Date prepared: 1 February 2008

Tatiana P. Molchanova
Resident Alien of the USA (since 1995)
Present address: 11405 Commonwealth Drive, Apt. #104,
N. Bethesda, MD 20852.
Tel.: (301) 468-0467 (home)
E-mail: molchanova57@yahoo.com

Resume

Education:
Ph.D. in Biological Sciences, "Hematological Scientific Center" and "Engelhardt Institute of Molecular Biology", Russian Academy of Science, Moscow.
BS, Chemist (Chemistry of the Biologically Active Natural Compounds), Institute of Fine Chemical Technology, Moscow.
Research expertise
Protein biochemistry: protein expression, isolation and characterization, conformational stability, cell receptor search; enzymatic activity, ligand binding.
Molecular diagnosis of human hereditary diseases through protein and DNA structure analysis.
Nomenclature and Content of Locus-Specific Databases. Protein databases analysis.

Objectives: Research Specialist (or equivalent)

Research Experience
Protein:
Protein expression.
Protein purification by crude extraction, precipitation, ultrafiltration; FPLC [gel-filtration, ion- exchange]; HPLC [size exclusion, ion exchange, reverse phase (RPC), hydrophobic interaction (HIC), normal phase etc.]; affinity chromatography. Immunoprecipitation. Isolation protein from inclusion bodies.
Protein characterization: subunit definition; SDS PAGE; 1D and 2D PAGE; Western Blots; specific staining; spectral analysis (UV/vis spectrophotometry, fluorescent spectrophotometry); protein functional properties.
Protein primary structure: chemical and enzymatic digestion, peptide mapping by HPLC, TLC, sample preparation for mass spectrometry and data analysis; sequencing by Edman degradation.
Protein stability: thermostability, stability in organic solvent; aggregation; subunit dissociation; proteolytic degradation as a tool for protein stability.
Protein modification: chemical modification, cross-linking.
Membrane proteins: preparation, solubilisation, affinity chromatography by using specific ligands; membrane protein assays [receptor binding and enzymatic activity based on radiolabeled substrates].
Protein structure and activity: ligand binding, kinetics; proteolytic enzyme activities and

inhibition; cAMP and cGMP dependent phosphodiesterases, Ca2+ binding, protein folding and crystallization.
Hemoglobin: isolation, oxygen affinity, stability, dissociation and reassociation, subunits and globin chain isolation, mutation detection, Locus-Specific Hb databases and analysis.
DNA: DNA and mRNA isolation, blot hybridization, cloning, PCR, DNA sequencing;
RNA quantitative RT-PCR and etc.
Cell culture: proliferation assays, receptor binding.
Computer skills: Word, Excel, PowerPoint, Origin, KaleidaGraph, Reference Manager, CorelDraw, Sequence Analysis tools such as GCG-Lite+, Blast, ExPASy and others. Search database: ENTREZ, SRS, SwissProt, OMIM and others.
Employment:
June, 2002- May 2004 Charles River Laboratories, NIH/NICHD, Research Specialist I,
Address:
945 Russell Ave. Suite B,
Gaithersburg, MD 20879
Tel: 301—402-2634
New address: 01_24_07
Charles River Laboratories
20401 Seneca Meadows Pkwy
Germantown, MD 20876-7005

Contractor. Responsibilities: expression, purification, characterization and receiving of biochemical characteristics of the recombinant, mutant proteins. Accomplishments (updated on February 2004): expression (from about few hundreds liters of cultured E.coli cells) and FPLC purification of the native iGluR2S1S2, iGluR5S1S2, iGluR6S1S2, I-deltaR2S1S2 construct of the iGluR2, iGluR5, iGluR6, idelta2R receptors for the purpose of protein crystallization and X-ray analysis and studies of their biochemical properties. I have set up and tested the ligand-protection of iGluR2S1S2, iGluR5S1S2, iGluR6S1S2, I-deltaR2S1S2 iGluR2S1S2, iGluR5S1S2, iGluR6S1S2, I-deltaR2S1S2 with the quantitative proteolysis assay using trypsin and chymotrypsin as enzymes, electrophoresis and scanning for the quantitative data. I have expressed and purified [Se-Met]-labeled GluR6S1S2 construct. Protein was crystallized and X-ray structure resolved. I have worked out the ligand-binding assay based on quantitative recording of the fluorescence signal. I have determined the quantitative parameters for the binding of 15 different radio-labeled ligands with iGluR6S1S2, iGluR5S1S2. I have done screening of protein folding following by the radio labeled ligand binding assay. I am currently working on the screening of the expression and FPLC isolation of the new i-delta2S1S2 construct to find out the optimal conditions of the expression of the protein of our interest. I have done the technical assistance for the crystallization trials. I have duties for reagent's preparing, order laboratory supplies for the group needs according to the supervisor orders.
April, 2001- April 2002 Center for the Advanced Research and Biotechnology, University of Maryland Biotechnology Institute.

