

Andrey A. Ptitsyn, Ph.D.
CURRICULUM VITAE

DATE OF BIRTH: December 25, 1965
MARITAL STATUS: Married, 2 children

INSTITUTE ADDRESS: Colorado State University
Campus delivery 1682
Fort Collins CO 80523

TELEPHONE: (970) 491 0878
FAX: (970) 491-1815
E-MAIL: Andrey.Ptitsyn@colostate.edu
WWW: <http://lamar.colostate.edu/~ptitsyn>

CURRENT POSITION: Assistant Professor

EXPERIENCE

Colorado State University

Time: 2006 - current
Position: Assistant Professor, Special research faculty
Responsibilities: Development of the Center for Bioinformatics

Pennington Biomedical Research Center

Time: 2001 - 2006
Position: Assistant Professor, Research track
Responsibilities: Development of an independent research program in computational biology, assisting the other research program in bioinformatics, assistance in building of bioinformatics facilities at the Pennington Center.

Genomics Institute of the Novartis Research Foundation

Time: 2000 - 2001
Position: Bioinformaticist
Responsibilities: Development of algorithms and tools for analysis of genomic data, analysis of microarray data.

South African National Bioinformatics Institute

Time: 1997 - 2000
Position: Senior computer programmer, National Bioinformatics Server Manager.
Responsibilities: Installation and running the SA National WWW server for bioinformatics. Development of algorithms and software tools for bioinformatics server. Scientific research in bioinformatics.

Institute of Cytology and Genetics, Siberian Branch, USSR

Academy of Sciences

Time: 1996 - 1997

Position: Group Leader and Senior Researcher.

Responsibilities: Leading a small group developing tools for DNA and protein sequence analysis. Design, implementation and management of LAN for the institute. Consulting on LAN and Internet. Determining the needs of the institute in the areas of IT, communications and computing; development of the appropriate solution and overseeing its implementation. Research in computational biology, both independent and in collaboration in experimental teams.

Time: 1993 - 1996

Position: Researcher at the laboratory of Theoretical Molecular Genetics

Responsibilities: Scientific programming and research. Managing independent research and software development projects. Managing local network in the laboratory.

Time: 1992 - 1993

Position: Junior researcher at the laboratory Of Theoretical Molecular Genetics.

Responsibilities: Scientific programming and research it a team. Participation in software projects design.

Time: 1990 - 1992

Position: Scientific Programmer, full time

Responsibilities: Scientific programming and research in a team.

Time: 1988 - 1990

Position: Scientific Programmer, part time.

Responsibilities: Scientific programming in research team

EDUCATION

Ph.D. in Bioinformatics, 2000, University of the Western Cape, Cape Town, South Africa.

Thesis title: "High-performance algorithms for EST clustering".

Master of Science in Biology (special training in **ecology** and **mathematical biology**), 1990, Novosibirsk, Novosibirsk State University, Russia.

Thesis title: "Computer modeling of biomass flow in ecosystems incorporating helminthes with complex life cycle"

Long-range wire connection specialist. 1984 - 1986 Army Signals School, Poltava, Ukraine.

Undergraduate student, 1983 - 1984 Gorky State University, Biology Department, Russia.

PROFESSIONAL ACTIVITY

1990-current Development of independent research projects in Computational Biology, Bioinformatics and Biomedical Science.

1997 - Russian Foundation for Basic Research Grant for the development of Siberian Regional Genome Informatics Server (largest RFBR grant in the institute)

1997 - Visiting researcher at the San Diego Supercomputer Center, San Diego, CA, USA.

1991 - 1997 Scientific research on the All-Union (later Russian National) Scientific and Technological Project "HUMAN GENOME" (Section "Informatics").

1996 - Visiting researcher at the Max Plank Institute for Molecular Genetics, Berlin, Germany.

1993 - 1997 Computer Networking and System Integration in the biological research center, Novosibirsk.

1993, 1994 - Visiting researcher at the Institute for Advanced Biomedical Technologies, Milan, Italy.

1989 - 1993 Development of educational software for Novosibirsk State University.

2006 - organized 3rd annual MCBIOS Conference in Baton Rouge, Louisiana.

