

CURRICULUM VITAE

Personal Data

Name: Jose Rizo-Rey (Josep Rizo)
Birth: 8/01/59, Barcelona, Spain
Citizenship: USA and Spain
Address: Dept. of Biophysics, University of Texas Southwestern Medical Center, 5323 Harry Hines Blvd.,
Dallas, TX 75235-8816
Phone: 214-645-6360
FAX: 214-645-6353
E-mail: Jose.Rizo-Rey@UTSouthwestern.edu

Education

1981 Bachelor's Degree in Chemical Sciences (Speciality: Organic Chemistry), University of Barcelona
1982 Master's in Organic Chemistry, University of Barcelona
1988 Ph.D. in Organic Chemistry, University of Barcelona
1988 Bachelor's Degree in Physical Sciences (Speciality: Theoretical Physics), University of Barcelona

Positions

1983-1987 Teaching Assistant, Dept. of Organic Chemistry, University of Barcelona
1987-1989 Teaching Associate, Dept. of Organic Chemistry, University of Barcelona
1989-1990 Research Fellow, Dept. Pharmacology, University of Texas Southwestern Medical Center (UTSWMC)
1990-1991 Assistant Instructor, Dept. Pharmacology, UTSWMC
1991-1993 Instructor, Dept. Pharmacology, UTSWMC
1993-1994 Research Assistant Professor, Dept. Pharmacology, UTSWMC
1995-2001 Assistant Professor, Dept. Pharmacology, UTSWMC
1996-2001 Assistant Professor, Dept. Biochemistry, UTSWMC
2001-2003 Associate Professor, Dept. Pharmacology, UTSWMC
2001-2003 Associate Professor, Dept. Biochemistry, UTSWMC
2003- Professor, Dept. Pharmacology, UTSWMC
2003- Professor, Dept. Biochemistry, UTSWMC
2010-2017 Chair, Molecular Biophysics Graduate Program, UTSWMC
2012- Professor, Dept. Biophysics, UTSWMC
2013-present Virginia Lazenby O'Hara Chair in Biochemistry

Teaching Experience

1982-1987 Recitation (30 hours/year) and laboratory (200 hours/year) on general chemistry and organic chemistry for first- to fifth-year students in the Faculty of Chemistry, University of Barcelona
1987-1988 Lectures (90 hours) and laboratory (140 hours) on general chemistry for first-year students in the Faculty of Biology, University of Barcelona
1991- Magnetic resonance course (half semester) and lectures on biophysics and mathematics for graduate students of the Biophysics Program in UTSWMC
1995- Lectures on NMR spectroscopy, on Protein Folding and Protein Structure, and on membrane fusion in the Core Course of the Division of Cell and Molecular Biology in UTSWMC. Courses on Advanced NMR Spectroscopy, Modern Methods in Structural Biology, Physical Chemistry of Macromolecules and Synaptic Transmission in UTSWMC.

Service and Honors

Grants, fellowships, honorary positions and awards

1980-1981	Fellow, Undergraduate Research Collaborator, INAPE (Spain)
1982-1983	Fellow, Ministry of Education and Science, Spain
1983	Student Award, Catalan Society of Physical, Chemical and Mathematical Sciences (Spain)
1983	IV Sant Albert Award for Graduate Research, School of Chemistry Graduates, Catalan Chemical Association (Spain)
1989-1990	Postdoctoral Fellow, Ministry of Education and Science, Spain; at UTSWMC
1994-1996	Joint Grant United Cerebral Palsy Foundation/Hearst Foundation, "Analysis of the structure and binding properties of synaptotagmin"
1995-1998	Grant Welch Foundation "Analysis of interactions between synaptic proteins by NMR"
1995-2000	Grant NIH (R29) "Structural and Binding Properties of Synaptotagmin"
1997-2016	Grant NIH (RO1) "Structure and Function of Syntaxin 1"
1998-2001	Grant Welch Foundation "Structure and interactions of V ₀ "
1998-2001	Established Investigator Award from the American Heart Association
2001-2004	Grant Welch Foundation "Rab/SNARE coupling at the synapse"
2001-2016	Grant NIH (RO1) "Synaptotagmin and C2-domains: Structure and Function"
2002	High End Instrumentation Grant NIH "800 MHz NMR spectrometer"
2003-2004	Grant Muscular Dystrophy Association "Structure and function of MUNC13 and RIM"
2004-2007	Grant Welch Foundation "Mechanism of Ca ²⁺ -dependent Neurotransmitter Release"
2007-present	Grant Welch Foundation "NMR methods to study membrane proteins in lipid bilayers"
2007-2010	Human Frontiers Science Program grant "Roles of V ₀ and SNAREs in lipid mixing and pore opening during membrane fusion"
2008-	K. P. Professor, Zhejiang University, Hangzhou, China
2012-2018	CPRIT MIRA Award (co-PI) "Molecular and Structural Basis of Epigenetic Regulation of AR"
2014	S10 Shared Instrumentation Grant NIH "Acquisition of upgrades for 800 MHz NMR console"
2014-2017	Guest Professor, Huazhong University of Science and Technology, Wuhan, China
2015	Medalla Narcis Monturiol al Merit Cientific, Generalitat de Catalunya
2015-present	Visiting Professor, Academia Sinica, Taipei, Taiwan
2016-present	Research Program Award NIH (R35) "Mechanisms of neurotransmitter release and its regulation"

Selected invited lectures

2000	Student invited speaker, 'From genes to thoughts' Symposium, EMBL, Heidelberg
2005	University Lecture, UTSWMC, Dallas, Texas
2006	Visiting Lecturer of the Alberta Heritage Foundation for Medical Research
2006	Molecular Biosciences Lecturer, Wichita State University
2009	Graduate Student invited Molecular and Cellular Biology seminar, University of Massachusetts, Amherst
2010	Closing Lecture, 35th Lorne Conference on Protein Structure and Function, Lorne, Australia
2010	Keynote Speaker, Centre for Neurogenomics and Cognition Research, Amsterdam, The Netherlands
2010	Opening Lecture, IV Spanish Portuguese Biophysical Congress, Zaragoza, Spain
2013	Session Chair and Lecturer, Biophysics Society Meeting, Philadelphia
2013	Keynote Lecture, 8th Asian Biophysics Association Symposium, Jeju Island, South Korea
2013	Neuroscience Distinguished Lecture, University of Toronto
2015	Keynote Lecture, 17th International Neuroscience Winter Conference, Soelden, Austria
2016	Session Chair and Lecturer, World Life Science Conference, Beijing, China
2017	Keynote lecture, Collaborative Research Center 665, Developmental disturbances in the nervous system, Final Symposium, Berlin, Germany
2019	University Lecture, Er Yi Innovation Forum, Shanghai Jiao Tong University, Shanghai, China
2019	Opening Lecture, Symposium on Quantitative Synaptology, Göttingen, Germany

2020 Keynote Lecture, Oklahoma Microscopy Society 2020 spring meeting

Service in advisory boards, review panels and Symposium organization

2001-present Member, Faculty of 1000
2002 Member, NIH Shared Instrumentation Study Section
2003-2006 Scientific Advisory Board, DFG-Research Center for Molecular Physiology of the Brain, Göttingen, Germany
2003 Member, NIH Special Emphasis Panel to Review the MIT/Harvard Center for Magnetic Resonance resource grant
2004 Ad hoc member, BBCB study section from NIH
2004 Ad hoc member, MDCNA2 study section from NIH
2004 Member, NIH Shared Instrumentation Study Section
2004 Member, NIH Special Emphasis Panel to Review Program Project Grant from UCSD
2005 Member, NIH Special Emphasis Panel to Review Program Project Grant from Salk-Baylor
2005 Ad hoc member, MSFC study section from NIH
2005 Ad hoc member, SYN study section from NIH
2006-2009 Permanent member, SYN study section from NIH
2012 ZRG1 BCMB-B January Study Section from NIH
2013 MDCN September Special Emphasis Panel from NIH
2014 Co-Organizer, 26th International Conference on Magnetic Resonance in Biological Systems (ICMRBS), Dallas, Texas, USA
2014-2024 Member, ICMRBS Council
2014-2022 International Scientific Advisory Board, Max Planck Institute for Biophysical Chemistry, Göttingen, Germany
2014 ZRG1 F05-R(20)L February Study Section from NIH
2014-present Coordinator of the Polish Visiting Research Graduate Traineeship Program at UTSWMC
2015 BDMA February Study Section from NIH
2016-present American Heart Association - Basic Cell PC1 April Study Section
2016 ZRG1 BCMB-D Program Project Study Section from NIH
2017-2019 Scientific Advisory Board, Institute of Biological Chemistry, Academia Sinica, Taipei, Taiwan
2017 ZNS1 SRB-J (16) Special Emphasis Panel for review of R35 applications, NINDS, NIH
2017 Ad hoc member, Biophysics of Neural Systems study section from NIH
2017-present Scientific Advisory Board, STXBP1 Disorders Foundation
2018 ZNS1 SRB-M (07) Special Emphasis Panel for review of R35 applications, NINDS, NIH
2019 External review panel, Dept. of Molecular, Cellular and Developmental Biology, University of Colorado Boulder
2019 ZNS1 SRB-H (12) Special Emphasis Panel for review of R35 applications, NINDS, NIH
2020 American Heart Association - Review committee: Career Development Award Basic Cell Sciences 2
2020-2022 Chair, Academic Advisory Board, Institute of Biological Chemistry, Academia Sinica, Taipei, Taiwan
2020 ZRG1 CB-Q (55) Special Emphasis Panel for review of MIRA applications, NIGMS, NIH
2020 ZNS1 SRB-H (15) Special Emphasis Panel for review of R35 applications, NINDS, NIH
2021 ZRG1 BCMB-D (07) Study Section for review of Collaborative Program Grant for Multidisciplinary Teams (RM1) applications, NIH
2021 ZNS1 SRB-H (20) Special Emphasis Panel for review of R35 applications, NINDS, NIH