University of Maryland Biotechnology Institute
Center for Advanced Research in Biotechnology
9600 Gudelsky Drive, Rockville, MD 20850
tel: 240-314-6000

Research Associate. Main field of studies: structural biology of recoverin as a regulator of the rhodopsin activity. Responsibilities: expression, purification and characterization of the recombinant, mutant recoverins. Study of the properties of the mutant proteins. Accomplishments: During 1 year I have expressed and purified eight different native mutant myristoylated and unmyristoylated recoverins using different combinations of protein purification methods. Mechanism of Ca++ binding using [45 Ca++ isotope] and the fluorescence spectra data to EF-hand Ca-binding proteins. Expression and purification of the URL-3 protein, preliminary characterization of its Ca2+ binding with the fluorescence spectroscopy and its stability.
1995-2000: Pro-Neuron, Inc., Gaithersburg, MD, USA. Scientist. Main field of studies: hematopoiesis, diabetes.
Responsibilities: as a part of a team I was responsible for the isolation of proteins, recombinant proteins (soluble and from inclusion bodies) and peptides, and other bioactive molecules from cells, tissues (including blood, bone marrow cells, liver, serum/plasma and etc) of different species, and cell cultures (such as hematopoietic and etc). Isolated molecules were proven for their purity by PAGE, (TLC) and specified by Western blot and mass-spectrometry analysis. I was in charge and I provided protein modification, specific digestion and isolation of specific peptides. I carried out the receptor-binding assays, isolation of the specific drug-binding proteins by affinity chromatography. Protein sequence alignments, analysis and conclusions.
Accomplishments:
I have isolated proteins of the same class from different spices. I modified some of them and isolated their peptides. It was my impact in the analysis of the relations between the structure and the biological activity of this class of proteins and peptides.
I have isolated the chemotactic protein CP10, and macrophage related proteins MRP8, MRP 14), which were shown, had a new biological activity.
I have partially purified small molecule(s) with new specific activity.
Using different cell lines (RAW 264.7, SK-N-SH, C2C12, PC12, FDCP mixed, CD34+, mouse brain membrane) and different assays for the G-protein coupled receptor binding I have shown that tested drugs (isolated and synthetic peptides) were not probably ligands for this class of receptors.
I have shown that one of the tested drugs had preferential affinity to Hsp75 stress protein.
I have specified cAMP dependent phosphodiesterase inhibitory activity for new drugs using a competition approach.
1991-1995: Department of Biochemistry and Molecular Biology, Comprehensive Sickle Cell Center, Medical College of Georgia, Augusta, GA. International Research Fellow. Field of study: Molecular diagnosis of hemoglobinopathies. Quantitative RT PCR for the regulation of human globin gene expression. Human hemoglobin mutation databases.
Accomplishments: I have identified more than 100 hemoglobin mutations.
Using my own skills I was able alone to complete identification of the mutation (by

protein or/and DNA sequencing) starting from whole blood sample.
I had worked out and set up the experimental procedures and wrote Protocols for the molecular diagnosis of abnormal Hbs through the DNA sequencing.
I have revised the understanding of the regulation of the alpha globin gene expression.
I was one of the enthusiastic initiator and active member of the team working on the Hb Locus-Specific Databases on the World Wide Web. I was mostly responsible for the definition of the biochemical and functional criteria for the mutant Hbs to make databases friendly useful for biochemists, molecular biologists and clinicians.
1975-1991: Hematological Scientific Center, Moscow, Russia. Senior Research Scientist; Junior Research Scientist. Field of study: development of the methodology and techniques for the molecular diagnosis of hematological diseases based on protein studies; study of the molecular mechanisms of the erythrocyte pathobiology based on hemoglobin and membrane protein studies.
1970-1991: Engelhardt Institute of the Molecular Biology, Russian Academy of Sciences, Moscow. Visiting Scientist.
Field of study: conformational stability and dynamic of the protein structure (spectral analysis, thermal and cold stability, mechanical stability; stability in the presence of different ions, organic solvents and denatured agents); proteolytic degradation as a test for the protein conformation stability. Statistical analysis of the distribution of the destabilizing mutations in the structure of alpha and beta mutant Hb variants and hypothetical explanation of the detection of the Hb mutations in population.

Honors and Awards:

Silver Medal Scholarship

Award for Scholarly Outstanding

1981,1982- Second and third Price for the scientific studies
of the conformational dynamic of proteins in
the Scientific Competition in the Engelhadt
Institute of Molecular Biology

The Silver Medal and the Bronze Medal at
the Exhibition of Achievements of the National Economy, section " Medicine for the Care of Public Health", Moscow, Russia,
The First Place in the Competition for Best Poster 's Presentation
(erythrocyte membrane protein study) at the International Symposium
"Molecular Factors of Hematopoiesis and Stem Cells", Moscow, Russia,

Participation at the International Symposiums:

6th International Conference on Thalassaemia and the Haemoglobinopathies and the 8th Annual Thalassaemia Parent and Patients International Conference, Invited Lector, Malta, 1997
Third HUGO Mutation Database Meeting, San Francisco, CA, 1996
International Workshop on Sequencing by Hybridization, Houston, TX, 1993
International Symposium on Molecular Factors of Hematopoiesis and Stem Cells, Moscow, 1990
- 14-th International Congress of Biochemistry, Prague, Czechoslovakia, 1988

Soviet-French Symposium on the Physical Chemistry of proteins and Peptides, Pushchino,
Russia, 1975
XIV International Congress of Genetics, Moscow, Russia, 1975

Collaborations:

Hospitals and Research Institutes located in Moscow and in other republics of the former USSR and in USA.
Institute of Biophysics of the Russian Academy of Sciences, Pushchino: microcalorimetry of the membrane proteins;
Institute of Analytical Instrumentation for Scientific-Industrial Associations, Russian Academy of Sciences, Saint Petersburg, Russia: mass-spectrometry for human mutation studies;
Institute of Hematology, Budapest, Hungary: methods for human hemoglobin mutation studies;
Laikon Hospital, Athens, Greece: RFLP for the prenatal diagnosis of hemoglobinopathies;
Argonne National Laboratory, DOE, USA: microchip technology for diagnosis of human mutation diseases;
Laboratory of the Chemical Biology, NIDDK/NIH, Bethesda, MD: screening studies for search of new drugs for Sickle Cell Disease treatment;
Pennsylvania State University; human hemoglobin locus-specific mutation databases.

