

**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel in the order listed for Form Page 2.  
Follow the sample format on preceding page for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Natalia Malkova		POSITION TITLE Postdoctoral Fellow	
EDUCATION/TRAINING ( <i>Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.</i> )			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Ural State University, Russia	B.S.	1998	Biochemistry
Pushchino State University, Russia	M.S.	2000	Biochemistry
Engelgardt Institute of Molecular Biology, Russian Academy of Sciences, Russia	Ph.D.	2002	Molecular Biology

**A. Positions and Honors**

1999-2002	M.S. and Ph.D. student, Laboratory of Protein Chemistry (head: Prof. V. M. Lipkin) Shemyakin & Ovchinnikov Institute of Bioorganic Chemistry, Russian Academy of Sciences
2000	International Soros Science Education Program (ISSEP) Fellowship
2002-2003	Research Scientist, Shemyakin & Ovchinnikov Institute of Bioorganic Chemistry, Russian Academy of Sciences
2003	Russian Foundation for Basic Research Fellowship
2004-present	Postdoctoral Fellow, California Institute of Technology
2004-2006	Elizabeth Ross Fellowship for the Study of Mental Illness

**B. Selected peer-reviewed publications**

- Navolotskaya, EV, Zargarova TA, Lepikhova TN, Turobov VI, Nurieva, RI, **Malkova, NV**, Lipkin, VM, Zav'yalov, VP (1999) Study of immunosuppressive activity of a synthetic decapeptide corresponding to an ACTH-like sequence of human immunoglobulin G1. *Biochemistry (Mosc)*. 64: 758-64.
- Navolotskaya, EV, Zargarova, TA, Lepikhova, TN, Turobov VI, Nurieva, RI, **Malkova, NV**, Zav'yalov, VP, Lipkin, VM (2000) Hormone-like activity of a synthetic decapeptide with the adrenocorticotropin-like sequence of human immunoglobulin G1. *Bioorg. Khim*. 26: 31-8.
- Navolotskaya, EV, **Malkova, NV**, Lepikhova, TN, Krasnova, SB, Zargarova, TA, Zav'yalov, VP, Lipkin VM (2001) Interaction of synthetic decapeptide SLTCLVKGFY with human T lymphocytes. *Bioorg. Khim*. 27: 359-63.
- Navolotskaya, EV, **Malkova, NV**, Zargarova, TA, Lepikhova, TN, Zav'yalov, VP, Lipkin, VM (2001) Synthetic  $\beta$ -endorphin-like peptide immunorphan binds to non-opioid receptors for  $\beta$ -endorphin on T lymphocytes. *Peptides*. 22: 2009-13.
- Navolotskaya, EV, **Malkova, NV**, Zargarova, TA, Lepikhova, TN, Krasnova, SB, Lipkin, VM (2002) Effect of synthetic beta-endorphin-like peptide immunorphan on human T lymphocytes. *Biochemistry (Mosc)*. 67: 357-63.