Journal service

Editorial boards: Cell Research, Journal of Molecular Cell Biology, FEBS Open Bio.

Adhoc reviewing editor: eLife, Proceedings of the National Academy of Sciences USA.

Reviewer: eLife, Science, Nature, Cell, Proceedings of the National Academy of Sciences USA, Nature Structural and Molecular Biology, EMBO Journal, Nature Communications, Nature Cell Biology, Nature Protocols, Molecular Cell, Neuron, Cell Reports, Science Advances, Journal of the American Chemical Society, Journal of Neuroscience, Journal of Cell Biology, Developmental Cell, Plant Cell, Structure, Journal of Biological Chemistry, Journal of Molecular Biology, Journal of Biomolecular NMR, Biophysical Journal, Journal of Cell Science, Langmuir, Neuroscience, Biochemistry, Biochimica Biophysica Acta, Molecular Biology of the Cell, Traffic, PLoS Biology, PLoS One, BMC Biology, FEBS Letters, Molecular and Cellular Biology, Frontiers in Neuroscience, Protein Science, ACS Chemical Neuroscience and Journal of Neurochemistry among others.

Society Memberships

American Chemical Society
Sociedad de Biofísica de España
Biophysical Society
American Association for the Advancement of Science
Protein Society

Publications

1. J. Rizo, "Aplicació de la RMN de ^{13}C a l'estudi de suports polimèrics emprats en la Síntesi de Pèptids en Fase Sòlida", *Butll. Soc. Cat. Cièn. III*, 35-85 (1984).
2. E. Giralt, J. Rizo, and E. Pedroso, "Application of Gel-Phase ^{13}C -NMR to monitor Solid Phase Peptide Synthesis", *Tetrahedron* **40**, 4141-4152 (1984).
3. J. Rizo, F. Albericio, G. Romero, C. Garcia-Echeverria, J. Claret, C. Muller, E. Giralt and E. Pedroso, "Use of Polar Picolyt Protecting Groups in Peptide Synthesis", *J. Org. Chem.* **53**, 5386-5389 (1988).
4. F. Albericio, E. Nicolas, J. Rizo, M. Ruiz-Gayo, E. Pedroso and E. Giralt, "Convenient Synthesis of Fluorenylmethyl-Based Side Chain Derivatives of Glutamic and Aspartic acids, Lysine, and Cysteine", *Synthesis*, 119-122 (1990).
5. F. Albericio, J. Rizo, E. Nicolas, M. Ruiz-Gayo, F. Cardenas, C. Carreno, D. Andreu, E. Pedroso, and E. Giralt, "Fluorenylmethyl-based side-chain Protecting Groups: Towards a New Strategy of Peptide Synthesis", in *Peptides: Chemistry, Structure, and Biology. Proceedings of the 11th American Peptide Symposium* (J. E. Rivier & G. R. Marshall, Eds.), Escom, Leiden, The Netherlands, pp. 923-924 (1990).
6. S. Stradley, J. Rizo, M. Bruch, Z.-P. Liu, and L. Gierasch, "Influence of Asparagine on Turn Formation in Cyclic Pentapeptides", in *Peptides: Chemistry, Structure, and Biology. Proceedings of the 11th American Peptide Symposium* (J. E. Rivier & G. R. Marshall, Eds.), Escom, Leiden, The Netherlands, pp. 644-646 (1990).
7. S. Stradley, J. Rizo, M. Bruch, A. Stroup, and L. Gierasch, "Cyclic Pentapeptides as Models for Reverse Turns: Determination of the Equilibrium Distribution Between Type I and Type II Conformations of Pro-Asn and Pro-Ala β -Turns", *Biopolymers* **29**, 263-287 (1990).
8. E. Giralt, F. Albericio, F. Bardella, R. Eritja, M. Feliz, E. Pedroso, M. Pons and J. Rizo, "Gel-phase NMR Spectroscopy as a Useful Tool in Solid Phase Synthesis", in *Solid Phase Synthesis* (R. Epton, Ed.), SPCC (UK), Birmingham, pp. 111-120 (1990).
9. J. Rizo, M. M. Dhingra and L. M. Gierasch, "A Cyclic Hexapeptide Model for Asparagine Side-chain/backbone Interactions in a Protein β Turn", in *Peptides 1990. Proceedings of the 21st European Peptide Symposium* (E. Giralt & D. Andreu, Eds.), Escom, Leiden, The Netherlands, pp. 468-471 (1991).

10. J. Rizo, M. M. Dhingra and L. M. Gierasch, "Peptide Models for Reverse Turns. The Role of Asparagine in the α Position of a β turn", in *Molecular Conformations and Biological Interactions*, P. Balaram and S. Ramaseshan, Eds., Indian Academy of Sciences, Bangalore, India, 469-496 (1991).
11. J. Rizo, F. Blanco, B. Kobe, M. D. Bruch, D. W. Hoyt and L. M. Gierasch, "Conformations of Wild-type and Mutant OmpA Signal Sequences in Membrane Mimetic Environments", in *Peptides: Chemistry and Biology. Proceedings of the 12th American Peptide Symposium* (J. A. Smith and J. E. Rivier, Eds.), ESCOM, Leiden, The Netherlands, pp. 265-267 (1992).
12. R. J. Bienstock, S. C. Koerber, J. Rizo, J. Rivier, A. T. Hagler and L. M. Gierasch, "Conformation of a Highly Potent Bicyclic GnRH Antagonist by Combined Molecular Dynamics and Two-Dimensional NMR Analyses", in *Peptides: Chemistry and Biology. Proceedings of the 12th American Peptide Symposium* (J. A. Smith and J. E. Rivier, Eds.), ESCOM, Leiden, The Netherlands, pp. 262-264 (1992).
13. J. Rizo and L. M. Gierasch, "Constrained Peptides: Models of Bioactive Peptides and Protein Substructures", *Annu. Rev. Biochem.* 61, 387-418 (1992).
14. J. Rizo, S. C. Koerber, R. J. Bienstock, J. Rivier, A. T. Hagler and L. M. Gierasch, "Conformational Analysis of a Highly Potent, Constrained Gonadotropin-Releasing Hormone Antagonist I. Nuclear Magnetic Resonance", *J. Am. Chem. Soc.* 114, 2852-2859 (1992).
15. J. Rizo, S. C. Koerber, R. J. Bienstock, J. Rivier, L. M. Gierasch and A. T. Hagler, "Conformational Analysis of a Highly Potent, Constrained Gonadotropin-Releasing Hormone Antagonist II. Molecular Dynamics Simulations", *J. Am. Chem. Soc.* 114, 2860-2871 (1992).
16. J. Rizo, F. Albericio, E. Giralt and E. Pedrosa, "Reversible protection of lysine to facilitate the purification of protected peptide segments", *Tetrahedron Lett.* 33, 397-400 (1992).
17. M. Bruch, J. Rizo and L. M. Gierasch "Impact of a Micellar Environment on the Conformations of Two Cyclic Pentapeptides", *Biopolymers* 32, 1741-1754 (1992).
18. J. Rizo, F. Blanco, B. Kobe, M. D. Bruch and L. M. Gierasch, "Conformational Behavior of Escherichia coli OmpA Signal Peptides in Membrane Mimetic Environments", *Biochemistry* 32, 4881-4894 (1993).
19. J. Rivier, L. Gierasch, J. Rizo, S. C. Koerber, A. Hagler, J. Porter, A. Corrigan, W. Vale and C. Rivier, "Probing the GnRH Receptor with Linear and Cyclic Analogs", in *Peptide Chemistry 1992. Proceedings of the 2nd Japan Symposium on Peptide Chemistry*, (N. Yanaihara, Ed.), ESCOM, Leiden, The Netherlands, 313-317 (1993).
20. R. J. Bienstock, J. Rizo, S. C. Koerber, J. E. Rivier, A. T. Hagler and L. M. Gierasch, "Conformational Analysis of a Highly Potent Dicyclic Gonadotropin-Releasing Hormone Antagonist by Nuclear Magnetic Resonance and Molecular Dynamics", *J. Med. Chem.* 36, 3265-3273 (1993).
21. S. J. Stradley, J. Rizo and L. M. Gierasch, "The Conformation of a Hexapeptide Substrate Bound to Protein Farnesyltransferase", *Biochemistry* 32, 12586-12590 (1993).
22. Z. Wang, J. Jones, J. Rizo and L. M. Gierasch, "Membrane-Bound Conformation of a Signal Peptide: a Transferred Nuclear Overhauser Effect Analysis", *Biochemistry* 32, 13991-13999 (1993).
23. Z.-P. Liu, J. Rizo and L. M. Gierasch, "Equilibrium Folding Studies of Cellular Retinoic Acid Binding Protein, a Predominantly β -Sheet Protein", *Biochemistry* 33, 134-142 (1994).
24. J. Rizo, R. B. Sutton, J. Breslau, S. C. Koerber, J. Porter, J. E. Rivier, A. T. Hagler and L. M. Gierasch,