<u>Teaching skills:</u> Supervisor for students, Visiting scientists, Guidance of the research studies for the Philosophic Degree.

List of publications

Preeviewed publications in the professional journals

Reference List

1. Abaturov LV, Molchanova TP, Nosova NG, Shliapnikov SV, Faizulin DA. The conformational dynamic of the tetramer hemoglobin molecule as revealed by hydrogen exchange. II. Influence of the intersubunit contact splitting Mol Biol (Mosk). 2006 May-Jun;40(3):468-81. Russian.

2. Hamasaki-Katagiri N, Molchanova T, Takeda K, Ames JB. Fission yeast homolog of neuronal calcium sensor-1 (Ncs1p) regulates sporulation and confers calcium tolerance. J Biol Chem. 2004 Mar 26;279(13):12744-54.

3. Т. Молчанова. (2004) "Лермонтов Юрий Григорьевич". Образование и общество, №4, стр. 114-118.

4. Ames,J.B., Hamasaki,N., and Molchanova,T. (2002). Structure and calcium-binding studies of a recoverin mutant (E85Q) in an allosteric intermediate state. Biochemistry *41*,

5776-5787.

5. Molchanova,T.P., Kolledey,S.V., Pronina,L.C., Mirgorodskaya,O.A., Musolyamov,A.C., Abaturov,L.V., and Huisman,T.H. (1999). Unstable Hb Newcastle [beta92(F8)His-->Pro], first case discovered in a Russian patient. Hemoglobin *23*, 373-378.
6. Molchanova,T.P., Postnikov,Y., V, Gu,L.H., and Huisman,T.H. (1998). Historical note: the beta-thalassemia allele in the noble Russian family Lermontov is identified as the ATG-->ACG change in the initiation codon. Hemoglobin *22*, 283-286.
7. Chui,D.H., Hardison,R., Riemer,C., Miller,W., Carver,M.F., Molchanova,T.P., Efremov,G.D., and Huisman,T.H. (1998). An electronic database of human hemoglobin variants on the World Wide Web. Blood *91*, 2643-2644.
8. Hardison,R.C., Chui,D.H., Riemer,C.R., Miller,W., Carver,M.F., Molchanova,T.P., Efremov,G.D., and Huisman,T.H. (1998). Access to a syllabus of human hemoglobin variants (1996) via the World Wide Web. Hemoglobin *22*, 113-127.
9. Bisse,E., Schlemer,E., Lizama,M., Huaman-Guillen,P., Wieland,H., Adam,G., Molchanova,T.P., and Huisman,T.H. (1998). Hb Strasbourg [beta 23(B5)Val-->Asp]; a high oxygen affinity variant observed in a German family. Hemoglobin *22*, 69-73.
10. Smetanina,N.S., Molchanova,T.P., and Huisman,T.H. (1997). Analysis of mRNA from red cells of patients with thalassemia and hemoglobin variants. Hemoglobin *21*, 437-467.
11. Molchanova,T.P. and Huisman,T.H. (1997). The levels of abnormal hemoglobin in persons with heterozygosities for an alpha chain variant and for beta-thalassemia. Hemoglobin *21*, 173-177.
12. Molchanova,T.P. and Huisman,T.H. (1996). The importance of the 3' untranslated region for the expression of the alpha-globin genes. Hemoglobin *20*, 41-54.
13. Molchanova,T.P., Smetanina,N.S., and Huisman,T.H. (1995). A second, elongated, alpha 2-globin mRNA is present in reticulocytes from normal persons and subjects with terminating codon or poly A mutations. Biochem. Biophys. Res. Commun. *214*, 1184-1190.
14. Harthoorn-Lasthuizen,E.J., Nabben,F.A., Kazanetz,E.G., Gu,L.H., Molchanova,T.P., and Huisman,T.H. (1995). HB Mizuho or alpha 2 beta 2 68(E12)Leu-->Pro in a young Dutch boy. Hemoglobin *19*, 203-206.
15. Prchal,J.T., Adler,B., Wilson,J.B., Baysal,E., Qin,W.B., Molchanova,T.P., Pobedimskaya,D.D., Kazanetz,E.G., and Huisman,T.H. (1995). Hb Bibba or alpha 2 136(H19)Leu-->Pro beta 2 in a Caucasian family from Alabama. Hemoglobin *19*, 151-164.
16. Pobedimskaya,D.D., Molchanova,T.P., Streichman,S., and Huisman,T.H. (1994). Compound heterozygosity for two alpha-globin gene defects, Hb Taybe (alpha 1; 38 or 39 minus Thr) and a poly A mutation (alpha 2; AATAAA-- >AATAAG), results in a severe hemolytic anemia. Am. J. Hematol. *47*, 198-202.
17. Molchanova,T.P., Pobedimskaya,D.D., and Huisman,T.H. (1994). The differences in quantities of alp. Br. J. Haematol. *88*, 300-306.
18. Pobedimskaya,D.D., Molchanova,T.P., and Huisman,T.H. (1994). Hb Ramona or alpha (2)24(B5)Tyr-->Cys beta 2. Hemoglobin *18*, 365-366.
19. Qin,W.B., Pobedimskaya,D.D., Molchanova,T.P., Wilson,J.B., Gu,L.H., de

