

CURRICULUM VITAE

NAME: Irina I. Serysheva, Ph. D.

PRESENT TITLE: Associate Professor

ADDRESS: Department of Biochemistry & Molecular Biology
McGovern Medical School at UTHealth
The University of Texas Health Science Center at Houston
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CITIZENSHIP: U.S.A.

UNDERGRADUATE EDUCATION:

09/1977 B. S., Biochemistry
M. V. Lomonosov State University
Moscow, Russia

09/1978 M. Sc., Virology,
M. V. Lomonosov State University
Moscow, Russia

GRADUATE EDUCATION:

10/1984 Ph. D., Biochemistry
A. N. Bach Institute of Biochemistry
Russian Academy of Sciences,
Moscow, Russia

POSTGRADUATE TRAINING:

1984 – 1986 Molecular Biology & Biophysics
A. N. Bach Institute of Biochemistry
Russian Academy of Sciences,
Moscow, Russia

ACADEMIC APPOINTMENTS:

1989 – 1992 Senior Scientist
A. N. Bach Institute of Biochemistry
Russian Academy of Sciences
Moscow, Russia

1994 – 1998 Instructor
Department of Molecular Physiology & Biophysics
Baylor College of Medicine, Houston, Texas

1998 – 2005 Assistant Professor
Department of Molecular Physiology & Biophysics
Baylor College of Medicine, Houston, Texas

2005 – 2006	Assistant Professor Department of Biochemistry & Molecular Biology Baylor College of Medicine, Houston, Texas
2007 – 2008	Associate Professor Department of Biochemistry & Molecular Biology Baylor College of Medicine, Houston, Texas
2008 – 2015	Associate Professor (tenure tack) Department of Biochemistry & Molecular Biology McGovern Medical School at UTHealth, Houston, Texas
2015 – present	Associate Professor (tenured) Department of Biochemistry & Molecular Biology, McGovern Medical School at UTHealth, Houston, Texas
2008 – present	Faculty Member of the University of Texas Graduate School of Biomedical Sciences at Houston, Houston, Texas
2008 – present	Adjunct Associate Professor Department of Biochemistry & Molecular Biology Baylor College of Medicine, Houston, Texas
2017 – present	Director of Structural Biology Imaging Center, McGovern Medical School at UTHealth, Houston, TX

OTHER ADVANCED TRAINING/EXPERIENCE:

1984 – 1992	Senior Research Fellow, Research Scientist, Postdoctoral Fellow A. N. Bach Institute of Biochemistry Russian Academy of Sciences Moscow, Russia
1990	Visiting Scientist, Department of Microbiology University of California Los Angeles, CA (Dr. F. Eiserling)
1990 – 1991	Visiting Scientist at Department of Molecular Biology & Microbiology Tufts University, School of Medicine Boston, MA (Dr. E. Goldberg)
1992 – 1994	Research Associate Department of Biochemistry Baylor College of Medicine Houston, Texas (Dr. W. Chiu)

PROFESSIONAL ORGANIZATIONS/COMMITTEES/ACTIVITIES:

1987 - 1990	Organizer of Conferences for Young Scientists on the Modern Problems of Biochemistry, 1985 (Grodno, Russia), 1987 (Moscow, Russia)
1986 - 1989	Member of Young Scientist Committee in A. N. Bach Institute of Biochemistry of Russian Academy of Sciences, Moscow, Russia

06/1990	Member of the Organizing committee of International Meeting on "Self-organization and Assembly of Biological Macromolecules", June 1990, Moscow
1994 - present	Member of the American Biophysical Society
2008 - present	Member of American Heart Association
2008 - present	Faculty Member of the Gulf Cost Consortia/The Keck Center for Computational Biology, Houston, TX 77030
2015 - 2017	Program chair for the Cryo-EM Subgroup of the American Biophysical Society
2018	Organizer of Thermo Fisher Scientific Symposium on "Electron Cryo-Microscope Advances: Imaging Cells to Atoms", April 4, Houston, TX

HONORS AND AWARDS:

1973	Gold Medal (highest grades in all classes) of the Russian Government upon graduation of high school
1973 – 1978	National Merit Scholarship of Moscow State University
1973 – 1978	BS/M.Sc. Diploma with honors (Summa Cum Laude) from M. V. Lomonosov Moscow State University
1988	Russian Academy of Sciences Award to Young scientist for the best achievements in developing of science
1989	A. N. Bach Institute of Biochemistry/Russian Academy of Sciences - Award for the best scientific work.
1994 – 1996	Baylor College of Medicine, Junior Faculty Seed Grant
1998 – 2002	National Scientist Development Award, American Heart Association
2001 – 2003	Research Career Development Grant from Muscular Dystrophy Association of USA

EDITORIAL POSITIONS/ MANUSCRIPT REVIEWING:

<i>Ad hoc</i> reviewer for:	Nature
	Nature Communications
	Nature Structural and Molecular Biology
	Structure
	PNAS
	The Journal of Molecular Biology
	The Journal of Biological Chemistry
	Biophysical Journal
	PLosOne

SERVICE ON NATIONAL GRANT REVIEW, STUDY SECTIONS, COMMITTEES:

2011 - 2013	<i>Ad hoc</i> reviewer of NIH Study Section ZGM1-CBB (NIGMS Special Emphasis Review Panel for PSI Biology Grants)
2014 - 2016	<i>Ad hoc</i> reviewer of BBM and BPNS Study Sections, NIH
2017	<i>Ad hoc</i> reviewer of a special emphasis panel (SEP) ZGM1 CBB-3 (CR) for Regional Consortia for High Resolution Cryo-EM U24 Grants
2016 - 2020	<i>Permanent member of</i> BBM Study Section, NIH