AREA OF SCIENTIFIC INTERESTS:

Computational Biology, Bioinformatics, Systems Biology. Circadian oscillation in biological pathways. Etiology of metabolic syndrome. Algorithm development. High-performance computing. Sequences analysis. Genome assembly and annotation. EST clustering. Gene expression analysis, microarray data analysis. Cluster analysis of biological data. Gene structure and regulation, genome organization. Networking and Internet technologies in biomedical research.

SYNERGISTIC ACTIVITIES

- Developed and implemented the first prototype of integrated system for automatic annotation of genomic sequence fragments which pipelined separate applications, integrated their results into an object-oriented database and visualized using interactive graphic interface (1993-1994)
- Designed and implemented campus-size computer network for the largest biological research institute in Siberia (Inst. of Cytology and Genetics, Novosibirsk), including web portals, central databases, web-based bioinformatics applications, email and file exchange services (1995-1996)
- Contributed to the development and support of the South African National Bioinformatics Service, South African National Node of EMBNet (hosted by formally coloreds-only University of Western Cape), including support and application development for

the first high-performance bio-computing facility on the African continent (1997-2000).

- Initiated and led research projects in collaboration with experimental biologists, which resulted in discovery of novel molecular mechanisms of insulin resistance in type II diabetes and discovery of the baseline circadian oscillation in all mammalian genes; both discoveries were featured by the national and international news agencies (2005-2007)
- Contributing to the development of Bioinformatics and Systems Biology capacity at the Colorado State University and Rocky Mountain Region in general, which includes Bioinformatics core service, bio-computing facilities, bioinformatics analysis supplement (1-3 lectures) to a number of "omics" courses taught at different departments, education of faculty through short courses and seminars, adding bioinformatics component for multiple collaborative research projects and grant applications, connecting individual PIs across colleges and departments to each other and core facilities (genomics, proteomics, biostatistics) through experiment planning, data integration and interpretation, etc. (current).

PROGRAMMING LANGUAGES

C/C++ (preferred)

Assembler (PDP, VAX, Intel x86), Fortran, Pascal, Java, Perl, HTML/CGI, MPI

LANGUAGES SPOKEN

Russian (native)
English (fluent)
Italian (rarely exercised)

PUBLICATIONS

Ptitsyn, A. Gimble, J. Analysis of circadian pattern reveals tissue-specific alternative transcription in leptin signaling pathway. Accepted in BMC Bioinformatics, 2007

Ptitsyn, A., Zvonic, S, Gimble, J., Digital signal processing reveals circadian baseline oscillation in majority of mammalian genes. PLoS Comput Biol. 2007 Jun 15;3(6):e120. **Editor's picks, most viewed**

Ptitsyn A, Hulver M, Cefalu W, York D, Smith SR. Unsupervised clustering of gene expression data points at hypoxia as possible trigger for metabolic syndrome. BMC Genomics 2006, 7:318 (19 Dec 2006) **Highly accessed.**

Sanjin Zvonic, Andrey A Ptitsyn, Gail Kilroy, Xiyang Wu, Steven A Conrad, L. K Scott, Farshid Guilak, Gadi Pelled, Dan Gazit, Jeffrey M. Gimble, Circadian Oscillation of Gene Expression in Murine Calvarial Bone; J Bone Miner Res. 2007 Mar;22(3):357-65.

Adrian M. Stütz, Jaroslaw Staszkievicz, Andrey Ptitsyn, George Argyropoulos Circadian expression of genes regulating food intake Obesity (Silver Spring). 2007 Mar;15(3):607-15.

Jonathan D Wren, Yuriy Gusev, Andrey Ptitsyn and Stephen Winters-Hilt Proceedings of the Third Annual Conference of the MidSouth Computational Biology and Bioinformatics Society BMC Bioinformatics 2006, 7(Suppl 2):S1

Andrey A. Ptitsyn, Sanjin Zvonic, Jeffrey M. Gimble Permutation test for periodicity in short time series data BMC Bioinformatics 2006, 7(Suppl 2):S10

Andrey A. Ptitsyn, Sanjin Zvonic, Steven A. Conrad, L. Keith Scott, Randall L. Mynatt, and Jeffrey M. Gimble Circadian Clocks are Resounding in Peripheral Tissues. PLoS Comput Biol. 2(3): e16.

Sanjin Zvonic, Andrey A. Ptitsyn, Steven A. Conrad, L. Keith Scott, Z. Elizabeth Floyd, Gail Kilroy, Xiyang Wu, Brian C. Goh, Randall L. Mynatt, Jeffrey M. Gimble Characterization of Peripheral Circadian Clocks in Adipose Tissues. Diabetes. 2006 Apr;55(4):962-70.