"Defining the Active Conformation of Gonadotropin Releasing Hormone (GnRH) through Design and Conformational Analysis of Constrained GnRH Analogs", in *Peptides: Chemistry, Structure and Biology. Proceedings of the 13th American Peptide Symposium* (R. S. Hodges and J. A. Smith, Eds.), ESCOM, Leiden, The Netherlands, pp. 766-768 (1994).

25. J. Rizo, Z.-P. Liu and L. M. Gierasch, "¹H and ¹⁵N NMR resonance assignments and secondary structure of cellular retinoic acid binding protein with and without bound ligand", *J. Biomol. NMR* 4, 741-760 (1994).

26. M. Sukumar, J. Rizo, M. Wall, L. A. Dreyfus, Y. M. Kupersztoch and L. M. Gierasch, "The Structure of *Escherichia Coli* Heat-Stable Enterotoxin b by Nuclear Magnetic Resonance and Circular Dichroism", *Protein Sci.* 4, 1718-1729 (1995).

27. J. Rivier, G. C. Jiang, S. L. Lahrichi, J. Porter, S. C. Koerber, J. Rizo, A. Corrigan, L. Gierasch, A. Hagler, W. Vale and C. Rivier, "Dose relationship between GnRH antagonists and pituitary suppression", *Hum. Reprod.* 11 Suppl. 3, 133-147 (1996).

28. J. E. Rivier, G.-C. Jiang, S. C. Koerber, S. L. Lahrichi, L. Porter, J. Rizo, L. Gierasch, A. Hagler, W. Vale, M. Karten, and C. L. Rivier, "GnRH antagonists: design, synthesis and side effects", *Proceedings of the Treatment with GnRH Analogs: Controversies and Prospectives* (M. Filicori, C. Flamigni, Eds.), 13-23 (1996).

29. J. Rizo and M. D. Bruch, "Structure Determination of Biological Macromolecules", in *NMR Spectroscopy Techniques*, second ed. (M. D. Bruch, Ed.), Marcel Dekker, New York, pp. 285-415 (1996).

30. J. Rizo, R. B. Sutton, J. Breslau, S. C. Koerber, J. Porter, A. T. Hagler, J. E. Rivier and L. M. Gierasch, "A Novel Conformation in a Highly Potent, Constrained Gonadotropin Releasing Hormone Antagonist", *J. Am. Chem. Soc.* 118, 970-976 (1996).

31. J. Rizo and L. M. Gierasch, "Secondary Structure Elements in Peptides and Proteins: α -turns, α -helices and β -sheets", in *Encyclopedia of NMR* (D. M. Grant and R. K. Harris, Eds.), John Wiley & Sons, pp. 3517-3526 (1996).

32. X. Shao, B. A. Davletov, R. B. Sutton, T. C. Südhof and J. Rizo, "A Bipartite Ca²⁺-Binding Motif in C₂ Domains of Synaptotagmin and Protein Kinase C", *Science* 273, 248-251 (1996).

33. T. C. Südhof and J. Rizo, "Synaptotagmins: C₂-Domain Containing Proteins that Regulate Membrane Traffic", *Neuron* 17, 379-388 (1996).

34. X. Shao, C. Li, I. Fernandez, X. Zhang, T. C. Südhof and J. Rizo, "Synaptotagmin-Syntaxin Interaction: the C₂-Domain as a Ca²⁺-Dependent Electrostatic Switch", *Neuron* 18, 133-142 (1997).

35. A. L. Osterman, H. Brooks, J. Rizo and M. A. Phillips, "The role of Arg-277 in the binding of pyridoxal-5'-phosphate to *Trypanosoma brucei* ornithine decarboxylase", *Biochemistry* 36, 4558-4567 (1997).

36. C. Von Poser, K. Ichtchenko, X. Shao, J. Rizo and T. C. Südhof, "The Evolutionary Pressure to Inactivate: a Subclass of Synaptotagmins with an Amino Acid Substitution that Abolishes Ca²⁺ Binding", *J. Biol. Chem.* 272, 14314-14319 (1997).

37. K. K. Reddy, J. Rizo and J. R. Falck, "Concise Synthesis of L- α -Phosphatidyl-D-*myo*-Inositol 3,4-Bisphosphate, an Intracellular Messenger", *Tetrahedron Letters* 38, 4729-4730 (1997).

38. X. Shao, T. C. Südhof and J. Rizo, "Assignment of the ¹H, ¹⁵N and ¹³C resonances of the calcium-free and calcium-bound forms of the first C₂-domain of synaptotagmin I", *J. Biomol. NMR* 10, 307-308 (1997).

39. P. L. Clark, Z.-P. Liu, J. Rizo and L. M. Gierasch, "Cavity formation before stable hydrogen bonding in the

folding of a β -clam protein, *Nature Struct. Biol.* 4, 883-886 (1997).

40. J. Rizo, "Peptides", in *The Encyclopedia of Chemistry* (J. J. Lagowski, Ed.), Macmillan, New York, NY, 1145-1151 (1997).

41. Z.-P. Liu, J. Rizo and L. M. Gierasch, "Protein Folding", in *Bioorganic Chemistry: Peptides and Proteins* (S. M. Hecht, Ed.), Oxford University Press, New York, NY, 224-257 and 493-498 (1998).

42. J. Rizo* and T. C. Südhof*, β C₂-domains, structure and function of a universal Ca²⁺-binding domain, *J. Biol. Chem.* 273, 15879-15882 (1998).

43. J. Ubach, X. Zhang, X. Shao, T. C. Südhof and J. Rizo, β Ca²⁺-binding to synaptotagmin: how many Ca²⁺ ions bind at the tip of a C₂-domain?, *EMBO J.* 17, 3921-3930 (1998).

44. R. G. Kibbey, J. Rizo, L. M. Gierasch and R. G. W. Anderson, β The LDL receptor clustering motif interacts with the clathrin terminal domain in a reverse turn conformation, *J. Cell. Biol.* 142, 59-67 (1998).

45. X. Zhang, J. Rizo and T. C. Südhof, β Mechanism of phospholipid binding by the C₂A-domain of synaptotagmin I, *Biochemistry* 37, 12395-12403 (1998).

46. X.-M. Yang, W.-F. Yu, J.-H. Li, J. Fuchs, J. Rizo and M. L. Tasayco, β NMR evidence for the reassembly of an α / β domain after cleavage of an α -helix: implications for protein design, *J. Am. Chem. Soc.* 120, 7985-86 (1998).

47. X. Shao, I. Fernandez, T. C. Südhof and J. Rizo, β Solution structures of the Ca²⁺-free and Ca²⁺-bound C₂A-domain of synaptotagmin I: does Ca²⁺ induce a conformational change?, *Biochemistry* 37, 16106-16115 (1998).

48. I. Fernandez, J. Ubach, X. Zhang, T. C. Südhof and J. Rizo, β Three-dimensional structure of an evolutionarily conserved N-terminal domain of syntaxin 1A, *Cell* 18, 841-849 (1998).