SERVICE ON UT MEDICAL SCHOOL at HOUSTON COMMITTEES:

2011 - 2014	UT Medical School Research Committee
2011 - present	UT Medical School Faculty Senate

SERVICE ON GRADUATE SCHOOL COMMITTEES:

PhD Committees/Structural and Computational Biology & Molecular Biophysics Program at Baylor College of Medicine:

Stephen Murray	2010 – 2015
Ian Rees	2008 – 2012
Mariah R. Baker	2003 – 2008
James M. Bell	2015 – 2019
David J. Chmielewski	2016 – 2017
Hanzhi Zhang	2017 – present

PhD Committees GSBS BMB Program at UT Medical School:

Rita Sirrieh	2011 – 2013
Swarna Ramaswamy	2012 – 2014
Douglas B. Litwin	2015 – present
Runze Shen	2017 – present
Naga Babu Chinnam	2017 – present

2018 – present BCB Candidacy exam committee

SPONSORSHIP OF CANDIDATES FOR POSTGRADUATE DEGREE:

Mariah R. Baker	2003 – 2008; SCMB program at Baylor College of Medicine; Currently a post-doctoral fellow in BMB, The UT Medical School, Houston
Ian Rees	2009 – 2012; the Keck Foundation Pre-Doctoral fellow/BCM; Currently a post-doctoral fellow Associate at Lawrence Berkeley National Laboratory, San Francisco

SPONSORSHIP OF POSTDOCTORAL FELLOWS:

Paula Aracena, Ph. D.	2008 – 2009; Currently an Assistant Professor in MELISA Institute, Chile
Olga B. Popova, Ph. D.	2009 – 2015
Mariah R. Baker, Ph. D.	2009 – 2017: Currently an Assistant Professor at McGovern Medical School at UTHealth
Guizhen Fan, Ph. D.	2015 – present

TEACHING RESPONSIBILITIES:

1985 - 1990	Director of course on the structure and assembly of T-even phages (includes laboratory classes) – 4 th year undergraduate students (M.Sc. program), Moscow State University, Department of Biology, Virology Division.
1994	Instructor of International workshop on Molecular Imaging of the Cytoskeletal Protein Assembly, April 29 - May 3, 1994, Baylor College of Medicine, Houston, TX
2004 - 2005	Instructor, Tutorials of TEM for Biological Cryospecimens, 2005; October, 2004; NCMI, Baylor College of Medicine, Houston, TX.
2004 - 2008	Structural Proteomics & Functional Genomics, 5th term, Translational Biology & Molecular Medicine Program at the Graduate School of Biomedical Sciences, Baylor College of Medicine (workload: 3 lectures/1.5 week).
2010 - 2013	Topics in Biochemistry & Molecular Biology (GS03 024)/BMB Graduate Program (Course Director: Dr. R. Kulmacz). I have taught 2 lectures on intracellular ion channels/receptors. This set of lectures has been well received, and the evaluations from students have been positive as communicated by the course director.
2011 - 2015	Metabolic Biochemistry / 2129BSCI1001-M (Course Director: Dr. P. Carpenter). I have been a conference leader in Block III of this course for the MD students. The workload associated with preparation of conferences (2 conferences/week for 6 weeks) and conference time requires total 60 hours.
2014 - 2016	The BMB/GSBS course “Emerging Fields in Biochemistry and Molecular Biology: Advanced Cell Signaling” (Course Director: Dr. D. Boehning). This course involves 3 lectures/1.5 week for the MD/PhD students; estimated workload is 15 hours including lecture preparation and delivery.
2013 – 2018	Director for the GSBS course “Seminars in Life Science (GS12 1051; Co-director: Dr. C. Breton) (former GS03 1711 course). This commitment involves coordinating invitations to outside faculty and putting together the schedule of speakers for both semesters.

- 2014 - present The GSBS Core Course “Protein structure and function/Metabolism) (Course Directors: Drs. V. Jayaraman and P. Carpenter). I have been asked to give an introductory lecture on cryo-EM and 2 hands-on tutorials on modeling and structure prediction of proteins; estimated workload associated with this course is 6 hours including preparation of course related materials.
- 2014 – present The GSBS course “Current Methods in Biochemistry and Cell Biology” (Course Director: Dr. J. Putkey); 2 lectures on electron cryomicroscopy methods (theory and application); estimated workload is 15 hours including lecture preparation and delivery.
- 2015 - 2016 The GSBS Core Course “Topics in Molecular Medicine” (Director of the MD/PhD Program: Dr. D. Milewicz); 2 lectures: Structure determination by electron cryomicroscopy
- 2016 - present The GSBS Core Course (GS04 1051) “Imaging Cells and Molecules” (Course Director: Dr. Hung Ton-That); 2 lectures and 2 Lab sessions (2 hours/each): Electron cryomicroscopy. estimated workload is 25 hours including lecture preparation and delivery.

RESEARCH INTERESTS:

Molecular mechanisms underlying transport of molecules across the biological membrane; structure and function of ion channels and associated regulatory proteins; cellular Ca²⁺ signaling; structure determination of macromolecular complexes by electron cryo-microscopy and computer reconstruction techniques; structural proteomics, bioinformatics.

