

CURRICULUM VITAE
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EDUCATION

M.S. Physiology, 1981 Lomonosov University, Moscow, USSR
Ph.D. in Neurophysiology, 1994, Lomonosov University, Moscow, Russia
PhD Thesis: "Neurophysiological analysis of the effect of mediatory aminoacid receptor agonists and antagonists on EEG in rat brain". Supervisors: Prof. A.Yu. Budantsev, Dr. G.I. Kovalev.

COURSEWORK in USA

Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, Summer Coursework: Mouse Behavior Analysis, Summer 2003
Columbus State University, Columbus, OH. Summer Coursework: Spinal Cord Injury Techniques Course, Summer 2004

RESEARCH EXPERIENCE

2004-present Research Scientist, Center for Adaptive Neural Systems at the Arizona State University

- Studies of new therapeutic targets for spinal cord injury (**ref. 1, 4**). Supervisor: Dr. Ranu Jung.
- Studies of new therapeutic targets for Parkinson's disease. DBS and pharmacology.

2001-2004 Staff Scientist, Thomas H. Christopher Center for Parkinson's Research, Sun Health Research Institute

- Studies of new therapeutic targets for Parkinson's disease. Investigations of novel compounds in models of Parkinson's, and application of behavioural, histochemical and neurochemical techniques to the assessment of their effects (**ref. 2, 3, 6**). Supervisor: Dr. Jeffrey N. Joyce.

1998-2001 Research Professor, laboratory of Neuroendocrinology of C.U.I.B. (Centro Universitario de Investigaciones Biomedicas), University of Colima, Mexico.

- Studies of central mechanisms that regulate glucose level in blood and brain glucose retention (**ref. 5, 7, 8, 9, 10**). Supervisor: Dr. Ramon Alvares-Buylla de Aldana.

1992-1998 Post-Doctoral Fellow, Laboratory of Functional Neurochemistry, Institute of Experimental and Theoretical Biophysics, Pushchino, Moscow Region, Russia.

- Functional-neurochemical studies of rat brain cholinergic system in state depending learning (**ref. 11, 12**). Supervisor: Prof. Budantsev A.Yu.

- Studies of electrical activity of rat brain under central administration of various doses of mediatory system receptor agonists and antagonists. (**ref. 13, 14, 17-22**). Supervisor: Dr. Kovalev G.I.

- Participation in creation of original computer version of the rat brain atlas (**ref. 15-16 and 1, 2 in: Manuals and computer programs**). Supervisor: Prof. Budantsev A.Yu.

1989-1992 Research Fellow at the Laboratory of Medical Biophysics, Institute of Biological Physics, the USSR Academy of Sciences.

- Studies in the field of hibernation: effects of the substances thought to be "Hibernation triggers" on behaviour of rats and biopotentials of their brains (**ref. 1-5 in: Book chapters**). Supervisor: Dr. Ignat'ev.

- Studies of electrical activity of the animal brain under perfluoro-carbon administration (**ref. 19**). Supervisor: Dr. Sologub G.R.
1985-1989 Graduate student, Institute of Biological Physics, the USSR Academy of Sciences.
- Neurophysiological analysis of the effect of mediatory aminoacid receptor agonists and antagonists on EEG in rat brain. Supervisor: Dr. Kovalev G.I.

TECHNICAL EXPERTISE

Surgical techniques: stereotaxic implantation of electrodes and cannulas into brain structures, microinjections into different brain structures in vivo, lesion of brain structures, installations of catheters into different types of veins and arteries, blood sampling from abdominal aorta, installation of muscular electrodes, etc.

Animal behavior analysis: open-field test, cylinder test, rotarod test, conditioned reflex, labyrinthine reflex, BBB-score for spinal cord injury rats, etc.

Histology: Preparation of brain tissue slices in a cryomicrotome and their staining, Neural Tracers staining, Neuron imaging with NeuroLucida.