49. J. Rizo and T. C. Südhof, β Mechanics of membrane fusion, *Nature Struct. Biol.* 5, 839-842 (1998).

50. P. L. Clark, M. Sukumar, Z. P. Liu, J. Rizo, B. F. Weston, K. S. Rotondi and L. M. Gierasch, "Folding of a predominantly β -sheet", in *Peptides. Proceedings of the 15th American Peptide Symposium* (J. P. Tam, P. T. P. Pravin, Eds.), Kluwer, Dordrecht, The Netherlands, pp. 349-351 (1999).

51. R. Baluna, J. Rizo, B. E. Gordon, V. Ghetie and E. S. Vitetta, β Evidence for a structural motif in toxins and interleukin-2 which may be responsible for binding to endothelial cells and initiating vascular leak syndrome, *Proc. Natl. Acad. Sci. USA* 96, 3957-3962 (1999).

52. J. Ubach, J. Garcia, M. P. Nittler, T. C. Südhof and J. Rizo, β Structure of the Janus-faced C₂B-domain of rabphilin, *Nature Cell Biol.* 1, 106-112 (1999).

53. H. Kim, L. Esser, M. B. Hossain, D. Xia, C.-A. Yu, J. Rizo, D. Van der Helm and J. Deisenhofer, β Structure of antimycin A1, a specific electron transfer inhibitor of ubiquinol-cytochrome c oxidoreductase, *J. Am. Chem. Soc.* 121, 4902-4903 (1999).

54. J. Hazzard, T. C. Südhof and J. Rizo, β NMR analysis of the structure of synaptobrevin and of its interaction with syntaxin, *J. Biomol. NMR* 14, 203-207 (1999).

55. I. Dulubova, S. Sugita, S. Hill, M. Hosaka, I. Fernandez, T. C. Südhof* and J. Rizo*, β A conformational switch in syntaxin during exocytosis, *EMBO J.* 18, 4372-4382 (1999).

56. M. A. Contreras, J. Ubach, O. Millet, J. Rizo* and M. Pons*, β Lanthanide induced orientation of a calcium

binding protein, *J. Am. Chem. Soc.* 121, 8947-8948 (1999).

57. S. C. Koerber, J. Rizo, R. S. Struthers and J. E. Rivier, Consensus bioactive conformation of cyclic GnRH antagonists defined by NMR and molecular modeling, *J. Med. Chem.* 43, 819-828 (2000).

58. T. Matos, J. Rizo and T. C. Südhof, "The relation of protein binding to function: what is the significance of munc18 and synaptotagmin binding to syntaxin 1, and where are the corresponding binding sites?", *Eur. J. Cell Biol* 79, 377-382 (2000).

59. S. Pabst, J. Hazzard, W. Antonin, T. C. Südhof, R. Jahn, J. Rizo and D. Fasshauer, "Selective interaction of complexin with the neuronal SNARE complex: determination of the binding regions", *J. Biol. Chem.* 275, 19808-19818 (2000).

60. R. Fernandez-Chacon, A. Königstorfer, S. H. Gerber, J. Garcia, M. F. Matos, C. F. Stevens, N. Brose, J. Rizo, C. Rosenmund and T. C. Südhof, "Synaptotagmin I functions as a Ca²⁺-regulator of release probability", *Nature* 410, 41-49 (2001).

61. I. Dulubova, T. Yamaguchi, Y. Wang, T. C. Südhof and J. Rizo, "Vam3p structure reveals conserved and divergent properties of syntaxins", *Nature Struct. Biol.* 8, 258-264 (2001).

62. S. H. Gerber, J. Garcia, J. Rizo and T. C. Südhof, "An unusual C₂-domain in the active-zone protein piccolo: implications for Ca²⁺-regulation of neurotransmitter release", *EMBO J.* 20, 1605-1619 (2001).

63. J. Ubach, Y. Lao, I. Fernandez, D. Arac, T. C. Südhof and J. Rizo, "The C₂B-domain of synaptotagmin I is a Ca²⁺-binding module", *Biochemistry* 40, 5854-5860 (2001).

64. Y. Wang, I. Dulubova, J. Rizo and T. C. Südhof, "Functional analysis of conserved structural elements in yeast syntaxin Vam3p", *J. Biol. Chem.* 276, 28598-28605 (2001).

65. S. H. Gerber, J. Rizo and T. C. Südhof, "The top loops of the C₂-domains from synaptotagmin and phospholipase A2 control functional specificity", *J. Biol. Chem.* 276, 32288-32292 (2001).

66. I. Fernandez, D. Arac, J. Ubach, S. H. Gerber, O. Shin, Y. Gao, R. G. W. Anderson, T. C. Südhof and J. Rizo, "Three-dimensional structure of the synaptotagmin I C₂B-domain: synaptotagmin I as a phospholipid binding machine", *Neuron* 32, 1057-1069 (2001).

67. S. H. Gerber, J. Rizo and T. C. Südhof, "Role of electrostatic and hydrophobic interactions in Ca²⁺-dependent phospholipid binding by the C₂A-domain from synaptotagmin I", *Diabetes* 51 Suppl 1, S12-18 (2002).

68. X. Chen, D. Tomchick, E. Kovrigin, D. Arac, M. Machius, T. C. Südhof and J. Rizo, "Three-dimensional structure of the complexin/SNARE complex", *Neuron* 33, 397-409 (2002).

69. X. Luo, Z. Tang, J. Rizo* and H. Yu*, "The Mad2 spindle checkpoint protein undergoes similar major conformational changes upon binding to either Mad1 or Cdc20", *Molecular Cell* 9, 59-71 (2002).

70. J. Rizo, J. Ubach and J. Garcia, "Ca²⁺-binding mode of the C₂A-domain of synaptotagmin". In "Methods in Molecular Biology: Calcium-Binding Protein Protocols" (H. J. Vogel, Ed.), Humana Press, Totowa, NJ, pp. 305-316 (2002).

71. J. Rizo and T. C. Südhof, "C₂-domains". In "The Encyclopedia of Molecular Medicine" (T. E. Creighton, Ed.), John Wiley & Sons, New York, NY, pp. 708-711 (2002).

72. O. Millet, P. Bernado, J. Garcia, J. Rizo* and M. Pons*, "NMR measurement of the off-rate from the first calcium-binding site of the synaptotagmin I C₂A-domain", *FEBS Lett.* 516, 93-96 (2002).

73. T. Yamaguchi, I. Dulubova, S.-W. Min, X. Chen, J. Rizo and T. C. Südhof, “Sly1 binds to the Golgi and ER syntaxins via a conserved N-terminal peptide motif”, *Dev. Cell* 2, 295-305 (2002).
74. W. C. Wigley, M. J. Corboy, T. D. Cutler, P. H. Thibodeau, J. Oldan, M. G. Lee, J. Rizo, J. F. Hunt and P. J. Thomas, “Protein sequence that can encode native secondary structure by disfavoring alternate conformations”, *Nature Struct. Biol.* 9, 381-388 (2002).
75. J. Lu, J. Garcia, I. Dulubova, T. C. Südhof and J. Rizo, “Solution structure of the Vam7p PX domain”, *Biochemistry* 41, 5956-5962 (2002).
76. O. Shin, J. Rizo and T. C. Südhof, “Synaptotagmin function in dense core vesicle exocytosis studied in cracked PC12 cells”, *Nat. Neurosci.* 5, 649-656 (2002).
77. I. Dulubova, T. Yamaguchi, Y. Gao, S. W. Min, I. Huryeva, T. C. Südhof and J. Rizo, “How Tlg2p/syntaxin 16 ‘snares’ Vps45p”, *EMBO J.* 21, 3620-3631 (2002).
78. W. Antonin, I. Dulubova, D. Araç, S. Pabst, J. Plitzner, J. Rizo and R. Jahn, “The N-terminal domains of syntaxin 7 and vti1b form three-helix bundles that differ in their ability to regulate SNARE complex assembly”, *J. Biol. Chem.* 277, 36449-36456 (2002).
79. J. Rizo* and T. C. Südhof*, “SNAREs and munc18 in synaptic vesicle fusion”, *Nature Rev. Neurosci.* 3., 641-653 (2002).
80. R. Fernandez-Chacon, O. Shin, A. Königstorfer, M. F. Matos, A. C. Mayer, J. Garcia, S. H. Gerber, J. Rizo, T. C. Südhof and C. Rosenmund, “Structure/function analysis of Ca²⁺-binding to the C₂A-domain of synaptotagmin I”, *J. Neurosci.* 22, 8438-8446 (2002).
81. I. Dulubova, T. Yamaguchi, D. Araç, H. Li, I. Huryeva, S.-W. Min, J. Rizo* and T. C. Südhof*, “Convergence and divergence in the mechanism of SNARE binding by Sec1/Munc18-like proteins”, *Proc. Natl. Acad. Sci. USA* 100, 32-37 (2003).
82. D. Araç, T. Murphy and J. Rizo, “Facile detection of protein-protein interactions by one-dimensional NMR spectroscopy”, *Biochemistry* 42, 2774-2780 (2003).
83. T. C. Südhof and J. Rizo, “C₂-domains in Ca²⁺ signaling”. In “Handbook of Cell Signaling” Vol. 2 (M. Berridge, Ed.), Elsevier, San Diego, CA, pp. 95-100 (2003).
84. S. Chandra, X. Chen, J. Rizo, R. Jahn and T. C. Südhof, “A broken α -helix in folded α -synuclein”, *J. Biol. Chem.* 278, 15313-15318 (2003).
85. J. E. Smallshaw, V. Ghetie, J. Rizo, J. R. Fulmer, L. L. Trahan, M.-A. Ghetie and E. S. Vitetta, “Genetic engineering of an immunotoxin to eliminate pulmonary vascular leak in mice”, *Nat. Biotechnol.* 21, 387-391 (2003).
86. J. Rizo, “SNARE function revisited”, *Nat. Struct. Biol.* 10, 417-419 (2003).
87. N. Jarrowse, J. D. Wilson, D. Araç, J. Rizo and R. B. Kelly, “Endocytosis of synaptotagmin 1 is mediated by a novel, tryptophan-containing motif”, *Traffic* 4, 468-478 (2003).
88. M. F. Matos, K. Mukherjee, X. Chen, J. Rizo and T. C. Südhof, “Evidence for SNARE zippering during Ca²⁺-triggered exocytosis in PC12 cells”, *Neuropharmacology* 45, 777-786 (2003).
89. J. Rizo, “C₂-domain proteins involved in membrane traffic”. In “Handbook of Metalloproteins” Vol. 3 (A.