PUBLICATIONS

Abstracts and Proceedings

1. **Serysheva, I. I.**, Sherman, M. B., Hamilton, S. L., and Chiu, W.: Electron cryomicroscopy of ryanodine-modified Ca²⁺ release channel. *Bioph. J*, **66**:414, 1994.
2. Slavik, K. J., Needleman, D., Sarkar, H., **Serysheva, I.**, Chiu, W., Marks, A., and Hamilton, S. L.: (1995). Interactions of FKBP12 with the Ca²⁺ Release channel of rabbit skeletal muscle. *Bioph. J*, **68**:A128, 1995.
3. **Serysheva, I. I.**, Orlova, E. V., Sherman, M. B., van Heel, M., Chiu, W., Hamilton, S. L.: 3D Structure of Skeletal Muscle Ca²⁺ release channel in its open and closed states by electron cryomicroscopy and angular reconstitution. *Bioph. J*, **68**:A128, 1995.
4. **Serysheva, I. I.**, Orlova, E. V., Schatz, M., Marks, A., van Heel, M., Chiu, W., Hamilton, S. L.: Structural studies of the skeletal muscle Ca²⁺ release channel in different functional states. *Bioph. J*, **70**:A166, 1996.
5. **Serysheva, I. I.**, Schatz, M., van Heel, M., Chiu, W., and Hamilton, S. L.: Ca²⁺ induced Conformational Changes in the 3D structure of the Skeletal Muscle Ca²⁺ release channel. Proceedings of 14th Intern. Congr. Electron Microsc., September 1998, Cancun, Mexico.

6. **Serysheva, I. I.**, Chiu, W., and Hamilton, S. L.: The 3D Structure of the Skeletal Muscle Calcium Release Channel Activated with AMP-PCP and Ca^{2+} . *Bioph. J.*, **76**:A394, 1999.
7. **Serysheva, I. I.**, Ludtke, S. J., Hamilton, S. L., and Chiu, W.: Structure of Skeletal Muscle Calcium Release Channel by Electron Cryomicroscopy: Approaching High Resolution. *Bioph. J.*, **78**:484A, 2000.
8. Baldwin, P. R., Ludtke, S. L., **Serysheva, I. I.**, Cobb, B. A., Quiocho, F., Petrash, M., Tsuruta, H., and Chiu, W.: CTF Corrected Structure of α -Crystallin B by Electron Cryomicroscopy. *Bioph. J.*, **78**:8A, 2000.
9. Baker, M. L., **Serysheva, I. I.**, Wu, Y., Sencer, S., Tang, W., Pate, P., Zhang, J.-Z., Ludtke, S. J., Jiang, W., Chiu, W., and Hamilton, S. L.: Identification of an N-terminal redox sensor in RyR1. *Bioph. J.*, **80**:330A, 2001.
10. **Serysheva, I. I.**, Ludtke, S. J., Chiu, W., and Hamilton, S. L.: Electron Cryomicroscopy of Skeletal muscle voltage-sensitive L-type Ca^{2+} channel. *Bioph. J.*, **80**:378A, 2001.
11. **Serysheva, I. I.**, Ludtke, S. J., Baker, M. B., Chiu, W., and Hamilton, S. L.: Threedimensional Structure of the Dihydropyridine Receptor by Electron Cryomicroscopy. *Bioph. J.*, **82**:173A, 2002.
12. **Serysheva, I. I.**, Ludtke, S. J., Baker, M. B., Chiu, W., and Hamilton, S. L.: 3D Structures of Skeletal muscle Ca^{2+} channel proteins by electron cryomicroscopy. Proceedings of ICEM-15, September 2002, Durban.
13. **Serysheva, I. I.**, Bare, D., Ludtke, S. L., Kettlun, C. S., Chiu, W., and Mignery, G. A.: 3D structure of the Type 1 Inositol 1,4,5 – trisphosphate Receptor by Electron Cryomicroscopy, *Bioph. J.*, **84**:281, 2003.
14. Danila, C., Tang, W., Zhang, J.-Z., **Serysheva, I. I.**, and Hamilton, S. L.: Phosphorylation of Serine 2843 on RyR1 and the role of FKBP12, *Biophys. J.*, **86**:242, 2004.
15. Helling, D. B., Rao, B. S., Papineni, V. L., **Serysheva, I. I.**, and Hamilton, S. L.: A Domain of Ryanodine Receptor Type 1 Homologous to the Inositol 1,4,5 – Trisphosphate Receptor Ligand Binding Core, *Biophys. J.*, **86**:492, 2004.
16. **Serysheva, I. I.**, Ludtke, S. L., Hamilton, S. L. & Chiu, W.: Structure of RyR1 at 14 Å Resolution, *Biophys. J.*, **86**:242, 2004.
17. Ludtke, S. J., Booth, C., **Serysheva, I. I.**, Chen, D., and Chiu, W.: Single Particle Reconstruction at Subnanometer Resolution from JEOL201F and 4K x 4K Gatan CCD Camera. Proceedings of Microscopy and Microanalysis meeting, v. **11**:60-61, 2005.
18. **Serysheva, I. I.**, Ludtke, S. L., Baker, M. L., Hamilton, S. L., and Chiu, W.: Structure of the RYR1 channel in the closed state at subnanometer resolution. *Bioph. J.*, Supplement, Abstract. 2006.
19. **Serysheva, I. I.**, Ludtke, S. L., Baker, M. L., Hamilton, S. L., and Chiu, W.: Domain structure of RyR1 Channel at Subnanometer resolution. Proceedings of the 16th International Microscopy Congress, September, 2006, Sapporo, Japan, 2006.
20. Moiseenkova-Bell, V. Y., Stanciu, L. A., **Serysheva, I. I.**, Tobe, B. J., Zhou, Y., and Wensel, T. G. Cryo-electron microscopy of TRP family channels. *Biophys. J.*, Supplement, Abstract, 2007.
21. Moiseenkova-Bell, Yu, V., Chen, B., Tobe, B., **Serysheva, I. I.**, and Wensel, T. G.: Molecular Basis of Calmodulin and Ca^{2+} interaction with the TRP channels. *Biophys. J.*, Supplement, Abstract, 2009.