Pablos,J.M., and Huisman,T.H. (1994). Hb Fannin-Lubbock in five Spanish families is characterized by two mutations: beta 111 GTC-->CTC (Val-->Leu) and beta 119 GGC-->GAC (Gly-- >Asp). Hemoglobin *18*, 297-306.
20. Curuk,M.A., Molchanova,T.P., Postnikov,Y., Pobedimskaya,D.D., Liang,R., Baysal,E., Kolodey,S., Smetanina,N.S., Tokarev,Y., Rumyantsev,A.G., and . (1994). Beta-thalassemia alleles and unstable hemoglobin types among Russian pediatric patients. Am. J. Hematol. *46*, 329-332.
21. Molchanova,T.P., Pobedimskaya,D.D., and Postnikov,Y. (1994). A simplified procedure for sequencing amplified DNA containing the alp. Hemoglobin *18*, 251-255.
22. Molchanova,T.P., Pobedimskaya,D.D., Ye,Z., and Huisman,T.H. (1994). Two different mutations in codon 68 are observed in Hb G-Philadelphia heterozygotes. Am. J. Hematol. *45*, 345-346.
23. Qin,W.B., Baysal,E., Wong,K.F., Molchanova,T.P., Pobedimskaya,D.D., Sharma,S., Wilson,J.B., and Huisman,T.H. (1994). Quantities of alpha Q chain variants in heterozygotes with and without a concomitant beta-thalassemia trait. Am. J. Hematol. *45*, 91-93.
24. Dincol,G., Dincol,K., Erdem,S., Pobedimskaya,D.D., Molchanova,T.P., Ye,Z., Webber,B.B., Wilson,J.B., and Huisman,T.H. (1994). Hb Capa or alpha (2)94(G1)Asp-->Gly beta 2, a mildly unstable variant with an A-->G (GAC-->GGC) mutation in codon 94 of the alpha 1-globin gene. Hemoglobin *18* , 57-60.
25. Curuk,M.A., Dimovski,A.J., Baysal,E., Gu,L.H., Kutlar,F., Molchanova,T.P., Webber,B.B., Altay,C., Gurgey,A., and Huisman,T.H. (1993). Hb Adana or alpha 2(59)(E8)Gly-->Asp beta 2, a severely unstable alpha 1-globin variant, observed in combination with the -(alpha)20.5 Kb alpha-thal-1 deletion in two Turkish patients. Am. J. Hematol. *44*, 270-275.
26. Pobedimskaya,D.D., Molchanova,T.P., Huisman,T.H., Harding,S.R., and Bakanec,R. (1993). Hb F-Saskatoon or alpha 2G gamma (2)21(B3)Glu-->Lys observed in a North American Indian newborn. Hemoglobin *17*, 547-549.
27. Pobedimskaya,D.D., Molchanova,T.P., Amernick,R., Druskin,M.S., Webber,B.B., Wilson,J.B., and Huisman,T.H. (1993). Hb Sinai-Baltimore or alpha 2 beta (2)18(A15)Val->Gly, a silent, mildly unstable beta chain variant detected by isoelectrofocusing and high performance liquid chromatography. Hemoglobin *17*, 505-512.
28. Qin,W.B., Ju,T.L., Yue,X.L., Yan,X.L., Qin,L.Y., Molchanova,T.P., Pobedimskaya,D.D., and Huisman,T.H. (1993). Hb A2-liangcheng [delta 117(G19)Asn->Asp(AAC->GAC)]: a new delta chain variant detected by gene analysis in a Chinese family. Hemoglobin *17*, 463-466.
29. Malcorra-Azpiazu,J.J., Wilson,J.B., Molchanova,T.P., Pobedimskaya,D.D., and Huisman,T.H. (1993). Hb Porto Alegre or alpha 2 beta 29(A6)Ser->Cys in unrelated families of the Canary Islands. Hemoglobin *17*, 457-461.
30-. Postnikov,Y., Molchanova,T.P., and Huisman,T.H. (1993). Allele-specific amplification for the identification of several hemoglobin variants. Hemoglobin *17*, 439-452.
31. Gu,L.H., Wilson,J.B., Molchanova,T.P., McKie,K.M., McKie,V.C., and Huisman,T.H. (1993). Three sickle cell anemia patients each with a different alpha chain variant. Diagnostic complications. Hemoglobin *17* , 295-301.