Messerschmidt, W. Bode and M. Cygler, Eds.), Wiley, Chichester, pp. 599-613 (2004).

90. J. Garcia, S. H. Gerber, S. Sugita, T. C. Südhof and J. Rizo, “A conformational switch in the piccolo C₂A-domain regulated by alternative splicing”, *Nat. Struct. Molec. Biol.* *11*, 45-53 (2004).
91. O. Shin, A. Maximov, B. K. Lim, J. Rizo and T. C. Südhof, “Unexpected Ca²⁺-binding properties of synaptotagmin9”, *Proc. Natl. Acad. Sci. USA* *101*, 2554-2559 (2004).
92. X. Luo, Z. Tang, G. Xia, K. Wassmann, T. Matsumoto, J. Rizo* and H. Yu*, “The Mad2 spindle checkpoint protein has two distinct natively folded states”, *Nat. Struct. Molec. Biol.* *11*, 338-345 (2004).
93. H. Dai, O.-H. Shin, M. Machius, D. R. Tomchick, T. C. Südhof and J. Rizo, “Structural basis for the evolutionary inactivation of Ca²⁺ binding to synaptotagmin 4”, *Nat. Struct. Molec. Biol.* *11*, 844-849 (2004).
94. I. Dulubova, A. Ho, I. Huryeva, T. C. Südhof and J. Rizo, “Three-dimensional structure of an independently folded extracellular domain of human amyloid-beta precursor protein”, *Biochemistry* *43*, 9583-9588 (2004).
95. G. Xia, X. Luo, T. Habu, J. Rizo, T. Matsumoto and H. Yu, “Conformation-specific binding of p31^{comet} antagonizes the function of Mad2 in the spindle checkpoint”, *EMBO J.* *23*, 3133-3143 (2004).
96. D. Araç, I. Dulubova, J. Pei, I. Huryeva, N. V. Grishin and J. Rizo, “Three-dimensional structure of the rSly1 N-terminal domain reveals a conformational change induced by binding to Syntaxin 5”, *J. Mol. Biol.* *346*, 589-601 (2005).
97. N. Shen, O. Guryev and J. Rizo, “Intramolecular occlusion of the diacylglycerol-binding site in the C₁ domain of munc13-1”, *Biochemistry* *44*, 1089-1096 (2005).
98. X. Chen, J. Tang, T. C. Südhof and J. Rizo, “Are the neuronal SNAREs Ca²⁺ sensors?”, *J. Mol. Biol.* *347*, 145-158 (2005).
99. I. Dulubova, X. Lou, J. Lu, I. Huryeva, A. Alam, R. Schneggenburger, T. C. Südhof and J. Rizo, “A Munc13/RIM/Rab3 tripartite complex: from priming to plasticity?”, *EMBO J.* *24*, 2839-2850 (2005).
100. J. Basu, N. Shen, I. Dulubova, J. Lu, R. Guan, O. Guryev, N. V. Grishin, C. Rosenmund and J. Rizo, “Identification of a minimal domain responsible for Munc13 activity”, *Nat. Struct. Molec. Biol.* *12*, 1017-1018 (2005).
101. J. Lu, H. Li, Y. Wang, T. C. Südhof and J. Rizo, “Solution structure of the RIM1 PDZ domain in complex with an ELKS1b C-terminal peptide”, *J. Mol. Biol.* *352*, 455-466 (2005).
102. H. Dai, D. R. Tomchick, J. Garcia, T. C. Südhof, M. Machius and J. Rizo, “Crystal structure of the RIM2 C₂A-domain at 1.4 Å resolution”, *Biochemistry* *44*, 13533-13542 (2005).
103. J. S. Rhee, L. Li, O.-H. Shin, J.C. Rah, J. Rizo, T. C. Südhof and C. Rosenmund, “Augmenting neurotransmitter release by enhancing the apparent Ca²⁺-affinity of synaptotagmin 1”, *Proc. Natl. Acad. Sci. USA* *102*, 18664-18669 (2005).
104. A. D. Ferguson, V. M. Labunskyy, D. E. Fomenko, D. Arac, Y. Chelliah, C. A. Amezcua, J. Rizo, V. N. Gladyshev, and J. Deisenhofer, “NMR structures of the selenoproteins Sep15 and SelM reveal redox activity of new thioredoxin-like family”, *J. Biol. Chem.* *281*, 3536-3543 (2006).
105. X. Chen, D. Araç, T.-M. Wang, C. J. Gilpin, J. Zimmerberg and J. Rizo, “SNARE-mediated lipid mixing depends on the physical state of the vesicles”, *Biophys. J.* *90*, 2062-2074 (2006).

106. D. Araç, X. Chen, H. A. Khant, J. Ubach, S. J. Ludtke, M. Kikkawa, A. E. Johnson, W. Chiu, T. C. Südhof and J. Rizo, “Close membrane-membrane proximity induced by Ca²⁺-dependent multivalent binding of synaptotagmin 1 to phospholipids”, *Nat. Struct. Molec. Biol.* **13**, 209-217 (2006).
107. Deak, F., Shin, O.H., Tang, J., Hanson, P., Ubach, J., Jahn, R., Rizo, J., Kavalali, E.T., and Südhof, T.C. Rabphilin regulates SNARE-dependent re-priming of synaptic vesicles for fusion. *EMBO J.* **25**, 2856-2866 (2006).
108. Li, L., Shin, O.H., Rhee, J.S., Arac, D., Rah, J.C., Rizo, J., Südhof, T., and Rosenmund, C. Phosphatidylinositol phosphates as co-activators of Ca²⁺ binding to C2 domains of synaptotagmin 1. *J. Biol. Chem.* **281**, 15845-15852 (2006).
109. Lu, J., Machius, M., Dulubova, I., Dai, H., Südhof, T.C., Tomchick, D.R., and Rizo, J. Structural Basis for a Munc13-1 Homodimer to Munc13-1/RIM Heterodimer Switch. *PLoS. Biol.* **4**, 1159-1172 (e192) (2006).
110. Pang, Z.P., Sun, J., Rizo, J., Maximov, A., and Südhof, T.C. Genetic analysis of synaptotagmin 2 in spontaneous and Ca²⁺-triggered neurotransmitter release. *EMBO J.* **25**, 2039-2050 (2006).
111. Rizo, J., Chen, X., and Arac, D. Unraveling the mechanisms of synaptotagmin and SNARE function in neurotransmitter release. *Trends Cell Biol.* **16**, 339-350 (2006).
112. Tang, J., Maximov, A., Shin, O.-H., Dai, H., Rizo, J. and Südhof, T. C. A complexin/synaptotagmin-1 switch controls fast synaptic vesicle exocytosis. *Cell* **126**, 1175-1187 (2006).
113. Rizo, J. Illuminating membrane fusion. *Proc. Natl. Acad. Sci. USA* **103**, 19611-19612 (2006).
114. Dulubova, I., Khvotchev, M., Liu, S., Huryeva, I., Südhof, T. C.* and Rizo, J.* Munc18-1 binds directly to the neuronal SNARE complex. *Proc. Natl. Acad. Sci. USA* **104**, 2697-2702 (2007).
115. J. Rizo, “Proteinas SNARE”, *Investigacion y Ciencia* **364**, 30-31 (2007).
116. Dai, H., Shen, N., Araç, D. and Rizo, J. A quaternary SNARE-synaptotagmin-Ca²⁺-phospholipid complex in neurotransmitter release. *J. Mol. Biol.* **367**, 848-863 (2007).
117. Guan, R., Dai, H., Tomchick, D. R., Dulubova, I., Machius, M., Südhof, T. C. and Rizo, J. Crystal structure of the RIM1 \square C₂B domain at 1.7 Å resolution, *Biochemistry* **46**, 8988-8998 (2007).
118. Cavanaugh, L. F., Chen, X., Richardson, B. C., Ungar, D., Pelczer, I., Rizo, J. and Hughson, F. M. Structural analysis of conserved oligomeric Golgi complex subunit 2, *J. Biol. Chem.* **282**, 23418-23426 (2007).
119. Roggero, C. M., De Blas, G. A., Dai, H., Tomes, C. N., Rizo, J. and Mayorga, L. S. Complexin/synaptotagmin interplay controls acrosomal exocytosis. *J. Biol. Chem.* **282**, 26335-26343 (2007).
120. Rizo, J. and Dai, H. How much can SNAREs flex their muscles? *Nat. Struct. Molec. Biol.* **14**, 880-882 (2007).
121. Xue, M., Reim, K., Chen, X., Chao, H.-T., Deng, H., Rizo, J., Brose, N. and Rosenmund, C. Distinct domains of complexin I differentially regulate neurotransmitter release. *Nat. Struct. Molec. Biol.* **14**, 949-958 (2007).