22. Ngo, Q. I., Maxwell, J. T., Mignery, G. A., Chiu, W., Ludtke, S. J., and **Serysheva, I. I.**: Cryo-electron microscopy of IP₃R1 Ca²⁺ Release channel. *Biophys. J.*, Supplement, Abstract, 2009.
23. Tran, T. P., Ludtke, S. J., Moiseenkova-Bell, V. Y., Que T. Ngo, Q. T., Maxwell, J. T., Mignery, G. A., W. Chiu & **I. I. Serysheva**: Visualizing Alpha Helices in the Transmembrane Region of IP₃R1 Calcium Release Channel by Single Particle Electron Cryomicroscopy, 54th Annual Meeting, Biophysical Society Abstract 500.
24. **Serysheva, I. I.**, Ludtke, S. J, Chiu W. (2012). Visualizing Transmembrane Helices in Calcium Release Channels by Single Particle Cryo-EM. *Structural Biology of Cellular Processes: From Atoms to Cells*, Abstract Book of 40th Keystone Symposia, p. 129.
25. Fan, G., Gonzalez, J., Popova, O. B., Wensel, T. G. & **I. I. Serysheva** (2014). A First Look into the 3D Structure of the TRPV2 Channel by Single-Particle Cryo-EM. *Biophys J.* **106** (2): pp. 600a-601a.
26. Fan, G., Popova, O. B., Ludtke, S. J. & **I. I. Serysheva** (2014). Ligand-Induced Conformational Changes in Tetrameric IP₃R1 Revealed by Single-Particle Cryo-EM. *Biophys J.* **106** (2): pp. 109a.
27. Popova, O. B., Fan, G., Chiu, W., Ludtke, S. J. & **I. I. Serysheva** (2014). Cryo-EM Studies of RyR1 Channel in Detergent-Free Aqueous Environment. *Biophys J.* **106** (2): pp. 109a.

Peer-Reviewed Articles

1. Gorbatova, L. P., Selivanov, N. A., **Serysheva, I. I.**, Mesyanzhinov, V. V., and Poglazov, B. F.: Functional role of baseplate proteins of bacteriophage T4. *Doklady Acad.Nauk USSR (Proc.USSR Acad.Sci.)* (Russian), **277**:738–742, 1979.
2. **Serysheva, I. I.**: Isomeric forms of bacteriophage T4 sheath proteins. *Proc. of Moscow Conference on the Modern problems of Biochemistry and biophysics* (Russian). Moscow, part **2**:135–139, 1984.
3. **Serysheva, I. I.**, Venyaminov, S. Yu., Tourkin, A. I., and Poglazov, B. F.: On the presence of Guanosine phosphate in the tail of bacteriophage T4. *J.Mol. Biol.*, **179**:565–569, 1984.
4. Poglazov, B. F., Abuladze, N. K., **Serysheva I. I.**, and Tourkin, A. I.: Application of bifunctional reagents for studying of the topography of bacteriophage T4 proteins. In *New methods of practical biochemistry*, (Russian), Moscow, Nauka, 178-187, 1988.
5. **Serysheva, I. I.**, Tourkin, A. I., Bartish, I. V., and Poglazov, B. F.: The effect of the nucleotides on the sedimentation behavior of bacteriophage T4 contracted sheaths. *Doklady Akad.Nauk USSR (Proc. USSR Acad. Sci.)* (Russian), **303**:245–249, 1988.
6. **Serysheva, I. I.**, Abuladze N. K., and Poglazov, B. F.: Structure and functioning of the bacteriophage T4 adsorption apparatus. *Review in Uspehi bioh.* (Russian), **19**:122-143, 1988.
7. **Serysheva, I. I.**, Venyaminov S. Yu., Selivanov N. A., and Poglazov B.F.: Change of secondary structure upon the polymerization of bacteriophage T4 sheath protein. *Mol.Biol.* (Russian), **27**:541-547, 1990.
8. **Serysheva, I. I.**, Tourkin, A. I., Bartish, I. V., and Poglazov, B. F.: GTP-ase activity of bacteriophage T4 sheath protein. *J. Mol. Biol.*, **223**:23-25, 1992.
9. Chang, Z., Primm, T. P., Jakana, J., Lee, I. H., **Serysheva, I. I.**, Chiu, W., Gilbert, H. F., and Quiocho, F. A.: Mycobacterium tuberculosis 16-kDa antigen (Hsp 16.3) functions as

