



UNIMORE
UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA

Serena Carra, Ph.D.

Università degli Studi di Modena e Reggio Emilia
Dipartimento di Scienze Biomediche, Metaboliche e
Neuroscienze

via Giuseppe Campi, 287, 41125 Modena, Italia

tel: +39 0592055265

fax: +39 0592055363

e-mail: serena.carra@unimore.it

CURRICULUM VITAE

Surname: **Carra**
Given name: **Serena**
Sex: female
Date of Birth: October 5, 1973
Place of Birth: Carpi (Modena), Italy
Nationality: Italian
Language: English (fluent), French (fluent), Italian (mother tongue)
ORCID ID: 0000-0003-0939-0140
Research Gate: https://www.researchgate.net/profile/Serena_Carra
URL for web site: www.carralab.unimore.it

Qualifications, Research Experience & Training

Nov. 2015	Associate Professor of Molecular Biology , University of Modena and Reggio Emilia
July 2011-Oct. 2015	Assistant Professor, program Rita Levi Montalcini University of Modena and Reggio Emilia
June-2009-July 2011	Assistant Professor , University Medical Center Groningen
June-2007-May 2009	Post-doctoral fellow , University Medical Center Groningen
Feb.2004-April 2007	Post-doctoral fellow , under the supervision of Prof. Jacques Landry, Centre de recherche L'Hôtel-Dieu de Québec, Laval University, Québec, Canada.
2004	Ph.D. in Neurobiology , University of Catania, Italy.
Oct. 1999	Specialization in Pharmaceutical Research Methods , University of Modena.
Oct. 1998	M.Sc. in Chemistry and Pharmaceutical Sciences , University of Modena, Italy, graduated Oct., 14 th 1998, honors with distinctions.

Peer-reviewed Publication List

1. Amzallag E, Danino YM, Secco V, **Carra S**, Hornstein E. The E3 ligase MKRN2 prevents DRiP accumulation in stress granules and maintains granulostasis. EMBO Rep. 2026 Jun 15. doi: 10.1038/s44319-026-00832-2.