Ptitsyn, A. Hide W. CLU: a new algorithm for EST clustering, BMC Bioinformatics. 2005 Jul 15;6 Suppl. 2:S3.

Hide, W., Ptitsyn, A. What is an EST? ENCYCLOPEDIA OF GENETICS, GENOMICS, PROTEOMICS & BIOINFORMATICS 2005 Wiley

Jennings, S., Ptitsyn, A., Wilkins, D., Bruhn, R., Slikker, W., Wren, J. Regional Societies: Fostering Competitive Research Through Virtual Infrastructures, PLoS Biology 2004 Dec.2(12):2039-40.

Ptitsyn, A. Class Discovery Analysis of the Lung Cancer Gene Expression Data, DNA and Cell Biology, 2004 Oct;23(10):715-21

Smith, S., Ptitsyn, A., Graunke, D., Xie, H., Koza, R., Solving Clinical Problems in Nutrition Research with Microarrays Genomics and Proteomics in Nutrition. Marcel Dekker 2004.

Ptitsyn A. Topological adjustments to the Genechip expression values. Methods of Microarray Analysis III. Kluwer Acad. Publishers 2003. ISBN 1-4020-7582-0

Smith, S., Ptitsyn, A., Xie, H. Perils, pitfalls and promise: expression profiling to diagnose obesity subtypes. Progress in Obesity Research John Libbey Eurotext Ltd, 2003, pp. 342-347.

Gamielien J, Ptitsyn A, Hide W. Eukaryotic genes in Mycobacterium tuberculosis could have a role in pathogenesis and immunomodulation. Trends Genet. 2002 Jan;18(1):5-8

Miller RT, Christoffels AG, Gopalakrishnan C, Burke J, Ptitsyn AA, Broveak TR, Hide WA A comprehensive approach to clustering of expressed human gene sequence: the sequence tag alignment and consensus knowledge base. Genome Res 1999 Nov;9(11):1143-55

Frolov AS, Lavriushev SV, Grigorovich DA, Kel AE, Ptitsyn AA, Kolchanov NA, Podkolodnyi NL, Solov'ev VV, Milanesi L, Bourne P, et al. WWWMGs: an integrated server for molecular-genetic studies
Biofizika 1999 Sep-Oct; 44(5):832-6 (in Russian)

Fedorova EV, Rogozin IB, Ptitsyn AA, Cheriaukene OV, Kaftanovskaia EM The isolation and analysis of the highly repetitive DNA from the argali Tsitol. Genet. 1998 Sep-Oct;32(5):67-74 (in Russian)

A. Kel, A. Ptitsyn, V. Babenko, S. Meier-Ewert and H. Lehrach, A genetic algorithm for designing gene family-specific oligonucleotide sets used for hybridization: the G protein-coupled receptor protein superfamily, Bioinformatics, v.14 no. 3 (1998) pp. 259-271;

E.I.Jantsen, A.A.Ptitsyn, M.L.Filipenko, O.A. Baturina, N.P.Mertvetsov, Computer analysis of nucleotide sequences from the family of interspersed repetitive elements MER1 - another oligonucleotide primer for the PCR assay of human DNA. Genetika. 1997 Feb; 33(2):243-8. (in Russian).

Gruntenko NE, Kochetov AV, Makarova KS, Mishin VP, Lukasheva VV, Ptitsyn AA, Kokoza VA Gene Nc73EF of Drosophila melanogaster encodes a protein highly homologous to E1 subunit of human 2-oxoglutarate dehydrogenase (in Russian) Genetika 1998 Jan;34(1):32-7

A. A. Ptitsyn, I. B. Rogozin, D. A. Grigorovich, V. B. Strelets, A. E. Kel, L. Milanesi, and N. A. Kolchanov, AutoGene: A Computer System for Nucleotide Sequence Analysis, Molekulyarnaya Biologiya, v.30 no.2 (1996) pp.436-445;

Ptitsyn, A.A., Grigorovich D.A., Object-oriented data handler for the sequence analysis software development, Comp. Appl. Biosci. V.11 no. 6 (1995) pp. 583-589;

Strelets, V.B., Ptitsyn, A.A., Milanesi, L., Lim, H.A. (1994) Data bank homology search algorithm with linear computation complexity. Comp. Appl. Biosci., v.10, n. 3 (1994), pp. 319-322;

Ptitsyn, A.A., Strelets, V.B., Rogozin, I.B., Kel, A.E., Milanesi L., Kolchanov, N.A. "The AutoGene v1.0: a computer system for automatic molecular genetic analysis", Novosibirsk, 47 pp. 1994;

SCIENTIFIC CONFERENCES

1990 - International Symposium "Modelling and Computer Methods in Molecular Biology and Genetics", Novosibirsk, - 2 posters.