- oligomeric structure in vitro to suppress thermal aggregation. *J.Biol.Chem*, **271**:7218–7223, 1996.
10. **Serysheva, I. I.**, Orlova, E. V., Chiu, W., Sherman, M. B., Hamilton, S.L., and van Heel, M.: Electron cryomicroscopy and angular reconstitution used to visualize the skeletal muscle calcium release channel. *Nature Struct. Biol.*, **2**(1): 18-24, 1995.
 11. Orlova, E. V., **Serysheva, I. I.**, van Heel, M., Hamilton, S. L., and Chiu, W.: Two structural configurations of the skeletal muscle calcium release channel. *Nature Struct. Biol.*, **3**:547-552, 1996.
 12. **Serysheva, I. I.**, Schatz, M., Van Heel, M., Chiu, W., and Hamilton, S. L.: Structure of the Skeletal Muscle Calcium Release Channel Activated with Ca^{2+} and AMP-PCP. *Biophys. J.*, **77**:1936-1944, 1999.
 13. Pate, P., Mocha-Morales, J., Wu, Y., Zhang, J. Z., Rodney, G. G., **Serysheva, I. I.**, Williams, B. Y., Anderson, M. E., and Hamilton, S. L.: Determinants for Calmodulin Binding on Voltage-dependent Ca^{2+} Channels. *J.Biol.Chem*, **275**:39786-39782, 2000.
 14. **Serysheva, I. I.**, Ludtke, S. L., Baker, M. R., Chiu, W., and Hamilton, S. L.: Structure of the voltage-gated L-type Ca^{2+} channel by electron cryo-microscopy. *PNAS*, **99**:10370-10375, 2002.
 15. Baker M. L., **Serysheva, I. I.**, Sencer, S., Wu, Y., Ludtke, S. L., Jiang, W., Hamilton, S. L., and Chiu, W.: The skeletal muscle Ca^{2+} release channel has an oxidoreductase-like domain. *PNAS*, **99**:12155 -12160, 2002.
 16. **Serysheva, I. I.**, Bare, D. J., Ludtke, S. J., Kettlun, C. A., Chiu, W., and Mignery, G. L.: Structure of the Type 1 Inositol 1,4,5-trisphosphate Receptor Revealed by Electron Cryomicroscopy. *J Biol Chem*, **278**:21319-21322, 2003.
 17. **Serysheva, I. I.**, Hamilton, S. L., Chiu, W., and Ludtke, L. J.: Structure Ca^{2+} Release Channel at 14-Å Resolution. *J. Mol.Biol.*, **345**:427-431, 2005.
 18. Ludtke, S. J., **Serysheva, I. I.**, Hamilton, S. L., and Chiu, W.: The Pore Structure of the closed RyR1 Channel. *Structure*, **13**:1203-1211, 2005 (feature article).
 19. Moiseenkova-Bell, V. Y., Stanciu, L. A., **Serysheva, I. I.**, Tober, B., and Wensel, T. G.: Structure of TRPV1 channel revealed by electron cryomicroscopy. *PNAS USA* **105**: 7451-7455, 2008.
 20. **Serysheva, I. I.**, Ludtke, S. J., Baker, M. L., Cong, Y., Topf, M., Eramian, D., Sali, A., Hamilton, S. L., and Chiu, W.: Subnanometer resolution electron cryomicroscopy based domain models for the cytoplasmic region of skeletal muscle RyR channel. *PNAS USA* **05**:9610-9615, 2008.
 21. Ludtke, S. J., Tran, T. P., Ngo, Q. T., Moiseenkova-Bell, V. Y., Chiu, W., and **I. I. Serysheva**: Flexible Architecture of $\text{IP}_3\text{R1}$ by Cryo-EM. *Structure*, **19**:1192-1199, 2011.
 22. Popova, O. B., Baker, M. R., Tran, T. P., Le, T., and **Serysheva, I. I.** : Identification of ATP-binding regions in the RyR1 Ca^{2+} release channels. *PLoS ONE*, 7(11):e48725. doi: 10.1371/journal.pone.0048725, 2012
 23. Murray S. C., Flanagan J., Popova O. B., Chiu W., Ludtke S. J., and **Serysheva, I. I.**: Validation of Cryo-EM Structure of $\text{IP}_3\text{R1}$ Channel. *Structure* 6:900-909, 2013
 24. Jarius, S., Scharf, M., Begemann, N., Stöcker, W., Probst, C., **Serysheva, I.**, Sigrun Nagel, S., Francesc Graus, F., Psimaras, D., Wildemann, B. and Lars Komorowski, L.: Antibodies to the inositol 1,4,5-trisphosphate receptor type 1 (ITPR1) associated with cerebellar ataxia. *J of Neuroinflammation* 11:206-218, 2014.

25. Fan, G., Baker, M. L., Wang, Z., Baker, M. R., Sinyagovskiy, P. A., Chiu, W., Ludtke, S. J. & **Serysheva, I. I.**: Gating Machinery of IP₃R Channels Revealed by Cryo-EM. *Nature* 52:336-441, 2015.
26. Jarius S., Ringelstein M., Haas J, **Serysheva I.I.**, Komorowski L., Fechner K., Wandinger K.P., Albrecht P., Hefter H., Moser A., Neuen-Jacob E., Hartung H.P., Wildemann B., Aktas O.: Inositol 1,4,5-trisphosphate receptor type 1 autoantibodies in paraneoplastic and non-paraneoplastic peripheral neuropathy. *J Neuroinflammation*. 2016 Oct 24;13(1):278.
27. Wang Z., Fan G., Hryc C.F., Blaza J.N., **Serysheva I.I.**, Schmid M.F., Chiu W., Luisi B.F. Du D.: An allosteric transport mechanism for the AcrAB-TolC multidrug efflux pump. *eLife*. 2017 Mar 29;6. pii: e24905. doi: 10.7554/eLife.24905.
28. Yi P., Wang Z., Feng Q., Chou C.K., Pintilie G.D., Shen H., Foulds C.E., Fan G., **Serysheva I. I.**, Ludtke S.J., Schmid M.F., Hung M.C., Chiu W., O'Malley B.W.: Structural and Functional Impacts of ER Coactivator Sequential Recruitment. *Mol Cell*. 2017 Sep 7; 67(5):733-743.e4. doi: 10.1016/j.molcel.2017.07.026. Epub 2017 Aug 24.
29. Fan G., Baker M. R., Wang Z., Seryshev A. B., Ludtke S. J., Matthew L. Baker M. L., **Serysheva I. I.**: Cryo-EM Reveals Ligand Induced Allostery Underlying InsP₃R Channel Gating. *Cell Research (Nature Publishing Group)* 28: 1158-1170 (2018).
30. Dosey T. L., Wang Z., Fan G., Zhang Z., **Serysheva I. I.**, Chiu W., Wensel T. G.: TRPV2 ion channel gating through allosteric 1 domain coupling revealed by cryo-EM. *Nature Str. and Mol. Biol.* 26: 40-40 (2019).