Electrophysiology: Methods of obtaining and processing EEG. H-reflex record for hind limbs of the rat.

Other: Preparation of rat spinal cord injury models (impact and transaction), MPTP and 6-OHDA mouse and rat models of Parkinson's disease.

TEACHING EXPERIENCE

- **1995-1998** Lectured course on "Stereotaxic Methods in Neurobiology". Pushchino State University, Department of Neurobiology, Russia.
- **1995-1998** Lectured course on "Basic course of Human and Animals Physiology". Moscow Academy of Instrument-Making and Computer Science, Department of Biological and Medical Devices, Russia.
- **1998-2001** Lectured course on "Cryotomy and Stereotaxic Methods". Colima University, BioMedicine Department, Mexico.
- **1998-2001** Practical course on "Primary Culture of Rat Hepatocytes". Colima University, BioMedicine Department, Mexico.
- **1998-2001** Lectured course on "Endocrine Physiology" Colima University, BioMedicine Department, Mexico.

PROFESSIONAL SOCIETIES

Society for Neuroscience	2002 – present
Sistema Nacional de Investigadores de Mexico	2000-2003
Russian Neurochemistry Society,	1998- present

PUBLICATIONS

Peer-reviewed articles:

1. Fairchild M., Kim S.-J., Iarkov A., Abbas J.J., Jung R.. Repetitive hindlimb movement using intermittent adaptive neuromuscular electrical stimulation in an Incomplete Spinal Cord Injury rodent model. *Experimental Neurology*, 2010, Accepted, available online.