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2. Crotti S, Secco V, Morini M, Carra S. Small heat shock proteins and biomolecular condensates. *Cell Mol Life Sci*. 2026 May 1;83(1):260. doi: 10.1007/s00018-026-06216-y.
3. Fioretti PV, Barbieri A, Migazzi A, Bressan D, Grassano M, Donini L, Rocuzzo M, Torrieri MC, Conci F, Ferracci E, Invernizzi S, Bowden KM, Bacchetti F, Cappelli S, Peroni D, Belli R, Pancher M, Mugoni V, Scarduelli G, Ganesello M, Pasetto L, Canarutto G, Carra S, Soldano A, Bisio A, Robbiati S, Valentini C, Nardella C, Piazza S, D'Agostino VG, Quattrone A, Sleiman S, Whitfield JR, Soucek L, Vignoli B, Viero G, Tiberi L, Zippo A, Demichelis F, Bonetto V, Milanese M, Buratti E, Verde F, Ticozzi N, Calvo A, Ratti A, Shaw PJ, Terenzio M, Chiacchiera F, Pennuto M, Basso M. MYC-driven gliosis impairs neuron-glia communication in amyotrophic lateral sclerosis. *Brain*. 2025 Sep 26;awaf360. doi: 10.1093/brain/awaf360.
4. Montepietra D, Bjarnason S, Óskarsson KR, Cecconi C, Carra S, Heidarsson PO, Brancolini G. Pathogenic Mechanism of the K141E Mutation in HSPB8: Insights from smFRET and Simulations. *Cell Stress Chaperones*. 2025 May 29:100086. doi: 10.1016/j.cstres.2025.100086.
5. Verde EM, Secco V, Ghezzi A, Mandrioli J, Carra S. Molecular Mechanisms of Protein Aggregation in ALS-FTD: Focus on TDP-43 and Cellular Protective Responses. *Cells*. 2025 May 8;14(10):680. doi: 10.3390/cells14100680.
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7. Ghezzi A, Gianferrari G, Baldassarri E, Zucchi E, Martinelli I, Vacchiano V, Bonan L, Zinno L, Nuredini A, Canali E, Gizzi M, Terlizzi E, Medici D, Sette E, Currò Dossi M, Morresi S, Santangelo M, Patuelli A, Longoni M, De Massis P, Ferro S, Fini N, Simonini C, Carra S, Zamboni G, Mandrioli J. Phenotypical Characterization of C9ALS Patients from the Emilia Romagna Registry of ALS: A Retrospective Case-Control Study. *Genes (Basel)*. 2025 Mar 4;16(3):309. doi: 10.3390/genes16030309.
8. Verde EM, Antoniani F, Mediani L, Secco V, Crotti S, Ferrara MC, Vinet J, Sergeeva A, Yan X, Hoege C, Stuardi C, Paron F, Kao T-T, Shrivastava R, Polanowska J, Bailly A, Rosa A, Aronica E, Goswami A, Shneider N, Hyman AA, Buratti E, Xirodimas D, Franzmann TM, Alberti S, Carra S. SUMO2/3 conjugation of TDP-43 protects against aggregation. *Sci Adv*. 2025 Feb 21;11(8):eadq2475. doi: 10.1126/sciadv.adq2475. Epub 2025 Feb 21
9. Akaree N, Secco V, Levy-Adam F, Younis A, Carra S*, Shalgi R*. Regulation of physiological and pathological condensates by molecular chaperones. *FEBS J*. 2025 Jan 5. doi: 10.1111/febs.17390.
10. Ben-Zvi A, Carra S, Yeger-Lotem E. Editorial: Celebrating women's contribution to protein folding, misfolding, and degradation in honor of Susan Lindquist (1949-2016). *Front Mol Biosci*. 2024 Oct 14;11:1504059. doi: 10.3389/fmolb.2024.1504059. eCollection 2024.