122. Yang, M., Li, B., Tomchick, D. R., Machius, M., Rizo, J., Yu, H. and Luo, X. p31(comet) blocks Mad2 activation through structural mimicry. *Cell* *131*, 744-755 (2007).
123. Khvotchev, M., Dulubova, I., Sun, J., Dai, H., Rizo, J. and Südhof, T. C. Dual Modes of Munc18-1/SNARE Interactions Are Coupled by Functionally Critical Binding to syntaxin-1 N-terminus. *J. Neurosci.* *27*, 12147-12155 (2007).
124. Guan, R., Dai, H. and Rizo, J. Binding of the Munc13-1 MUN domain to membrane-anchored SNARE complexes. *Biochemistry* *47*, 1474-1481 (2008).
125. Yang, M., Li, B., Liu, C.-J., Tomchick, D. R., Machius, M., Rizo, J., Yu, H. and Luo, X. Insights into Mad2 regulation in the spindle checkpoint revealed by structure of the symmetric Mad2 dimer. *PLoS Biol.* *6*, 643-655 (e50) (2008).
126. Rizo, J. A dynamic t-SNARE complex. *Structure* *16*, 163-165 (2008).
127. Maximov, A., Lao, Y., Li, H., Chen, X., Rizo, J., Sorensen, J. B. and Südhof, T. C. Genetic analysis of synaptotagmin-7 function in synaptic vesicle exocytosis. *Proc. Natl. Acad. Sci. U.S.A.* *105*, 3986-3991 (2008).
128. Chen, X., Lu, J., Dulubova, I. and Rizo, J. NMR analysis of the closed conformation of syntaxin-1. *J. Biomol. NMR* *41*, 43-54 (2008).
129. Rizo, J.* and Rosenmund, C.* Synaptic vesicle fusion. *Nat. Struct. Mol. Biol.* *15*, 665-674 (2008).
130. Gerber, S. H., Rah, J.-C., Min, S.W., Liu, X., de Wit, H., Dulubova, I., Meyer, A. C., Rizo, J., Arancillo, M., Hammer, R. E., Verhage, M., Rosenmund, C. and Südhof, T. C. Conformational switch of Syntaxin-1 controls synaptic vesicle fusion, *Science* *321*, 1507-1510 (2008).
131. Xue, M., Ma, C., Craig, T. K., Rosenmund, C.* and Rizo, J.* The Janus-faced nature of the C₂B domain is fundamental for synaptotagmin-1 function. *Nat. Struct. Mol. Biol.* *15*, 1160-1168 (2008).
132. Rizo, J. “SNAREs”. In “Encyclopedia of Neuroscience” (L. Squire, Editor), Oxford: Academic Press, Vol. 9, 11-19 (2009).
133. Deák, F., Xu, Y., Chang, W.-P., Dulubova, I., Khvotchev, M., Liu, X., Südhof, T. C.* and Rizo, J.* Munc18-1 binding to the neuronal SNARE complex controls synaptic vesicle priming. *J. Cell Biol.* *184*, 751-764 (2009).
134. Pei, J., Ma, C., Rizo, J. and Grishin, N.V. Remote homology between Munc13 MUN domain and vesicle tethering complexes. *J. Mol. Biol.* *391*, 509-517 (2009).
135. Shin, O.H., Xu, J., Rizo, J. and Südhof, T. C. Differential but convergent functions of Ca²⁺ binding to synaptotagmin-1 C₂ domains mediate neurotransmitter release. *Proc. Natl. Acad. Sci. USA* *106*, 16469-16474 (2009).
136. Rizo, J. “Synaptic vesicle fusion machinery”. In “Molecular Biology of Assemblies and Machines” (R. Perham, L. Johnson, A. Steven, W. Baumeister), Garland Science (2016).

137. Shin, O.-H., Lu, J., Rhee, J.-S., Tomchick, D. R., Pang, Z. P., Wojcik, S. M., Camacho-Perez, M., Brose, N., Machius, M., Rizo J.*, Rosenmund, C.* and Sudhof, T. C.* Munc13 C₂B domain –an activity-dependent Ca²⁺-regulator of synaptic exocytosis. *Nat. Struct. Mol. Biol.* 17, 280-288 (2010).
138. Xue, M., Craig, T.K., Xu, J., Chao, H.-T., Rizo, J.* and Rosenmund, C.* Binding of the Complexin N terminus to the SNARE complex C terminus potentiates synaptic vesicle fusogenicity. *Nat. Struct. Mol. Biol.* 17, 568-575 (2010).
139. Xu, Y., Su, L. and Rizo, J. Binding of Munc18-1 to synaptobrevin and to the SNARE four-helix bundle. *Biochemistry* 49, 1568-1576 (2010).
140. Rizo, J. Synaptotagmin-SNARE coupling enlightened. *Nat. Struct. Mol. Biol.* 17, 260-262 (2010).
141. Carr, C. M. and Rizo, J. At the junction of SNARE and SM protein function. *Curr. Opin. Cell Biol.* 22, 488-495 (2010).
142. Sheard, L.B., Tan, X., Mao, H., Withers, J., Nissan, G.B., Hinds, T.R., Hsu, F.-F., Sharon, M., Browse, J., He, S.Y., Rizo, J., Howe, G.A. and Zheng, N. Jasmonate perception by inositol-phosphate-potentiated COI1-JAZ co-receptor. *Nature* 468, 400-405 (2010).
143. Xue, M., Craig, T.K., Shin, O.-H., Li, Y., Brautigam, C.A., Tomchick, D.R., Sudhof, T.C., Rosenmund, C.* and Rizo, J.* Structural and mutational analysis of functional differentiation between synaptotagmins-1 and 7. *PLoS One* 5, e12544 (2010).
144. Citri, A., Bhattacharyya, S., Ma, C., Morishita, W., Fang, S., Rizo, J. and Malenka, R.C. Calcium Binding to PICK1 is Essential for the Intracellular Retention of AMPA Receptors Underlying long-term depression. *J. Neurosci.* 30, 16437-16452 (2010).
145. Pan, Y.-R., Lou, Y.-C., Seven, A.B., Rizo, J. and Chen, C. NMR structure and calcium-binding properties of the tellurite resistance protein TerD from *Klebsiella pneumoniae*. *J. Mol. Biol.* 405, 1188-1201 (2011).
146. Kaeser, P.S., Deng, L., Wang, Y., Dulubova, I., Liu, X., Rizo J. and Sudhof, T.C. RIM proteins tether Ca²⁺-channels to presynaptic active zones via a direct PDZ-domain interaction. *Cell* 144, 282-295 (2011).
147. Ma, C., Li, W., Xu, Y. and Rizo, J. Munc13 mediates the transition from the closed syntaxin/Munc18 complex to the SNARE complex, *Nat. Struct. Mol. Biol.* 18, 542-549 (2011).
148. Xu, Yi, Seven, A.B., Su, L., Jiang, Q.-X. and Rizo, J. Membrane bridging and hemifusion by denatured Munc18. *PLoS One* 6, e22012 (2011).
149. Brewer, K.D., Li, W., Horne, E.B. and Rizo J. Reluctance to membrane binding enables accessibility of the synaptobrevin SNARE motif for SNARE complex formation. *Proc. Natl. Acad. Sci. USA* 108, 12723-12728 (2011).
150. Sudhof, T.C. and Rizo J. Synaptic vesicle exocytosis, in ‘The synapse’ (Ed. T. C. Sudhof), *Cold Spring Harb. Perspect. Biol.* 3, a005637 (2011).
151. Li, W., Ma, C., Guan, R., Xu, Y., Tomchick, D.R.* and Rizo, J.* The crystal structure of a Munc13 C-