32. Divoky,V., Svobodova,M., Indrak,K., Chrobak,L., Molchanova,T.P., and Huisman,T.H. (1993). Hb Hradec Kralove (Hb HK) or alpha 2 beta 2 115(G17)Ala-->Asp, a severely unstable hemoglobin variant resulting in a dominant beta- thalassemia trait in a Czech family. Hemoglobin *17*, 319-328.
33. Molchanova,T.P., Postnikov,Y.V., Gu,L.H., and Huisman,T.H. (1993). Hb A2-Grovetown or alpha 2 delta (2)75(E19)Leu-->Val. Hemoglobin *17*, 289-291.
34. Molchanova,T.P., Postnikov,Y., Wilson,J.B., Webber,B.B., Gu,L.H., Sabio,H., Waldron,P., and Huisman,T.H. (1993). Hb Madrid or alpha 2 beta (2)115(G17)Ala-->Pro in a black teenager. Hemoglobin *17*, 251-254.
35. Molchanova,T.P., Postnikov,Y., Gu,L.H., Prior,J.F., Raven,J.L., Bennett,J.A., and Huisman,T.H. (1993). Hb Tigraye or alpha 2 beta (2)79(EF3)Asp-->His(GAC-->CAC): a hemoglobin variant with increased oxygen affinity observed in an Ethiopian male. Hemoglobin *17*, 247-250.
36. Molchanova,T.P., Postnikov,Y., Pobedimskaya,D.D., Smetanina,N.S., Moschan,A.A., Kazanetz,E.G., Tokarev,Y., and Huisman,T.H. (1993). Hb Alesha or alpha 2 beta (2)67(E11)Val-->Met: a new unstable hemoglobin variant identified through sequencing of amplified DNA. Hemoglobin *17*, 217-225.
37. Pobedimskaya,D.D., Molchanova,T.P., Gu,L.H., Molina,M.A., de Pablos,J.M., and Huisman,T.H. (1993). Hb F-Sacromonte or alpha 2G gamma (2)59(E3)Lys-->Gln observed in a Spanish newborn and his mother. Hemoglobin *17*, 269-274.
38. Molchanova,T.P. (1993). A new screening test for unstable hemoglobins using N-butanol and red blood cells. Hemoglobin *17*, 81-84.
39. Smetanina,N.S., Zhestkova,N.M., Molchanova,T.P., and Tokarev,I. (1993). [Koln hemoglobinopathy: 3 patients in one Russian family]. Ter. Arkh. *65*, 45-48.
40. Molchanova,T.P., Wilson,J.B., Gu,L.H., Guemira,F., Fattoum,S., and Huisman,T.H. (1992). Hb Bab-Saadoun or alpha 2 beta (2)48(CD7)Leu----Pro, a mildly unstable variant found in an Arabian boy from Tunisia. Hemoglobin *16*, 267-273.
41. Negri,A.S., Maldonado Eloy-Garcia,J., Molchanova,T.P., Wilson,J.B., Gu,L.H., and Huisman,T.H. (1992). Hb Brockton [alpha 2 beta 2(138)(H16)Ala-->Pro] observed in a Spanish girl. Hemoglobin *16*, 511-514.
42. Liu,J.S., Molchanova,T.P., Gu,L.H., Wilson,J.B., Hopmeier,P., Schnedl,W., Balaun,E., Krejs,G.J., and Huisman,T.H. (1992). Hb Graz or alpha 2 beta 2(2)(NA2)His-->Leu; a new beta chain variant observed in four families from southern Austria. Hemoglobin *16*, 493-501.
43. Molchanova,T.P., Wilson,J.B., Gu,L.H., Hain,R.D., Chang,L.S., Poon,A.O., and Huisman,T.H. (1992). A second observation of the fetal methemoglobin variant Hb F-M-Fort Ripley or alpha 2G gamma 2(92)(F8)His----Tyr. Hemoglobin *16*, 389-398.
44. Dmitrieva,M.G., Kazanets,E.G., Molchanova,T.P., Karpova,I.V., Sevast'ianova,M.G., and Andreeva,A.P. (1991). [Oxygen-binding properties of blood in hemoglobinosis M Boston detected in the USSR for the first time]. Gematol. Transfuziol. *36*, 9-11.
45. Molchanova,T.P., Kolodei,S.V., and Tokarev,Y. (1991). Expression of human membrane proteins 4.1a and 4.1b in reticulocytes and mature erythrocytes. Biomed. Sci. *2*, 379-384.
46. Tasheva,E.S., Zareva,Z.Z., Topuzova,S.T., and Molchanova,T.P. (1990). Hb Andrew-Minneapolis [beta 144(HC1)Lys----Asn] in a Bulgarian family. Hemoglobin *14*, 227-228.
47. Molchanova,T.P. (1989). [Basis of the molecular organization of erythrocyte