11. Gianferrari G, Cuoghi Costantini R, Crippa V, Carra S, Bonetto V, Pansarasa O, Cereda C, Zucchi E, Martinelli I, Simonini C, Vicini R, ..., Co-ALS Investigators Group, D'Amico R, Poletti A, Mandrioli J. Colchicine treatment in amyotrophic lateral sclerosis: safety, biological and clinical effects in a randomized clinical trial. *Brain Commun*. 2024 Sep 5;6(5):fcae304. doi: 10.1093/braincomms/fcae304. eCollection 2024.

12. Secco V, Tiago T, Straats R, Preet S, Chia S, Vendruscolo M, **Carra S**. HSPB6: A lipid-dependent molecular chaperone inhibits α -synuclein aggregation. *iScience* 2024, Aug 3;27(9):110657. doi: 10.1016/j.isci.2024.110657.
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14. Moritz MNO, Dores-Silva PR, Coto ALS, Selistre-de-Araújo HS, Leitão A, Cauvi DM, De Maio A, **Carra S**, Borges JC. Human HSP70-escort protein 1 (hHep1) interacts with negatively charged lipid bilayers and cell membranes. *Cell Stress Chaperones*. 2023 Nov 25. doi: 10.1007/s12192-023-01394-1.
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17. Choudhary D, Mediani L, Avellaneda MJ, Bjarnason S, Alberti S, Boczek EE, Heidarsson PO, Mossa A*, **Carra S***, Tans SJ*, Cecconi C*. Human Small Heat Shock Protein B8 Inhibits Protein Aggregation without Affecting the Native Folding Process. *J Am Chem Soc*. 2023 Jul 19;145(28):15188-15196. doi: 10.1021/jacs.3c02022.
18. Ecroyd H, Bartelt-Kirbach B, Ben-Zvi A, Bonavita R, Bushman Y, Casarotto E, Cecconi C, Chun Yu Lau W, Hibshman JD, Joosten J, Kimonis V, Klevit R, Liberek K, McMenimen KA, Miwa T, Mogk A, Montepietra D, Peters C, Rocchetti MT, Saman D, Sisto A, Secco V, Strauch A, Taguchi H, Tanguay M, Tedesco B, Toth ME, Wang Z, Benesch JLP, **Carra S**. The beauty and complexity of the small heat shock proteins: a report on the proceedings of the fourth workshop on small heat shock proteins. *Cell Stress Chaperones*. 2023 Jul 18. doi: 10.1007/s12192-023-01360-x.
19. Alberti S, **Carra S**. A shared fate for nuclear and cytosolic inclusions. *Nat Cell Biol*. 2023 May;25(5):629-630.
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21. Gönczi M, Teixeira JMC, Barrera-Vilarmau S, Mediani L, Antoniani F, Nagy T.M., Fehér K, Ráduly Z, Ambrus V, Tózsér J, Barta E, Kövér KE, Csernoch L, **Carra S***, Fuxreiter M*. Alternatively spliced exon regulates context-dependent MEF2D higher-order assembly during myogenesis. *Nat Commun*. 2023 Mar 10;14(1):1329. doi: 10.1038/s41467-023-37017-7.
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23. Hibshman JD, **Carra S**, Goldstein B. Tardigrade small heat shock proteins can limit desiccation-induced protein aggregation. *Commun Biol*. 2023 Jan 30;6(1):121. doi: 10.1038/s42003-023-04512-y.