Invited Review Articles

1. Hamilton, S. L., **Serysheva, I. I.**, and Strasburg, G.: Calmodulin and Excitation-Contraction Coupling. *NIPS*, 15:281-284, 2000.
2. **Serysheva, I. I.**: Structural Insights into Excitation-Contraction Coupling by Electron Cryomicroscopy. *Biochemistry (Moscow, Russia)*, 69:1226-1232, 2004.
3. Hamilton, S. L., and **Serysheva, I. I.**: Ryanodine Receptor Structure: Progress and Challenges. *J Biol Chem*, 284:4047-4051, 2009.
4. Ludtke, S. J., and **Serysheva, I. I.**: Single-particle cryo-EM of calcium release channels: structural validation. *Curr Opin Struct Biol*, 23: 755-762, 2013.
5. **Serysheva, I. I.**: Toward a high-resolution structure of IP₃R channel. *Cell Calcium*, 56: 125-132, 2014.
6. Baker, M. R., Fan, G., and **Serysheva, I. I.**: Single-particle cryo-EM of the ryanodine receptor channel in an aqueous environment. *Eur J Transl Myol*, 25: 25-48, 2015.
7. **Baker MR, Fan G, Serysheva II.**: Structure of IP₃R channel: high-resolution insights from cryo-EM. *Curr Opin Struct Biol*. 2017 Jun 12;46:38-47. Review doi: 10.1016/j.sbi.2017.05.014. [Epub ahead of print]

Book Chapters

1. **Serysheva, I. I.**: Contractile proteins of bacteriophages. In "Proteins and Peptides", edited by V. Ivanova, Moscow, "Nauka, 1995", (Russian), 1994.
2. Orlova, E. V., **Serysheva I. I.**, Hamilton S. L., Chiu W., and van Heel, M.: The skeletal muscle calcium-release channel visualized by electron cryomicroscopy and angular

- reconstitution, in *The Structure and Function of Ryanodine Receptors*, ed. R. Sitsapesan and A. Williams, J. B. Lippincott Co., Philadelphia, P.A., 23 – 47, 1998.
3. **Serysheva, I.** and Hamilton, S.: Ryanodine Binding Sites on the skeletal muscle Ca²⁺ release channel, in *The Structure and Function of Ryanodine Receptors*, ed. R. Sitsapesan and A. Williams, J. B. Lippincott Co., Philadelphia, P.A., 95 – 111, 1998.
 4. **Serysheva, Irina I.**, Chiu, Wah, Ludtke, Steven J.: Single Particle Electron Cryomicroscopy of the Ion Channels in the Excitation-Contraction Coupling Junction, in “Cellular Electron Microscopy, ed. J. Richard McIntosh, (Series “Methods in Cell Biology”), Elsevier Academic Press, 2007.
 5. **Serysheva, Irina I.** and Ludtke, Steven J.: 3D Structure of IP₃ receptor. In “Current Topics in Membranes”, Vol 66: Structure-Function of Ca²⁺ release channels (Volume Editor: I. I. Serysheva). Elsevier 2010, pp. 167 – 186, 2010.
 6. **Serysheva, I. I., Baker MR, Fan G.**: "Structural Insights into IP₃R Function"; In "Membrane Dynamics and Calcium Signaling", edited by Krebs Joachim, London, the Springer Publishing company, pp. 121-149, 2018.

Books

1. **Serysheva, I. I.** – Editor Of Current Topics in Membranes, Vol 66: “Structure-Function of Ca²⁺ release channels”; Elsevier 2010.

INVITED TALKS and PRESENTATIONS

Local

"Electron cryomicroscopy and angular reconstitution used to visualize the skeletal muscle calcium release channel". Protein structure-function meeting, November 1994; Department of Biochemistry, Baylor College of Medicine, Houston TX

"3-Dimensional structure of the skeletal muscle Ca²⁺-release channel in its open and closed states by electron cryo-microscopy and angular reconstitution". September 1995; Department of Molecular Physiology and Biophysics, Baylor College of Medicine, Houston, TX.

“Structure of Ca²⁺ channels revealed by Electron Cryomicroscopy and Single Particle Image Analysis”; October 10, 2003; Department of Biochemistry & Molecular Biology, UT Houston Medical School, Houston, TX

“Domain structure of RyR1 channel at sub-nanometer resolution”; January 26, 2007; The W. M. Keck Center for Interdisciplinary Bioscience Training, Rice University, Houston, TX.