1993 - I International course of computer methods in molecular genetics, IMB, Moscow, practical workshops.

1994 - IV annual conference of Russian National Program "Human Genome", Chernogolovka (Moscow region), poster.

1995 - II International course of computer methods in molecular genetics, IMB, Moscow, practical workshops.

1996 - ISMB-96, poster
1996 - II Siberian Congress on Applied and Industrial Mathematics - 4 oral presentations.
1996 - German Conference on Bioinformatics, Leipzig - poster
1996 - Bioinformatics-Structure, Jerusalem - posters
1999 - EBG meeting, University of Cape Town, oral presentation.
1999 - RECOMB99, Lyon, poster
1999 - ISMB99, Heidelberg, tutorial (one of the authors), poster
2000 - CSHL Genome sequencing and biology, poster
2000 - EBI Genome Based Gene Structure Determination, Poster
2000 - ISMB2000, San Diego, poster
2001 - RECOMB01 Satellite Meeting on sequence assembly, oral presentation.
2001 - ISMB2001, Copenhagen, poster.
2002 - ISMB2002, Edmonton, poster.
2002 - Microarray Analysis Coordination Network Retreat, Lake Mohonk NY, oral presentation.
2002 - Critical Assessment of Microarray Data Analysis, Duke Univ., oral presentation.
2003 - ISMB2003, Brisbane, Australia, poster.
2003 - Open Bioinformatics Consortium BOSC2003, Brisbane, Australia, oral presentation.
2003 - Affymetrix Low-Level Analysis Workshop, UC Berkeley, oral presentation.
2003 - MCBIOS (Mid-South Bioinformatics Society) First Annual Meeting, Little Rock, Arkansas, oral presentation.
2004 - Bioinformatics Symposium, University of Louisiana at Lafayette, oral presentation
2004 - MCBIOS (Mid-South Bioinformatics Society) First Annual Meeting, Little Rock, Arkansas, oral presentation.
2005 - Keystone Symposium X3 Systems Biology "Mechanisms of insulin resistance revealed by high-dimension expression pattern analysis".
2005 - Bioinformatics Symposium at UL Lafayette, LA "High-performance "booster" matching algorithm for EST clustering".
2005 - American Diabetes Association, San Diego, CA "New mechanisms of insulin resistance in skeletal muscle".
2005 - 2nd Moscow Conference on Computational Molecular Biology (MCCMB'05) «Algorithm GRAD for selection of informative genetic characteristics»
2006 - MCBIOS 3rd Annual Meeting (Chair), poster.
2006 - CSHL Systems Biology, poster
2006 - BGRS2006, poster
2006 - Bioinformatics Rocky 2006, keynote
2007 - MCBIOS07, New Orleans, oral presentation
2007 - Keystone symposium on systems Biology (X5), poster
2007 - Graybill Conference 2007, Fort Collins, CO. Tutorial.
2007 - ISMB/ECCB, Highlights track presentation, poster

SUPERVISING EXPERIENCE

Grigorovich Dmitriy,	B.Sci. in Computer Science, 1996 Novosibirsk State University, odip@bionet.nsc.ru
Anindya Poddar,	Louisiana State University Computer Science Dept., Ph.D. candidate
Corby Martin Ph.D.	Department of Health Behavior, Instructor co-mentor on K23 (Mentored Patient-Orientated Research Career Development Award) grant

entitled *Energy Expenditure: Relation with Body Mass over Time*, awarded by NIH in 2005.

PROFESSIONAL ASSOCIATIONS

International Society for Computational Biology - member since 1999.

MidSouth Computational BIOlogy Society (MCBIOS) - Board of Directors, 2003-2007, Chair of the 2005 MCBIOS Bioinformatics Conference

American Diabetes Association - professional section member since 2005.