- terminal module exhibits a remarkable similarity to vesicle tethering factors. *Structure* 19, 1443-1455 (2011).
152. Matos, M.F., Xu, Y., Dulubova, I., Otwinowski, Z., Richardson, J.M., Tomchick, D.R., Rizo, J. and Ho, A. Autoinhibition of Mint1 adaptor protein regulates amyloid precursor protein binding and processing. *Proc. Natl. Acad. Sci. USA*, 106, 3803-3807 (2012).
153. Rizo, J. and Sudhof, T.C. The membrane fusion enigma: SNAREs, Sec1/Munc18 proteins and their accomplices – guilty as charged? *Annu. Rev. Cell Dev. Biol.* 28, 279-308 (2012).
154. Rizo, J., Rosen, M.K. and Gardner, K.H. Enlightening molecular mechanisms through study of protein interactions. *J. Mol. Cell Biol.* 4, 270-283 (2012).
155. Rizo, J. Staging membrane fusion, *Science* 337, 1300-1301 (2012).
156. Ma, C. *, Su, L., Seven, A. B., Xu, Y. and Rizo, J.* Reconstitution of the vital functions of Munc18 and Munc13 in neurotransmitter release, *Science* 339, 421-425 (2013).
157. Zhou, A., Brewer, K.D., and Rizo, J. Analysis of SNARE complex/Synaptotagmin-1 Interactions by One-dimensional NMR Spectroscopy. *Biochemistry* 52, 3446-3456 (2013).
158. Xu, J., Brewer, K. D., Perez-Castillejos, R., and Rizo, J. Subtle interplay between synaptotagmin and complexin binding to the SNARE complex. *J. Mol. Biol.* 425, 3461-3475 (2013).
159. Seven, A. B., Brewer, K. D., Shi, L., Jiang, Q.-X., and Rizo, J. Prevalent mechanism of membrane bridging by synaptotagmin-1. *Proc. Natl. Acad. Sci. USA* 110, E3243-3252 (2013).
160. Rizo, J. and Xu, J. Synaptic vesicle fusion without SNARE transmembrane regions. *Dev. Cell* 27, 124-126 (2013).
161. Mukherjee, S., Zheng, H., Derebe, M. G., Callenberg, K. M., Partch, C. L., Rollins, D., Propher, D. C., Rizo, J., Grabe, M. , Jiang, Q. X., and Hooper, L. V. Antibacterial membrane attack by a pore-forming intestinal C-type lectin. *Nature* 505, 103-107 (2014).
162. Xu, J., Bacaj, T., Zhou, A., Tomchick, D. R., Sudhof, T. C., and Rizo, J. Structure and Ca-Binding Properties of the Tandem C Domains of E-Syt2. *Structure* 22, 269-280 (2014).
163. Wang, H., Sun, L., Su, L., Rizo, J., Liu, L., Wang, L.-F., Wang, F.-S., and Wang, X. Mixed Lineage Kinase Domain-like protein MLKL Causes Necrotic Membrane Disruption Upon Phosphorylation by RIP3, *Mol. Cell* 54, 133-146 (2014).
164. Trimbuch, T., Xu, J., Flaherty, D., Tomchick, D. R., Rizo, J.*, and Rosenmund, C.* Re-examining how complexin inhibits neurotransmitter release. *eLife* 3, e03291 (2014).
165. Su, L., Quade, B., Wang, H., Sun, L., Wang, X. and Rizo, J. A plug release mechanism for membrane permeation by MLKL. *Structure* 22, 1489-1500 (2014).
166. Gonzalez, P., da Costa, V. C. P., Hyde, K., Wu, Q., Annunziata, O., Rizo, J., Akkaraju G. and Green, K. N. Biomodal-hybrid heterocyclic amine targeting oxidative pathways and copper mis-regulation in

Alzheimer's disease. *Metallomics* 6, 2072-2082 (2014).

167. Rizo, J. and Xu, J. The synaptic vesicle release machinery. *Annu. Rev. Biophys.* 44, 339-367 (2015).

168. Brewer, K. D., Bacaj, T., Cavalli, A., Camilloni, C., Swarbrick, J. D., Liu, J., Zhou, A., Zhou, P., Barlow, N., Xu, J., Seven, A. B., Prinslow, E. A., Voleti, R., Haussinger, D., Bonvin, A. M., Tomchick, D. R., Vendruscolo, M., Graham, B., Sudhof, T. C., and Rizo, J. Dynamic binding mode of a Synaptotagmin-1-SNARE complex in solution, *Nat. Struct. Mol. Biol.* 22, 555-564 (2015).

169. Yang, X., Wang, S., Sheng, Y., Zhang, M., Zou, W., Wu, L., Kang, L., Rizo, J., Zhang, R., Xu, T., and Ma, C. Syntaxin opening by the MUN domain underlies the function of Munc13 in synaptic-vesicle priming, *Nat. Struct. Mol. Biol.* 22, 547-554 (2015).

170. Duan, L., Rai, G., Roggero, C., Zhang, Q. J., Wei, Q., Ma, S. H., Zhou, Y., Santoyo, J., Martinez, E. D., Xiao, G., Raj, G. V., Jadhav, A., Simeonov, A., Maloney, D. J., Rizo, J., Hsieh, J. T., and Liu, Z. P. KDM4/JMJD2 Histone Demethylase Inhibitors Block Prostate Tumor Growth by Suppressing the Expression of AR and BMYB-Regulated Genes. *Chem. Biol.* 22, 1185-1196 (2015).

171. Eichmann, C., Campioni, S., Kowal, J., Maslennikov, I., Gerez, J., Liu, X., Verasdonck, J., Nespovitaya, N., Choe, S., Meier, B. H., Picotti, P., Rizo, J., Stahlberg, H., and Riek, R.. Preparation and Characterization of Stable alpha-Synuclein Lipoprotein Particles. *J. Biol. Chem.* 291, 8516-8527 (2016).

172. Liu, X., Seven, A. B., Camacho, M., Esser, V., Xu, J., Trimbuch, T., Quade, B., Su, L., Ma, C., Rosenmund, C., Rizo, J. Functional synergy between the Munc13 C-terminal C1 and C2 domains. *elife* 5, e13696 (2016). PMID: PMC4927299.

173. Pan, Y. Z., Quade, B., Brewer, K. D., Szabo, M., Swarbrick, J. D., Graham, B. and Rizo, J. Sequence-specific assignment of methyl groups from the neuronal SNARE complex using lanthanide-induced pseudocontact shifts. *J. Biomol. NMR* 66, 281-293 (2016). PMID: PMC5216067

174. Wickner, W. and Rizo, J. A cascade of multiple proteins and lipids catalyzes membrane fusion. *Mol. Biol. Cell* 28, 707-711 (2017). PMID: PMC5349777.

175. Xu, J., Camacho, M., Xu, Y., Esser, V., Liu, X., Trimbuch, T., Pan, Y.-Z., Ma, C., Tomchick, D. R. *, Rosenmund, C.* and Rizo, J.* Mechanistic insights into neurotransmitter release and presynaptic plasticity from the crystal structure of Munc13-1 C₁C₂BMUN. *eLife* 6, e22567 (2017). PMID: PMC5344669.

176. Camacho, M., Basu, J., Trimbuch, T., Chang, S., Pulido-Lozano, C., Chang, S.-S., Dulubova, I., Abo-Rady, M., Rizo, J. and Rosenmund, C. Heterodimerization of Munc13-C₂A domain with RIM regulates synaptic vesicle docking and priming. *Nat. Commun.* 8, 15293 (2017). PMID: PMC5436228.

177. Sitarska, E., Xu, J., Park, S., Liu, X., Quade, B., Stepien, K., Sugita, K., Brautigam, C. A., Sugita, S. and Rizo, J. Autoinhibition of Munc18 modulates synaptobrevin binding and helps to enable Munc13-dependent regulation of membrane fusion. *eLife* 6, e24278 (2017). PMID: PMC5464772.