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29. Boczek EE, Fürsch J, Niedermeier ML, Jawerth L, Jähnel M, Ruer-Gruß M, Kammer KM, Heid P, Mediani L, Wang J, Yan X, Pozniakovski A, Poser I, Mateju D, Hubatsch L, **Carra S**, Alberti S, Hyman AA, Stengel F. HspB8 prevents aberrant phase transitions of FUS by chaperoning its folded RNA binding domain. *Elife*. 2021 Sep 6;10:e69377. doi: 10.7554/eLife.69377.
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31. Shemesh N, Jubran J, Dror S, Simonovsky E, Basha O, Argov C, Hekselman I, Abu-Qarn M, Vinogradov E, Mauer O, Tiago T, **Carra S**, Ben-Zvi A and Yeger-Lotem E. The landscape of molecular chaperones across human tissues reveals a layered architecture of core-variable chaperones. *Nat Commun*. 2021 Apr 12;12(1):2180. doi: 10.1038/s41467-021-22369-9.
32. Mediani L, Antoniani F, Galli V, Vinet J, Carrà AD, Bigi I, Tripathy V, Tiago T, Cimino M, Leo G, Amen T, Kaganovich D, Cereda C, Pansarasa O, Mandrioli J, Tripathi T, Troost D, Aronica E, Buchner J, Goswami A, Sternecker J, Alberti S, **Carra S**. Hsp90-mediated regulation of DYRK3 couples stress granule disassembly and growth via mTORC1 signaling. *EMBO Rep*. 2021 May 5;22(5):e51740. doi: 10.15252/embr.202051740.
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35. Mediani L, Galli V, Carrà AD, Bigi I, Vinet J, Ganassi M, Antoniani F, Tiago T, Cimino M, Mateju D, Cereda C, Pansarasa O, Alberti S, Mandrioli J, **Carra S**. BAG3 and BAG6 differentially affect the dynamics of stress granules by targeting distinct subsets of defective polypeptides released from ribosomes. Cell Stress Chaperones. 2020 Jul 21. doi: 10.1007/s12192-020-01141-w.
36. Adriaenssens E, Tedesco B, Mediani L, Asselbergh B, Crippa V, Antoniani F, **Carra S***, Poletti A*, Timmerman V*. BAG3 Pro209 mutants associated with myopathy and neuropathy relocate chaperones of the CASA-complex to aggresomes. Sci Rep. 2020 May 29;10(1):8755. doi: 10.1038/s41598-020-65664-z.
37. Choudhary D, Mediani L, **Carra S**, Cecconi C. Studying heat shock proteins through single-molecule mechanical manipulation. Cell Stress Chaperones. 2020 Apr 6. doi: 10.1007/s12192-020-01096-y.
38. Alberti S, **Carra S**. Nucleolus: A Liquid Droplet Compartment for Misbehaving Proteins. Curr Biol. 2019 Oct 7;29(19):R930-R932. doi: 10.1016/j.cub.2019.08.013.
39. Mediani L, Guillén-Boixet J, Alberti S, **Carra S**. Nucleoli and Promyelocytic Leukemia Protein (PML) bodies are phase separated nuclear protein quality control compartments for misfolded proteins. Molecular & Cellular Oncology, <https://doi.org/10.1080/23723556.2019.1652519>
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42. Mediani L, Guillén-Boixet J, Vinet J, Franzmann TM, Bigi I, Mateju D, Carrà AD, Morelli FF, Tiago T, Poser I, Alberti S, **Carra S**. Defective ribosomal products challenge nuclear function by impairing nuclear condensate dynamics and immobilizing ubiquitin. EMBO J. 2019 Jul 4:e101341. doi: 10.15252/embj.2018101341.
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- proteins with important implications for life. *Cell Stress Chaperones*. 2019 Mar;24(2):295-308. doi: 10.1007/s12192-019-00979-z.
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84. **Carra S** and Kampinga HH. Cytoprotective function of small stress proteins in conformational disorders. In Review Book: Small Stress Proteins and Human Diseases. Chapter 1.1, 2010, Nova Publishers.
85. Fuchs M, Poirier DJ, Seguin S, Lambert H, **Carra S**, Charrette SJ, Landry J. Identification of the key structural motifs involved in HspB8/HspB6-Bag3 interaction. *Biochem J.* 2009. 425(1):245-55.
86. **Carra S**, The stress-inducible HspB8-Bag3 complex induces the eIF2alpha kinase pathway: Implications for protein quality control and viral factory degradation? *Autophagy.* 2009. 5(3):428-9.
87. **Carra S**, Brunsting JF, Lambert H, Landry J, Kampinga HH. HspB8 participates in protein quality control by a non chaperone-like mechanism that requires eIF2alpha phosphorylation. *J Biol Chem.* 2008. 284(9): 5523-32.
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89. **Carra S**, Seguin SJ and Landry J. HspB8 and Bag3: a new chaperone complex targeting misfolded proteins to macroautophagy. *Autophagy.* 2008. 4(2):237-9.
90. **Carra S**, Seguin SJ, Lambert H and Landry J. HspB8 chaperone activity toward poly(Q)-containing proteins depends on its association with Bag3, a stimulator of macroautophagy. *J Biol Chem.* 2008. 283(3):1437-44.
91. **Carra S** & Landry J. Role of HspB1 and HspB8 in hereditary peripheral neuropathies: beyond the chaperone function. In Review Book: Heat shock proteins and the brain: implications for neurodegenerative diseases and neuroprotection; Chapter 7, 139-155, 2008, Editors: Asea AAA, Brown IR.
92. **Carra S** & Landry J. Small Heat Shock Proteins in Neurodegenerative Diseases. In Review Book: Heat Shock Proteins in Biology and Medicine; Section VI, Chapter 18, 331-352, 2006, Editors: Jurgen Radons and Gabriele Multhoff.
93. **Carra S**, Sivilotti M, Chavez-Zobel AT, Lambert H, Landry J. HspB8, a small heat shock protein mutated in human neuromuscular disorders, has in vivo chaperone activity in cultured cells. *Hum. Mol. Genetics*, 2005. 14(12):1659-69.
94. **Carra S**, Vinet J, Blom JM, Brunello N, Barden N, Tascetta F. Chronic treatment with desipramine and fluoxetine modulate BDNF, CaMKKalpha and CaMKKbeta mRNA levels