membrane proteins and their defects leading to hemolytic anemia]. Gematol. Transfuziol. *34*, 32-41.
48. Molchanova,T.P., Mirgorodskaia,O.A., Abaturov,L.V., Podtelezhnikov,A.V., and Tokarev,I. (1989). [Location of amino acid substitutions in human hemoglobin. Mass spectrometric rapid analysis of tryptic peptides]. Mol. Biol. (Mosk) *23*, 225-239.
49. Molchanova,T.P. (1989). [Detection of unstable hemoglobins with the use of normal butyl alcohol]. Lab Delo 29-31.
50. Molchanova,T.P. and Tokarev,I. (1988). [Effect of various factors on the destruction of abnormal hemoglobins in vitro. A screening method for the detection of unstable abnormal human hemoglobins]. Gematol. Transfuziol. *33*, 39-43.
51. Kazanets,E.G., Andreeva,A.P., Molchanova,T.P., Pronina,L.K., and Tokarev,I. (1988). [First cases of the detection of Hb Hyde Park in the Soviet Union]. Gematol. Transfuziol. *33*, 43-46.
52. Idel'son,L.I., Molchanova,T.P., Aseeva,E.A., Spivak,V.A., and Tokarev,I. (1987). [A second case of an Hb Takoma carrier in Moscow]. Gematol. Transfuziol. *32*, 45-46.
53. Molchanova,T.P., Zareva,Z.Z., Rashkov,R.G., Abaturov,L.V., and Tokarev,I. (1987). [A first case of Hb J Paris-1 alpha2[A10] Ala----Asp beta2 carrier in Bulgaria. Structural organization]. Gematol. Transfuziol. *32*, 15-19.
54. Molchanova,T.P. (1987). [Functional role of proteolysis in erythroid cells in hemoglobinopathies]. Gematol. Transfuziol. *32*, 33-39.
55. Molchanova,T.P. (1986). [Improved methods for the laboratory diagnosis of unstable human hemoglobin anomalies]. Gematol. Transfuziol. *31*, 43-45.
56. Dubrova,I., Ikramov,K.M., Altukhov,I., Spivak,V.A., and Molchanova,T.P. (1985). [Genetic and clinical study of a family with abnormal hemoglobin Hb D Punjab 121 beta Glu----Gln]. Genetika *21*, 1918-1920.
57. Molchanova,T.P., Malozemova,N.G., and Abaturov,L.V. (1982). [Proteolytic degradation of native hemoglobin and its constituent parts- -isolated subunits and globin. I. Kinetic data and the character of the process of the breakdown of native forms]. Mol. Biol. (Mosk) *16*, 1128-1143.
58. Abaturov,L.A. and Molchanova,T.P. (1982). [Proteolytic degradation of native hemoglobin and its constituent parts- -isolated subunits and globin. II. Correlation with the hydrogen exchange data and the mechanism of the burst-like proteolytic breakdown of native proteins]. Mol. Biol. (Mosk) *16*, 1144-1164.
597. Spivak,V.A., Molchanova,T.P., Ermakov,N.V., Postnikov,I., and Tokarev,I. (1982). [Hemoglobin Lepore Boston in Bulgaria]. Probl. Gematol. Pereliv. Krovi. *27*, 27-31.
60. Spivak,V.A., Molchanova,T.P., Postnikov,Y., Aseeva,E.A., Lutsenko,I.N., and Tokarev,Y. (1982). A new abnormal hemoglobin: Hb Mozhaisk beta 92(F8)His leads to Arg. Hemoglobin *6*, 169-181.
61. Spivak,V.A., Molchanova,T.P., Ermakov,N.V., Tokarev,Y., Martinez,G., Szelenyi,J., Horanyi,M., Foldi,J., Hollan,S., Kazieva,H., and Shamov,I.A. (1981). A new hemoglobin variant: Hb Dagestan alpha 60(E9) Lys leads to Glu. Hemoglobin *5*, 133-138.
62. Molchanova,T.P., Abaturov,L.V., Spivak,V.A., Ermakov,N.V., and Tokarev,I. (1980). [Hemoglobin M Saskatoon alpha 2 beta 2 63 (E7) His--Tyr. Structural identification, hemichrome formation and proteolytic degradation]. Mol. Biol. (Mosk) *14*, 1253-1266.
63. Spivak,V.A., Molchanova,T.P., and Tokarev,I. (1980). [Rapid and highly sensitive

method of detection of abnormal hemoglobins S, E and D Punjab]. Probl. Gematol. Pereliv. Krovi. *25*, 55-59.
64. Spivak,V.A., Molchanova,T.P., Ermakov,N.V., Tokarev,I., and Gar'kavtseva,R.F. (1979). [Primary structure of abnormal E-like hemoglobin]. Biokhimiia. *44*, 816-821.
65. Spivak,V.A., Molchanova,T.P., Ermakov,N.V., Tokarev,I., Gar'kavtseva,R.F., and Asanov,I. (1978). [Determination of a primary structure of abnormal D-like hemoglobin isolated from a blood donor]. Biokhimiia. *43*, 1175-1183.
66. Abaturov,L.V., Yakobashvily,N.N., Jinoria,K.S., Molchanova,T.P., and Varshavsky,Y.M. (1976). Effect of inter-subunit contact on intramolecular conformational motility (conformational stability) of hemoglobin as revealed by hydrogen exchange. FEBS Lett. *70*, 127-130.
BOOKS:
Smetanina NS, Molchanova TP, Pobedimskaya DD, Kazanezh EG, Tokarev Yu.N., Rumyantsev AG: Molecular-Genetic of the Hemoglobinopathies from children. Practical Recommendations and Protocols for Diagnosis, 2001, Russian Ministry of Health
Abaturov L.V., Lebedev Yu.O., Molchanova T.P. et al.: Conformational rigidity and fluctuational motility of the global proteins: water as a stabilizer and plastificator of structure.- In the Book "Equilibrium Dynamics of the Biopolymer Structure", Pushino, Russia, 1990, pp.49-77 (in Russian).
Abaturov L.V., Molchanova T.P.: Dynamic structure of proteins according to the data of the hydrogen exchange and proteolytic degradation- In the Book:"Equilibrium Dynamics of the Native Structure of Protein", E.A. Burshtein, ed., Pushino, 1977, pp.5-25 (in Russian).
Abstracts

Katagiri NH, **Molchanova** TP, Ames JB: Cloning and characterization of a fission yeast homolog of recoverin processing a calcium-myristoyl switch- Kyoto Pombe Meeting, Japan 2002

Molchanova T.P., Smetanina N.S., and THJ Huisman : The analisis of mRNA from red cells of patients with thalassemia and hemoglobin vriants- 8-th Annual Thalassemia Parent and Patients International Conference, Malta, April, 1997.

Hardison R.C., Reimer C., Miller W., Chui D.H.K., **Molchanova** T.P., Carver M.F.H., Efremov G.D., Baysal E., and T.H.J. Huisman: Electronical and printed Syllabi describing 1 human hemoglobin variants and (2) determinants of thalassemia and HPFH – HUGO 4th International Mutation Database Meeting, Baltimore, U.S.A., October, 1997.

