carotenoid and lipid syntheses induced in Parietochloris incisa (Chlorophyta, Trebouxiophyceae) mutant deficient in Δ5 desaturase by nitrogen starvation and high light. **J. Phycol**. 2010. 46 (4). 763-772. DOI: 10.1111/j.1529-8817.2010.00849.x

8. **Alexei E. Solovchenko**, Mark N. Merzlyak and Sergei I. Pogosyan. Irradiation-induced decrease of reflectance provides an insight into photoprotective mechanisms of ripening apple fruit. **Plant Sci.** 2010. 178. 281–288.

9. **Alexei Solovchenko**, Inna Khozin-Goldberg, Lee Recht and Sammy Boussiba. Stress-induced changes in optical properties, pigment and fatty acid content of Nannochloropsis sp.: implications for non-destructive assay of total fatty acids. **Marine Biotechnology**. 2011. V. 13(3) P. 527-535. DOI: 10.1007/s10126-010-9323-x.

10. **A.E. Solovchenko**, O.B. Chivkunova, I. P. Maslova. Pigment composition, resistance to photodamage and optical properties of the microalga Haematococcus pluvialis cultivated under high light. **Russ. J. Plant Physiol**. 2011. 58(1). 9–17.

11. O. A. Gorelova, O.I. Baulina, **A.E. Solovchenko**, T.A. Fedorenko, T.R. Kravtsova, O.B. Chivkunova, O.A. Koksharova, E.S. Lobakova. Green Microalgae Isolated from Associations with White Sea Invertebrates . **Microbioloy (Microbiologia)**. 2012. 81(4). 505–507.

12. Dipasmita Pal, Inna Khozin-Goldberg, Shoshana Didi-Cohen, **Alexei Solovchenko**, Albert Batushansky, Yuval Kaye, Noga Sikron, Talya Samani, Aaron Fait, Sammy Boussiba. Growth, lipid production and metabolic adjustments in the euryhaline eustigmatophyte *Nannochloropsis oceanica* CCALA 804 in response to osmotic downshift. **Applied Microbiology and Biotechnology**. 2013. 97. 8291-8306. DOI 10.1007/s00253-013-5092-6.

13. **A.E. Solovchenko**, A.A. Lukyanov, S.G. Vasilieva, Ya.V. Savanina, O.V. Solovchenko, E.S. Lobakova. Possibilities of bioconversion of agricultural waste with the use of microalgae. **Moscow University Biological Sciences Bulletin**. 2013.68 (4). 206–215. DOI 10.3103/S0096392514010118

14. **Alexei Solovchenko**, Claude Aflalo, Alexander Lukyanov, and Sammy Boussiba. Non-destructive monitoring of carotenogenesis in *Haematococcus pluvialis* via whole-cell optical density spectra. **Applied Microbiology and Biotechnology**. 2013. 97 (10). 4533-4541. DOI 10.1007/s00253-012-4677-9

15. **Alexei Solovchenko**, Olga Solovchenko, Inna Khozin-Goldberg, Shoshana Didi-Cohen, Dipasmita Pal, Zvi Cohen, Sammy Boussiba. Probing the effects of high-light stress on pigment and lipid metabolism in nitrogen-starving microalgae by measuring chlorophyll fluorescence transients: Studies with a Δ5 desaturase mutant of *Parietochloris incisa* (Chlorophyta, Trebouxiophyceae). **Algal Research**. 2013. 2(3). 175-182. DOI 10.1016/j.algal.2013.01.01

16. **Alexei Solovchenko**, Olga Gorelova, Irina Selyakh, Larisa Semenova, Olga Chivkunova, Olga Baulina, Elena Lobakova. *Desmodesmus* sp. 3Dp86E-1—a

novel symbiotic chlorophyte capable of growth on pure CO_2. Marine Biotechnology. 2014. *In press.*

List of selected recent abstracts

1. Shebanova A.S., Baulina O.I., Gorelova O.A., **Solovchenko A.E.**, Lobakova E.S., Shaytan K.V., Kirpichnikov M.P. Element assay in the cell vacuoles of a green microalga by analytical transmission electron microscopy. Abstract of International Multidisciplinary Microscopy Congress (INTERM 2013), Antalya, Turkey, October 10-13. 2013. p. 79.

2. **Alexei Solovchenko**, Sergei Pogosyan, Olga Chivkunova, Irina Selyakh, Larisa Semenova, Elena Voronova, Elyna Volkova, Ivan Konyukhov, Pavel Scherbakov, Elena Lobakova. Cultivation of Chlorella on Distillery Wastewater. 3rd International Conference on Algal Biomass, Biofuels and Bioproducts. June 16–19, 2013. Toronto, Canada. (Online book of abstracts.)

3. **Solovchenko A.**, Gorelova O., Selyakh I., Baulina O., Chivkunova O., Pogosyan S., Voronova E., Konyukhov I., Semenova L., Scherbakov P.,Lobakova E.A novel extremely CO2-tolerant symbiotic chlorophyte from a subarctic sea hydroid is a promising organism for biomitigation applications 4th International Conference on Algal Biomass, Biofuels and Bioproducts. June 16–18, 2013. Santa-Fe, USA. (Online book of abstracts.)

4. Research Grants

1. Center for academic and educational relationship with the CIS and the Baltic states: Z. Cohen, I. Khozin-Goldberg, M. Merzlyak, O.B. Chivkunova, A.E. Solovchenko & S.I. Pogosyan. Study of the biochemical and optical properties of algae that can be utilized as a source of pigments and polyunsaturated fatty acids of economical value, Total amount – NIS 50,000

2. Russian Fund for Basic Research:

   2006-2012: *4 projects totaling to > $ 250 000*

3. President of Russia Grant Counsil

   2005, 2008: *2 projects totaling to > $25 000*

4. Ministry of Science and Education of Russian Federation

   2012–2013: *3 projects totaling to > $ 1 300 000*

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