2. Iarkov A.V., Der T.C. and Joyce J.N. Age-related differences in MK-801 induced behaviors in D3 receptor knockout mice. *Eur J Pharmacol.* 2010 Feb 10;627(1-3):177-84.
3. Yarkov A.V., Der T.C. and Joyce J.N. Locomotor activity induced by MK-801 is enhanced in dopamine D3 receptor knockout mice but suppression by dopamine D3/D2 antagonists occurs through the dopamine D3 receptor. *Eur J Pharmacol.* 2010 Feb 10;627(1-3):167-72.
4. Kim SJ, Fairchild M, Iarkov A, Abbas J, Jung R, "Adaptive control for functional neuromuscular stimulation movement therapy", *IEEE Trans Biomed Eng*, 2009 Feb; 56(2):452-61.
5. Montero SA, Yarkov A, Lemus M, de Alvarez-Buylla ER, Alvarez-Buylla R. Carotid chemoreceptor reflex modulation by arginine-vasopressin microinjected into the nucleus tractus solitarius in rats. *Arch Med Res.* 2006 Aug; 37(6):709-16.
6. Yarkov A.V., Hanger D., Reploge M., Joyce J.N. Behavioral effects of dopamine agonists and antagonists in MPTP-lesioned D3 receptor knockout mice. *Pharmacol. Biochem. Behav.* 2003 Dec.; 76(3-4):551-62.
7. Montero S.A., Yarkov A., Lemus M., Mendoza H., Valles V., de Alvarez-Buylla E.R., Alvarez-Buylla R. Enhancing effect of vasopressin on the hyperglycemic response to carotid body chemoreceptor stimulation. Role of metabolic variables. *Adv. Exp. Med. Biol.* 2003;536:95-107.
8. Montero S.A., Yarkov A., Lemus M., Mendoza H., Valles V., de Alvarez-Buylla E.R., Alvarez-Buylla R. Enhancing effect of vasopressin on the hyperglycemic response to carotid body chemoreceptor stimulation. Role of metabolic variables. *Adv. Exp. Med. Biol.* 2003;536:95-107.
9. Yarkov A., Montero S., Lemus M., E.R. de Alvarez-Buylla, and Alvarez-Buylla R., Arginine-vasopressin in nucleus of the tractus solitarius induces hyperglycemia and brain glucose retention. *Brain Research*, V. 902, 2001, pp. 212-222.
10. Montero S.A., Yarkov A., Alvarez-Buylla R. Carotid chemoreceptors participation in brain glucose regulation. Role of arginine-vasopressin. *Adv. Exp. Med. Biol.*; V. 475, 2000, pp. 749-760.
11. Budantsev A. Yu., Ivanova J.V., Yarkov A.V., Physiology analysis of the state dissociated learning evolved by physostigmine and pentobarbital administration. *Zh. Vyssh. Nerv. Deiat. Imeni I.P. Pavlova*, (Rus) V.49 (6), 1999, pp. 962-970.
12. Budantsev A. Yu., Yarkov A.V., Ivanova J.V. Acetylcholinesterase in formation of hippocamp at the state dissociated learning evolved by physostigmine and pentobarbital administration. *Neirokhimiya* (Rus), 1998, t.15, No.2, pp.137-145.
13. Yarkov A.V., Kovalev G.I. Comparative analysis of electrical brain activity after GABA and glutamate administration: is it possible to have correlation between specific neurochemical changes in the brain and in the EEG? *Bull. Exp. Biol. Med.* 1997 V. 124(8), pp. 776-779.
14. Iarkov A.V., Kovalev G.I., Galtchenko A.A. Changes in the electrical activity of the rat brain during the central administration of different doses of GABA agonists and antagonists. *Eksp. Klin. Farmakol.* (Rus), 1994, V. 57 (4), pp. 6-11.
15. Budantsev A.Iu., Kisliuk O.S., Shul'govsky V.V. Rykunov D.S., Yarkov A.V. The brain in stereotaxic coordinates. *Zh. Vyssh. Nerv. Deiat. Imeni I.P. Pavlova*, (Rus), 1993 V.43 (5), pp. 1045-1051.
16. Budantsev A.Iu., Kisliuk O.S., Shul'govsky V.V. Rykunov D.S., Yarkov A.V. The brain in stereotaxic coordinates. *Zh. Vyssh. Nerv. Deiat. Imeni I.P. Pavlova*, (Rus), 1993 V.43 (5), pp. 1045-1051.
17. Yarkov A.V., Vorobjov V.V., Kovalev G.I. The action of agonists and an antagonist of GABA on the frequency composition of the electrical activity of various brain structures of rats. *Neurosci. Behav. Physiol.*, V 23(1), 1993, pp. 76-82.
18. Iarkov A.V., Vorob'ev V.V., Kovalev G.I. The action of GABA agonists and an antagonist on the frequency structure of the electrical activity of different brain formations in rats. *Fiziol. Zh. SSSR Im. I. M. Sechenova* (Rus), 1991, V 77(11), pp. 12-20.
19. Vorobjov V.V., Yarkov A.V. Kukuschkin N.I., Sologub G.R., Gal'chenko A.A. Brain electrical activity of animals exposed to perfluorocarbon emulsions. *Patol. Fiziol. Eksp. Ter.* (Rus), 1991, N 2, pp. 19-23.

20. Yarkov A.V., Vorob'ev V.V., Gal'chenko A.A., Kovalev G.I. Electrical activity of the hippocampus of rats with the central administration of GABA agonists and antagonists. *Neurosci Behav Physiol* 1991 V.21(1) pp.81-88.
21. Yarkov A.V., Vorob'ev V.V., Gal'chenko A.A., Kovalev G.I. Electrical activity of the hippocampus of rats with the central administration of GABA agonists and antagonists. *Neurosci Behav Physiol* 1991 V.21(1) pp.81-88.
22. Yarkov A.V., Vorobjov V.V., Galtchenko A.A. and Kovalev G.I. Electrical activity of the hippocampus in rats under centrally administered GABA agonists and antagonists. *Fiziol. Zh. SSSR Im. I. M. Sechenova, (Rus.)*, V.75(12), 1989, pp.1677-1685.