178. Park, S., Bin, N.-R., Yu, B., Wong, R., Sitarska, E., Sugita, K., Ma, K., Xu, J., Tien, C.-W., Algouneh, A., Turlova, E., Wang, S., Siriya, P., Shahid, W., Kalia, L., Feng, Z.-P., Monnier, P. P., Sun, H.-S., Zhen, M., Gao, S., Rizo, J., and Sugita, S. UNC-18 and tomosyn antagonistically act in parallel to control synaptic vesicle priming

downstream of UNC-13 in *C. elegans*. *J. Neurosci.* 37, 8797-8815 (2017). PMID: PMC5588468.

179. Prinslow, E. A., Brautigam, C. A., and Rizo, J. Reconciling isothermal titration calorimetry analyses of interactions between complexin and truncated SNARE complexes. *eLife* 6, e30286 (2017). PMID: PMC5589412.

180. Liu, X., Seven, A. B., Xu, J., Esser, V., Su, L., Ma, C., and Rizo, J. Simultaneous lipid and content mixing assays for *in vitro* reconstitution studies of synaptic vesicle exocytosis. *Nat. Protoc.* 12, 2014-2028 (2017). PMID: PMC6163043.

181. Voleti, R., Tomchick, D. R., Sudhof, T. C.*, and Rizo, J.* Exceptionally tight membrane-binding may explain the key role of the synaptotagmin-7 C₂A domain in asynchronous neurotransmitter release. *Proc. Natl. Acad. Sci. USA* 114, E8518-E8527 (2017). PMID: PMC5635908.

182. de Jong, A. P. H., Roggero, C. M., Ho, M. R., Wong, M. Y., Brautigam, C. A., Rizo, J. and Kaeser, P.S. RIM C₂B domains target presynaptic active zone functions to PIP₂-containing membranes. *Neuron* 98, 335-349 (2018). PMID: PMC5910229.

183. Rizo, J. Mechanism of neurotransmitter release coming into focus. *Protein Sci.* 27, 1364-1391 (2018). PMID: PMC6153415.

184. Zhu, Y. H., Hyun, J., Pan, Y.-Z. Hopper, J. E., Rizo, J. and Wu, J. Q. Roles of the fission yeast UNC-13/Munc13 protein Ync13 in late stages of cytokinesis. *Mol. Biol. Cell* 29, 2259-2279 (2018). PMID: PMC6249806.

185. Prinslow, E. A., Stepien, K. P., Pan, Y.-Z., Xu, J. and Rizo, J. Multiple factors maintain assembled trans-SNARE complexes in the presence of NSF and α SNAP. *eLife* 8, e38880 (2019). PMID: PMC6353594.

186. Quade, B., Camacho, M., Zhao, X., Orlando, M., Trimbuch, T., Xu, J., Li, W., Nicastro, D., Rosenmund, C.* and Rizo, J.* Membrane bridging by Munc13-1 is crucial for neurotransmitter release. *eLife* 8, e42806 (2019). PMID: PMC6407922.

187. Brose, N., Brunger, A., Cafiso, D., Chapman, E. R., Diao, J., Hughson, F. M., Jackson, M. B., Jahn, R., Lindau, M., Ma, C., Rizo, J., Shin, Y. K., Sollner, T. H., Tamm, L., Yoon, T. Y., and Zhang, Y. Synaptic vesicle fusion: today and beyond, *Nat. Struct. Mol. Biol.* 26, 663-668 (2019).

188. Stepien, K. P., Prinslow, E. A., and Rizo, J. Munc18-1 is crucial to overcome the inhibition of synaptic vesicle fusion by α SNAP, *Nat. Commun.* 10, 4326 (2019). PMID: PMC6757032.

189. Duan, L., Chen, Z., Lu, J., Liang, Y., Wang, M., Roggero, C. M., Zhang, Q. J., Gao, J., Fang, Y., Cao, J., Lu, J., Zhao, H., Dang, A., Pong, R. C., Hernandez, E., Chang, C. M., Hoang, D. T., Ahn, J. M., Xiao, G., Wang, R. T., Yu, K. J., Kapur, P., Rizo, J., Hsieh, J. T., Luo, J., and Liu, Z. P. Histone lysine demethylase KDM4B regulates the alternative splicing of the androgen receptor in response to androgen deprivation, *Nucleic Acids Res.* 47, 11623-11636 (2019). PMID: PMC7145715.

190. Sorkin, R., Marchetti, M., Logtenberg, E., Piontek, M. C., Kerklingh, E., Brand, G., Voleti, R., Rizo, J., Roos, W. H., Groffen, A. J., and Wuite, G. J. L. Synaptotagmin-1 and Doc2b Exhibit Distinct Membrane-Remodeling Mechanisms, *Biophys. J.* 118, 643-656 (2020). PMID: PMC7002981.

191. Pan, Y. Z., Liu, X., and Rizo, J. Analysis of asymmetry in lipid and content mixing assays with reconstituted proteoliposomes containing the neuronal SNAREs, *Sci. Rep.* *10*, 2907 (2020). PMID: PMC7031292.
192. Qin, J., Liu, Q., Liu, Z., Pan, Y. Z., Sifuentes-Dominguez, L., Stepien, K. P., Wang, Y., Tu, Y., Tan, S., Wang, Y., Sun, Q., Mo, X., Rizo, J., Burstein, E., and Jia, D. Structural and mechanistic insights into secretagogin-mediated exocytosis, *Proc. Natl. Acad. Sci. U. S. A.* *117*, 6559-6570 (2020). PMID: PMC7104245.
193. Magdziarek, M., Bolembach, A. A., Stepien, K. P., Quade, B., Liu, X., and Rizo, J. Re-examining how Munc13-1 facilitates opening of syntaxin-1, *Protein. Sci.* *29*, 1440-1458 (2020). PMID: PMC7255523.
194. Jiao, L., Shubbar, M., Yang, X., Zhang, Q., Chen, S., Wu, Q., Chen, Z., Rizo, J., and Liu, X. A partially disordered region connects gene repression and activation functions of EZH2, *Proc. Natl. Acad. Sci. U. S. A.* *117*, 16992-17002 (2020). PMID: PMC7382310.
195. Voleti, R., Jaczynska, K., and Rizo, J. Ca²⁺-dependent release of Synaptotagmin-1 from the SNARE complex on phosphatidylinositol 4,5-bisphosphate-containing membranes, *eLife* *9*, e57154 (2020). PMID: PMC7498268.
196. Tien, C.-W., Yu, B., Huang, M., Stepien, K. P., Sugita, K., Xie, X., Han, L., Monnier, P. P., Zhen, M., Rizo, J., Gao, S., and Sugita, S. Open syntaxin overcomes exocytosis defects of diverse mutants in *C. elegans*, *Nat. Commun.* *11*, 5516 (2020). PMID: PMC7606450.
197. Stepien, K. P. and Rizo, J. Synaptotagmin-1-, Munc18-1-, and Munc13-1-dependent liposome fusion with a few neuronal SNAREs. *Proc. Natl. Acad. Sci. U. S. A.* *118*, e2019314118 (2021). PMID: PMC7848701.
198. Rizo, J., Jaczynska, K. and Stepien, K. P. Membrane fusion: molecular machinery turns full cycle, *eLife* *10*, e70298 (2021).
199. Voleti, R., Bali, S., Guerrero, J., Smothers, J., Springhower, C., Acosta, G., Brewer, K., Albericio, F. and Rizo, J. Evaluation of the tert-butyl group as a probe for NMR studies of macromolecular complexes. *J. Biomol. NMR* *75*, 347-63 (2021).
200. Rizo, J. Molecular Mechanisms Underlying Neurotransmitter Release. *Annu. Rev. Biophys.*, in press.
201. Humphreys, I. R., Pei, J., Baek M., Krishnakumar, A., Anishchenko, I., Ovchinnikov, S., Zhang, J., Ness, T. J., Banjade, S., Bagde, S. R., Stancheva, V. G., Li, X. H., Liu, K., Zheng, Z., Barrero, D. J., Roy, U., Kuper, J., Fernández, I. S., Szakal, B., Branzei, D., Rizo, J., Kisker, C., Greene, E. C., Biggins, S., Keeney, S., Miller, E. A., Fromme, J. C., Hendrickson, T. L., Cong, Q. and Baker, D. Computed structures of core eukaryotic protein complexes. *Science*, in press.
202. Camacho, M., Quade, B., Trimbuch, T., Xu, J., Sari, L., Rizo, J.* and Rosenmund, C.* Control of neurotransmitter release by two distinct membrane-binding faces of the Munc13-1 C1-C2B region. *eLife*, in press.

*Co-corresponding authors