“Cryo-EM of RyR1 channel at subnanometer resolution”, January 17, 2009, GCC Membrane Biology Symposium, Houston, TX.

“Insights into Intracellular Ca²⁺ signaling by Cryo-EM”; May 7, 2012; Department of Integrative Biology and Physiology, UT Medical School at Houston, Houston, TX.

“Exposing Memories’ Gatekeeper”; November 4, 2015; UTHealth McGovern Medical School Research Retreat; Breakthrough Discovery Symposium, Houston, TX.

“Neurodegeneration: Insights from the Structure of IP₃R Channel”; November 5, 2015; UTHealth McGovern Medical School Collaborative Workshop “How Understanding of Protein Structure Helps to Unravel the Mysteries of Life Processes”, Houston, TX.

“CryoEM Studies of IP₃R Channel”; June 6, 2017; UTHealth McGovern Medical School Collaborative Workshop “Cryo-Electron Microscopy”, Houston, TX.

“Ligand-mediated allostery of IP₃R channel: lessons from cryo-EM”; FEI symposium “Electron Cryo-Microscope Advances: Imaging Cells to Atoms”; April 4, 2018, Houston, TX

“Structural Insights into the Gating and Regulation of IP₃R channels”; The Keck Seminar Series, March 8, 2019, Houston TX

National

"3D structure of the skeletal muscle Ca²⁺-release channel in open state by electron cryomicroscopy"; invited speaker at the Conference on "Ion Channel Structures & Function"; July 16 -18, 1999; Yale University School of Medicine, New Haven, CT, USA.

"Gating of the skeletal muscle Ca²⁺ release channel by Electron Cryomicroscopy"; December 2000, invited seminar in the Department of Molecular Physiology and Biophysics at Rush University Medical School, Chicago, IL, USA.

"Structural Insights into Excitation-Contraction Coupling by Electron Cryomicroscopy: A Tale of Two Calcium Channels"; November 2001, invited seminar in the Department of Physiology, Stritch School of Medicine, Loyola University of Chicago, IL, USA.

“Electron Cryomicroscopy: Understanding Function through Structure”; November 11, 2004; invited seminar in the Department of Physiology and Biophysics, University of Miami School of Medicine, Miami, FL, USA

“Visualizing Pore-forming α -Helices in Calcium Release Channel by Single Particle Cryo-EM”; July 7, 2005; invited seminar in the Department of Physiology and Biophysics, Mount Sinai School of Medicine, New York, NY, USA.

“Structure of the RyR1 channel at subnanometer resolution by single particle cryo-EM”; December 12, 2005; invited seminar at the School of Biological Sciences, University of Missouri-Kansas city, Kansas City, MO, USA.

“Structure of RyR1 channel by single particle cryo-EM”; January 29, 2007; invited seminar in the Department of Biochemistry, Tulane University, New Orleans, LA, USA.

“Single-particle cryo-EM is a technique to study macromolecular complexes”; May 10, 2007; invited seminar in the Department of Microbiology/Cell Science and IBCR, University of Florida, Gainesville, FL, USA

“Structural Insights into Calcium Release Channel Function revealed by Cryo-EM”; October 10-11, 2009; invited speaker at NCMI/Baylor College of Medicine Symposium “Advances in Applications of Cryo-EM: From Atoms to Cells”, Houston, TX, USA.

"Cryo-EM Structure of IP₃R1 Channel at Subnanometer Resolution"; May 19-20, 2010; invited speaker at The Dean's EM Symposium, Case Western Reserve University, Cleveland, OH, USA.

“Flexible Architecture of Ca²⁺ Release Channels by Cryo-EM”, March 14, 2011, Invited Speaker at Theoretical and Computational Biophysics Group, University of Illinois Urbana-Champaign, Urbana, IL, USA.

“Structure of IP₃R Channel by Single Particle Cryo-EM”, November 3, 2015, Symposium on Cryo-EM, National Center for Macromolecular Imaging, Baylor College of Medicine, Houston, TX.

“Structure and Insights into the Mechanism of the IP₃-activated Calcium Release Channel”, May 6, 2016, GCC Symposium on Membrane Biophysics, Houston, TX

“Molecular Mechanism of the IP₃R channel: Insights from Single Particle Cryo-EM”, Paul Horowitz Lecture, March 23, 2017, Department of Pharmacology and Physiology, School of Medicine and Dentistry, University of Rochester Medical Center, Rochester, NY.

“Structure of IP₃R Channel: Towards Understanding Gating Mechanism”, November 10-12, 2018, III Frontiers in Membrane Protein Structural Dynamics, Argonne National Lab, Chicago, IL.

“Ligand-mediated Allostery of IP₃R: Insights from Single Particle Cryo-EM”, November 8, 2018. Department of Pharmacology, SUNY Upstate Medical University, Syracuse, NY.

International

"3-Dimensional structure of the skeletal muscle Ca²⁺-release channel in different functional states"; March 1995, Speaker at 13th Annual Meeting of Biophysical Society, San Francisco, CA, USA

Gordon Research Conference on Three-Dimensional Electron Microscopy of Macromolecules, (poster presentation); June 1995, Colby-Sawyer College, New London, NH, USA.

Gordon Research Conferences on Muscle: Excitation - Contraction Coupling, (poster presentation); June 1998 & June 2000; Colby-Sawyer College, New London, NH, USA.

"Ca²⁺ induced conformational changes in the skeletal muscle Ca²⁺-release channel"; September 1998; invited speaker at the 14th International Congress on Electron Microscopy, Cancun, Mexico.