- Navolotskaya, EV, Zargarova, TA, **Malkova, NV**, Krasnova, SB, Zav'yalov, VP, Lipkin, VM (2002) Endorphin-like peptide SLTCLVKGFY is a selective agonist of nonopioid endorphin receptor. *Biochem. Biophys. Res. Commun.* 292: 799-804.
- Navolotskaya, EV, Zargarova, TA, **Malkova, NV**, Krasnova, SB, Zav'yalov, VP, Lipkin, VM (2002) Synthetic peptide SLTCLVKGFY competes with  $\beta$ -endorphin for naloxone-insensitive binding sites on rat brain membranes. *Peptides.* 23: 1115-9.
- Malkova, NV**, Krasnova, SB, Navolotskaya, EV, Zargarova, TA, Prassolov, VS (2002) Effect of  $\beta$ -endorphin and  $\beta$ -endorphin-like peptide immunorphin on the growth of human leukemic cells *in vitro*. *Russian Journal of Immunology.* 7: 239-44.
- Sakharova, NYu, Lepikhova, TN, Lepikhov, KA, **Malkova, NV**, Navolotskaya, EV, Chailakhyan, LM (2002) The effects of immunomodulating peptides on the preimplantation development of mouse embryos. *Doklady Biological Sciences.* 385: 295-8.
- Navolotskaya, EV, Kolobov, AA, Kampe-Nemm, EA, Zargarova, TA, **Malkova, NV**, Krasnova, SB, Kovalitskaya, YuA, Zav'yalov, VP, Lipkin, VM (2003) Synthetic peptide VKGFY and its cyclic analog stimulate bactericidal activity of macrophages through non-opioid  $\beta$ -endorphin receptors. *Biochemistry (Mosc).* 68: 34-41.
- Navolotskaya, EV, Zargarova, TA, **Malkova, NV**, Zharmukhamedova, TY, Kolobov, AA, Kampe-Nemm, EA, Yurovsky, VV, Lipkin, VM (2003) Macrophage-stimulating peptides VKGFY and cyclo(VKGFY) act through nonopioid beta-endorphin receptors. *Biochem. Biophys. Res. Commun.* 303: 1065-72.
- Krasnova, SB, **Malkova, NV**, Kovalitskaya, YuA, Zolotaryov, YuA, Zargarova TA, Navolotskaya, EV, Lipkin, VM (2003) The stimulating effect of  $\beta$ -endorphin-like peptide immunorphin on the T-lymphoblastic cell line Jurkat is mediated through non-opioid  $\beta$ -endorphin receptor. *Russian Journal of Immunology,* 8: 31-36.
- Navolotskaya, EV, Kovalitskaya, YA, Zolotarev, YA, Kolobov, AA, Kampe-Nemm, EA, **Malkova, NV**, Yurovsky, VV, Lipkin, VM (2004) Characteristics of non-opioid beta-endorphin receptor. *Biochemistry (Mosc).* 69: 394-400.
- Pyatkov, KI, Arkhipova, IR, **Malkova, NV**, Finnegan, DJ, Evgen'ev, MB (2004) Reverse transcriptase and endonuclease activities encoded by Penelope-like retroelements. *Proc. Natl. Acad. Sci. USA,* 101: 14719-24.
- Maslov, LN, Lishmanov, IuB, Terashvili, M, **Malkova, NV** (2004) Endorphin component of endogenous opioid system: location, reception, function. *Patol Fiziol Eksp Ter.,* 3:15-23. Review in Russian.
- Navolotskaya, E, **Malkova, N**, Vanina, V, Kovalitskaya, Y, Kudryashova, N, Goncharenko, E, Kolobov, A, Kampe-Nemm, E, Yurovsky, V, Lipkin, V (2004) Short corticotrophin and  $\beta$ -endorphin-like peptides as potential effective and safe agents protecting from the action of various extreme factors. *Biotechnology and Medicine* edited by G.E. Zaikov. Nova Science Publishers, Inc. pp. 155-177.
- Maslov, LN, Lishmanov, IuB, Terashvili, M, **Malkova, NV** (2005) The role of endorphines in regulation of pain sensitivity. *Patol Fiziol Eksp Ter.,* (1):27-9. Review in Russian.
- Vanina, V, **Malkova, N**, Kovalitskaya, Yu, Kolobov, A, Kampe-Nemm, E, Lipkin, V, Navolotskaya, E (2007) Effect of ACTH(11-24) and ACTH-like peptides immunocortin and leukocorticotropin on the proliferation of rat splenic T and B lymphocytes *in vitro*. *Russian Journal of Immunology,* 1, 139-143.
- Shi, L, Smith, S, **Malkova, N**, Tse, D, Su, Y, Patterson, PH (2009) Activation of the maternal immune response alters cerebellar development in the offspring. *Brain Behav Immun.* 23:116-23.
- Hsiao, E, Bregere, C, **Malkova, N**, Patterson, PH (2010) Modeling Features of Autism in Rodents. *Autism Spectrum Disorders* edited by: D.G. Amaral; G. Dawson; D.H. Geschwind. Oxford University Press. In press.
- Malkova, N**, Yu, C., Hsiao, E, Patterson PH (2011) Maternal immune activation causes a deficit in the stress response to isolation in C57 pups. In preparation.