Molchanova T.P., and T.H.J. Huisman: Human hemoglobin variants: a gene spesific database-HUGO Mutation Database MeetingSan Francisco, October, 1996

Molchanova, T.P., Kolodey, S.V., Tokarev, Yu.N.: Human erythrocyte membrane proteins 4.1a and 4.1b in terminal stages of erythropoiesis. Abst. Symp. Molecular Factors of Hematopoiesis and Stem Cells, Moscow, 1990, p. 76.

Molchanova T.P., Mirgorodskaya O.A., Surin V.L. et al.: Mass-spectrometry and polymerase chain reaction in the human abnormal hemoglobin identification. - 1st All-Union Symposium on Human Genome, Pereslavl-Zalevski, Russia, 1990, pp. 174-175.

Abaturov L.V., Lebedev Yu.o., **Molchanova** T.P. et al. : The conformational mobility and flexibility of the protein structure. The role of the hydration in the protein structural mobility. - 14th International Congress of Biochemistry, Prague, Czechoslovakia, 1988.

Molchanova T.P., Abaturov L.V.: The influence of the point amino acid substitution in the active center of the human hemoglobin on the Hb's conformational stability and on Hb's affinity to the external ligands.- VI Conference on Spectroscopy of the Biopolymers, Kharkov, 1988.

Molchanova T.P., Mirgorodskaya O.A., Eremiyantz A.R. et al.: First case of carrier of unstable hemoglobin Hb Louisville b 42 (CD1) Phe-->Leu in two carriers from Moscow family.- Belorussian Congress of Hematologists and Transfuziologists, Minsk, 1988

Molchanova T.P., Tokarev Yu.N., Murgorodskaya O.A. et al. : Mass-spectrometric express analysis of the tyiptic peptides of human hemoglobin.- VII All-Union Symposium on Chemistry of Proteins and Peptides, Riga, 1987.

Molchanova T.P., Abaturov L.V., Tokarev Yu.N.: Role of the substitution of the external residues in the conformational stability of human hemoglobin- Symposium on Phisico-chemical Properties of the Biopolimers in Solutions and Cells with the participation of the contries of the Council for Mutual Economic Aid, Pushino, Russia, 1986, p. 113-114.

Molchanova T.P., Abaturov L.V., Tasheva E.S., Tokarev Yu.N.: Increased thermal denaturation of the metform of Hb O Arab ? 121 (GH4) Glu-->Lys - II National Congress on Medical Biology and Genetics, Sofia, 1985, p.76.

Spivak V.A., **Molchanova** T.P., Aseeva E.A., Luztenko I.N., Postnikov Yu.V. : Molecular diagnosis and physico-chemical studies of the human abnormal hemoglobins. - 2nd All-Union Symposium of Hematologists and Transfuziologists, L'vov, 1985, pp. 357-358.

Molchanova T.P., Spivak V.A., Tokarev Yu.N. : The study of the proteolytic degradation of the human abnormal hemoglobins. - 6th All-Union Symposium on Chemistry of Proteins and Peptides, Riga, 1983, pp.139-140

Spivak V.A., **Molchanova** T.P., Aseeva E.A., Postnikov Yu.V. et al.: Studies of the influence of the amino acid substitution on the structure and clinical manifestation of the human abnormal hemoglobins. - 6th All-Union Symposium on Chemistry of Proteins and Peptides, Riga, 1983, pp.137-138.

Spivak V.A., **Molchanova** T.P., Aseeva E.A., Postnikov Yu.V. et al. : Electroporesis and chromatography in studies of human abnormal hemoglobins. - 6th All-Union Symposium on Chemistry of Proteins and Peptides, Riga, 1983, p.138.

Molchanova T.P., Spivak V.A. : The application of the ion exchange chromatography for the abnormal hemoglobin studies. - 6th All-Union Symposium on Chemistry of Proteins and Peptides, Riga, 1983, p.129

Spivak V.A., **Molchanova** T.P., Postnikov Yu.V. et al.: Molecular diagnosis of the hemoglobin Buenos Aires ? 85 (F1) Phe-->Ser and studies of its properties. - 55th Scientific conference of the All-Union Hematological Scientific Center, Moscow, 1983, pp. 76-78.

Molchanova T.P., Abaturov L.V. : The mechanism of the burst-like proteolytic degradation of the native proteins. - All-Union Biophysical Congress, Moscow, 1982, p. 156.

Nosova N.G., **Molchanova** T.P., Abaturov L.V. : The influence of the media on the conformational and dynamic structure of the hemoglobin. - All-Union Biophysical Congress, Moscow, 1982, pp.117-118.

Spivak V.A., **Molchanova** T.P., Postnikov Yu.V. et al. : Molecular diagnosis of abnormal hemoglobins. - 53d Scientific conference of the All-Union Hematological Scientific Center, Moscow, 1981, p. 115.

Tokarev Yu.N., Kolodey S.V., Postnikov Yu.V., **Molchanova** T.P. et al.: Distribution and heterogenety of the hereditary hemoglobinopathies in some regions of the Central Asia and Caucases. - 53d Scientific conference of the All-Union Hematological Scientific Center, Moscow, 1981, p. 101.

Abaturov L.V., **Molchanova** T.P., Dzinoria K.Sh., Lebedev Yu.O., Yakobashvili N.N.: Dynamic model of the global protein structure - All-Union Symposium on Macromoleculars of Cell. Structure, Function, Interactions, Moscow, 1979, p. 44.