Book chapters:

1. Ignat'ev D.D., Vorobjov V.V., Yarkov A.V. Sviryaev V.I. "Hibernation trigger" changes behavior and brain electrical activity of rat. In: *Ecologo-physiological properties of natural hypomethabolic states. (Rus.)*, 1992, Pushchino, pp. 117-122.
2. Ignat'ev D.D., Vorobjov V.V., Yarkov A.V. Sviryaev V.I. The "Hibernation trigger" alters behavior and biopotentials of rat brain. *Studies in neuroscience*, N 105. Signal molecules and behavior. (Eds. Winlow W., Winogradova O.S., and Sakharov D.A.) Manchester University Press, 1991., p.213-218.
3. Ignat'ev D.D., Vorobjov V.V., Yarkov A.V., Sviryaev V.I. Change of the rat brain bioelectrical activity after administration of 1-10 kD fraction isolated from the brain of hibernating ground squirrel. In: *Living in the cold.II. (Eds. Malan F., and Canguilhem B.)*, 1989, pp. 44-46.
4. Ignat'ev D.D., Vorobjov V.V., Yarkov A.V., Sviryaev V.I. Effects of injection of hibernating ground squirrel *tellus undulatus* brain fraction 1-10 kD into homoiotherms In: "Signal molecules and mechanisms of an animal behaviour", Pushchino, 1989, pp.23-24.
5. Ignat'ev D.D., Vorobjov V.V., Kruman I.I., Yarkov A.V. Effect of 1000-10000 Dalton fraction of blood serum from hibernating and active ground squirrel on bioelectrical activity of rat brain cortex. In: *Mechanisms of hibernation. 1987, Pushchino, Rus.*, pp. 127-132.

Manuals and computer programs:

1. Budantsev A.Yu., Kisljuk O.S. Rykunov D.S., Yarkov A.V. Brain in stereotaxic coordinates. *Computer-Aided Handbook. Rus. Institute of Inform. Sist., Reg. N h34I01. Moscow*, 1992.
2. Budantsev A.Yu., Kisljuk O.V., Rykunov D.S., Yarkov A.V. Brain in stereotaxic coordinates. *Computer-Aided Handbook. Manual, Biopress, Pushchino*, 1992.

Abstracts (last 5 years):

1. Yarkov A.V., Hanger D., Reploge M., and Joyce J.N. Behavioral effects of dopamine agonists and antagonist in MPTP lesioned D3 receptor transgenic knockout mice. *Neuroscience* 2003, New Orleans, LA, USA.
2. Iarkov A.V., J. Graham^{1,2}, T. Kanchiku¹, D. Hagner, and R Jung. Location and 3D Reconstruction of Motoneurons Innervating Gastrocnemius Medialis and Tibialis Anterior in the Rat. Program No. 88.18. 2006 Neuroscience Meeting Planner. Atlanta, GA: Society for Neuroscience, 2006. Online.
3. Seung-Jae Kim, Mallika Mukherjee, Alexandre Iarkov, James Abbas, Ranu Jung. Adaptive Control for Neuromuscular Stimulation Therapy in an Intermittent Training Paradigm. *BMES Annual Meeting, Los Angeles, CA 2007. P1.133*
4. Hamm T, S Venugopal, V Turkin, B Hilllen, JJ Abbas, G Yamaguchi, A Iarkov, R Jung. Modeling Neuromusculoskeletal Alterations after Spinal Cord Injury. *CRCNS09, Collaborative Research in Computational Neuroscience PI meeting, Pittsburgh, June 7-9, 2009.*
5. Fairchild M, JL Burton, SJ Kim, A Iarkov, JJ Abbas, R Jung. Use of adaptive neuromuscular electrical stimulation for hip movement in an incomplete spinal cord injury rodent model. Program No. 55.9/K18. 2009 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2009. Online.

PERSONAL INFORMATION

Status in USA Permanent Resident (Green Card)
Marital status: Married, two children

References

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