International Forum on Structure and Function of Ion Channels; November 3 -6, 1999; poster presentation 1999, Harima, Japan.

"3-Dimensional structure of the skeletal muscle Ca^{2+} -release channel activated by Ca^{2+} and AMP-PCP"; February 1999; Speaker at 17th Annual Meeting of Biophysical Society, Baltimore, MD, USA.

"Insights into Excitation-Contraction coupling by electron cryo-microscopy"; June 8, 2003; invited speaker at the Gordon Research Conference on Excitation-Contraction Coupling in Muscle, New London, NH, USA

"Structure of RyR1 Channel at Subnanometer Resolution"; Platform presentation at the 16th International Microscopy Congress, September 2-8, 2006, Sapporo, Japan.

"Single particle cryo-EM of RyR1 channel at subnanometer resolution"; August 4- 9, 2007, invited speaker at the Microscopy and Microanalysis 2007 meeting (65th Annual Meeting of Microscopy Society of America), Fort Lauderdale, Florida, USA.

"Single particle cryo-EM studies of Ca^{2+} release channels"; June 14-19, 2009; invited speaker at the Gordon Research Conference on Excitation-Contraction Coupling in Muscle, Waterville Valley, NH, USA.

"Cryo-EM studies of Ca^{2+} Release Channels at Subnanometer Resolution"; June 13 – 18, 2010; invited speaker at the 2010 FASEB Summer Research Conference on Calcium and Cell Function, Steamboat Springs, CO, USA.

"Towards Atomic Structures of Ca^{2+} Release Channels"; March 14 -17, 2011; NCMI Workshop on Single Particle Reconstruction, Validation and Analysis, Houston, TX, USA.

"Cryo-EM Studies of IP_3R at Subnanometer Resolution"; June 26-July 01, 2011; invited speaker at the Gordon Research Conference on Calcium Signaling, Colby College, Waterville, ME, USA.

"Visualizing Transmembrane Helices in Calcium Release Channels by Single Particle Cryo-EM"; January 22-27, 2012; Invited Speaker at the 40th Keystone Symposia on Structural Biology of Cellular Processes, Keystone, Colorado.

"Dissecting structure-function of Ca^{2+} release channels with single-particle Cryo-EM"; May 27-June 01, 2012; invited speaker at the Gordon Research Conference on Three Dimensional Electron Microscopy/From Molecules to Systems - Visualizing Biological Complexity, Les Diablerets, Switzerland.

"Single-particle cryo-EM studies of Calcium Release Channels"; Symposium Advances in Electron Microscopy; February 11, 2015; 59th Annual Meeting of Biophysical Society, Baltimore, MD, USA.

"Near-atomic resolution structure of IP_3R by Cryo-EM"; June 6-11, 2015; invited speaker at the Gordon Research Conference on Calcium Signaling, Colby College, Waterville, ME, USA.

"Structure of $\text{IP}_3\text{R1}$ channel determined by Cryo-EM"; June 26-29, 2015; invited speaker at The 15 International Symposium of Society of Chinese Biochemists in America, Taipei, Taiwan.

“Cryo-EM studies of IP₃ Receptor”; October 18, 2015; invited speaker at NINDS SFN satellite meeting on "How Can Understanding Protein Structure help us Unravel the Mysteries of Neurodegenerative disease?" Chicago, IL.

“Cryo-EM Structure of the IP₃R1 Channel: Insights into the Gating Mechanism”; January 31 – February 5, 2016; invited speaker at the Gordon Research Conference “Ligand Recognition & Molecular Gating, Lucca (Barga), Italy.

“Single-particle Cryo-EM of IP₃R calcium channel: Structure Validation”; June 19-June 24, 2016; invited speaker at the Gordon Research Conference on Three Dimensional Electron Microscopy/Advancing and Reshaping Structural Biology with Cryo-Microscopy, Hong Kong, China.

“Structure and Function of IP₃R1 Ca²⁺ Channel: Insights from cryoEM Studies”; September 25-29, 2016; Invited speaker at 14th International Meeting of the European Calcium Society, Valladolid, Spain.

“Molecular mechanism of the IP₃-activated calcium release channel”; November 10-13, 2016; Invited speaker at 72nd Annual SW regional Meeting of American Chemical Society, Innovations in Energy and Medicine, Symposium on Electron Cryomicroscopy, Galveston, TX.

“Structure-function of IP₃R channel”; 2017 Cold Spring Harbor Asia Conference on membrane Proteins: Structure & Function; May 15-19, Suzhou, China.

“High-resolution cry-EM studies of IP₃R channel in different functional states”; 31st Annual Protein Society Symposium, July 24 - 27, 2017, Montréal, Canada

“Molecular Mechanism of the IP₃R channel: Insights from Cryo-EM studies”; the Gordon Research Conference on Organellar Channels & Transporters, July 30 – August 4, 2017, Mount Snow in West Dover, VT.

“Cryo-EM studies of IP₃R1 channel: towards understanding gating mechanism”; the Gordon research conference on “Ligand recognition and Molecular Gating”, March 4-9, 2018; Ventura, CA, USA.

“IP₃R channel and Brain diseases: insights from cryo-EM studies”; Symposium “High-resolution Protein Structures: Understanding human diseases”, Ben-Gurion University of Negev, Beer Sheva, Israel, March 19-20, 2018.

“Ligand-mediated Allostery of IP₃R Channel”, The Center on Membrane Protein Production and Analysis Symposium, the New York Structural Biology Center, June 17-19, 2018, New York, NY.