Spivak V.A., **Molchanova** T.P., Ermakov N.V., Tokarev Yu.N. : Study of the primary structure of abnormal hemoglobins. - 1st All-Union Symposium of Hematologists and Transfuziologists, Baku, 1979, p. 205.

5. Abaturov L.V., **Molchanova** T.P., Dzinoria K.Sh., Lebedev Yu.O., Yakobashvili N.N.: Dynamic model of the global protein structure - All-Union Symposium on Macromoleculars of Cell. Structure, Function, Interactions, Moscow, 1979, p. 44.

6. Spivak V.A., **Molchanova** T.P., Ermakov N.V., Tokarev Yu.N. : Study of the primary structure of abnormal hemoglobins. - 1st All-Union Symposium of Hematologists and Transfuziologists, Baku, 1979, p. 205.

Molchanova T.P., Spivak V.A., Abaturov L.V. et al.: Hemoglobin M Saskatoon, molecular diagnosis, hemichrome formation and proteolytic degradation. - 1st All-Union Symposium of Hematologists and Transfuziologists, Baku, 1979, p. 218.

Abaturov L.V., **Molchanova** T.P.: The connection between genetics and conformational stability of human abhormal hemoglobins. - All-Union Conference on the Mechanisms of Regulation in the Blood System, Krasnoyarsk, Russia, 1978, pp. 127-128.

Abaturov L.V., **Molchanova** T.P.: The fewer number of detected alpha chain point mutations in comparison with beta chain mutants of human hemoglobins as a result of the difference in conformational stability of normal chains- XIV International Congress of Genetics, Moscow, 1978, part 1, p. 25.

Spivak V.A., **Molchanova** T.P., Ermakov N.V. et al. : Determination of the primary structure of the D-like abnormal hemoglobin found in donor blood. - 1st Republican Conference on Hemolytic Anemias, Dushanbe, 1976, pp. 111-112.

Abaturov L.V., **Molchanova** T.P., Dzinoria K.Sh. et al. : Intramolecular mobility different ligand forms of human hemoglobin, its constituent pats: globin and sibunits according to the data of the hydrogen exchange and proteolytic degradation. - XI Mendeleev Symposium on General and Applied Chemistry, Almaata, 1975, p.40.

Molchanova T.P., Malozemova H.G., Abaturov L.V. : Ptoteolytic degradation of the hemoglobin and its constituent parts. - Conference on Conformational Changes of Biopolymers in Solutions, Tbilisi, 1975, pp.113-114.

Molchanova T.P., Tatishvili D.A., Abaturov L.V., Varshavski Ya.M. : Some structural features of the hemichromes as an intermediate form in the course of denaturation and spontneouse inactivation of hemoglobin. - Soviet-French Symposium on the Physical Chemistry of Proteins and Peptides, Pushino, Russia, 1975, p.38.

Abaturov L.V., Yakobashvily N.N., Jinoriya K.Sh., **Molchanova** T.P., Varshavsky Ya.M.: Effect of inter-subunit contact on intramolecular conformational motility (conformational stability) of hemoglobin as related by hydrogen exchange- Abst.Commun. 9th FEBS Meeting, Budapest, 1974, p.350

REVIEWS:

Molchanova T.P., T.H.J. Huisman - Hemoglobinopathies in Russia. Review (former USSR), Balkan J. Med. Gen., 1 (4), 143-148, 1998.

Molchanova, T.P., Postnikov, Yu.V.: Hemoglobinopathies in the former Soviet Union (Review). Sphere, 15(3): 1-4, 1992.

Molchanova, T.P., Tokarev, Yu.N.: Abnormal Hemoglobins in the USSR (Review). In: "Hematology Reviews" (ed. by O.K. Gavrilov), Harvard Acad. Press, v. 2B, pp. 1-32,

1990.
Molchanova, T.P.: The basis of molecular organisation of the erythrocyte membrane proteins and their defects in hemolytic anemias (Review). - Gematol. and Transfus., 34: 32-41, 1989 (Russian).
Molchanova, T.P.: The functional role of proteolysis in erythroid cells (Review). Gematol. and Transfus., 32(3): 33-39, 1987 (Russian).

Cited Index 14-Feb-08: 364

References

James B. Ames, Ph.D.
Assistant Professor
Center for Advanced Research and Biotechnogy
960 Godelsky Dr, Rockville, MD 20850
Phone number: 301- 738-6120
Email:

Sergei G. Bavykin, M.D., Ph.D., D.Sc.
Molecular biologist
Center for Biochip Technology, Argonne National Laboratory
9700 S. Cass Ave., Bldg. 202, Argonne IL 60439
tel.:(630)252-3980; fax:(630)-252-3387;
E-mail address: sbavykin@everest.bim.anl.gov

Professor Ross Hardison
Department of Biochemistry and Molecular Biology
ALTHOUST
Pennsylvania State University.
Tel.: 814-863-0113 Fax: 814-863-7024
Email: HYPERLINK

Abdulah Kutlar, M.D.
Director, Sickle Cell Adult Clinic
and Hemoglobin Laboratory,
Medical College of Georgia,
Augusta, GA 30912.
Tel.: 706-721-21-71 (Hospital)
Tel: 706-721-97-68 (Sickle Cell Center)
Tel: 706-869-8227 Home
Fax: 706-721-9637; E-mail: HYPERLINK mailto:akutlar@mail.mcg.edu

Dr. Mike Bamat,
Vice President of Research and Development
Pro-Neuron, Inc.
16020 Industrial Drive,
Gaithersburg, Maryland 20877.
Tel.: 301-984-8000 ext.: 5048