- in the hippocampus of transgenic mice expressing antisense RNA against the glucocorticoid receptor. *Neuropharmacology*. 2004. 47(7):1062-9.
95. Vinet J, **Carra S**, Blom JM, Harvey M, Brunello N, Barden N, Tascedda F. Cloning of mouse Ca^{2+} /calmodulin-dependent protein kinase kinase beta (CaMKK β) and characterization of CaMKK β and CaMKK α distribution in the adult mouse brain. *Mol. Brain Research*. 2003. 111:216-21.
 96. Blom JM, Tascedda F, **Carra S**, Ferraguti C, Barden N, Brunello N. Altered regulation expression of CREB by chronic antidepressant administration in the brain of transgenic mice with impaired glucocorticoid receptor function. *Neuropsychopharmacology*, 2002. 26(5):605-14.
 97. Tascedda F, Blom JM, **Carra S**, Brunello N, Racagni G, Riva MA. Modulation of glutamate receptors in response to the novel antipsychotic olanzapine in rats. *Biol. Psychiatry*, 2001. 50(2):117-22.

Awards

Alberto Pio III Award, ROTARY INTERNATIONAL, District 2072° - Italia (8th June 2023)

The Giovanni Armenise Harvard Foundation and AirAlzh, mid-career on neurodegenerative diseases for 2022

Ferruccio Ritossa Early Career Award for 2017, The 8th international congress on stress proteins in biology and medicine, August 13-17, 2017, Turku, Finland.

Poster Prize (2017) Phase Transitions in Biology and Disease, 2-3 May 2017, Leuven, Belgium

Poster Prize (2014) from AriSLA foundation.

Youth Travel Fund (2009) from EMBO meeting/Federation of European Biochemistry society.

Young Investigator Award (2008) National Ataxia Foundation, USA.

Best postdoctoral poster presentation Award (2006) Annual Meeting of the Faculty of Medicine, Laval University, Québec, Canada.

Best Ph.D. oral presentation Award (2004) Hôtel Dieu de Québec, Laval University, Québec, Canada.

Travelship Award (2003) from the Italian Society of Pharmacology.

Poster Award (2000) XXIInd Collegium Internationale Neuro-Psychopharmacologicum, Belgio, Bruxelles.

Ph.D. funding (2000-2004) Ph.D. salary financed by European Commission-Structural Funds and Ministero dell'Università e della Ricerca Scientifica e Tecnologica.

Travelship Award (2000) from the Italian Society of Pharmacology.

Poster Award (1999) European Regional Congress of the World Federation of Societies of Biological Psychiatry, Florence, Italy.

Speaker at national and international meetings and seminars/webinars

1. HSPB3: an active player involved in the differentiation of motor neurons and skeletal muscle cells. *Cell Death and Disease Meeting*, Villa Vigoni, German-Italian Centre for the European Dialogue, 17 – 19 June 2026
2. Protein quality control of stress granules: implications in Amyotrophic Lateral Sclerosis. 23 April 2026, invited seminar for the CriN series "The Many Faces of Stress: from Molecules to Mental disorder", La Sapienza (Rome, Italy)

3. Protein quality control of stress granules: implications in Amyotrophic Lateral Sclerosis. 12 January 2026, invited seminar, EPFL (Switzerland)
4. Protein quality control of stress granules. 19 December 2025, invited seminar, University of Milan, Italy
5. TDP-43 SUMO2/3-ylation prevents its irreversible aggregation. First European Workshop on TDP-43 Proteinopathies, Collège de France, Paris, France, December 1–2, 2025
6. Protein quality control of stress granules: implications in Amyotrophic Lateral Sclerosis. 26 September 2025, invited seminar, HSR Research, San Raffaele, Milan, Italy
7. Protein quality control of condensates: implications for neurodegeneration, “2025 Susan Lindquist School on Proteostasis (EMBO-FEBS)”, Swedish-Finnish Cultural Center Hanaholmen, September 16-19, 2025
8. PIAS-4 mediated SUMO2/3-ylation of TDP-43 protects against aggregation, “2nd biennial conference on TDP-43 function and dysfunction in disease”, Trieste, Italy, September 09-11 2025
9. PIAS4 conjugates SUMO2/3 chains to TDP-43 to prevent stress-induced aggregation, “GRC conference series on Stress Proteins in Growth, Development and Disease”, Sunday River, USA, 6-11 July 2025
10. Protein quality control and biomolecular condensates: implications for cellular stress response and neurodegenerative diseases. “Physical Principles Shaping Biomolecular Condensates”, Kavli Institute for Theoretical Physics (KITP), USCB, USA, 11 June 2025.
11. SUMO2/3 conjugation of TDP-43 protects against aggregation. EMBO Workshop “Protein quality control: From molecular mechanisms to aging and disease”, 18-23 May 2025, Hersonissos, Greece. Organizers: F.U. Hartl, S. Carra
12. Protein quality control of stress granules: implications in Amyotrophic Lateral Sclerosis, 19 February 2025, invited seminar, SoBS Research Seminar Series, Highfield Campus, University of Southampton, UK
13. SUMO2/3 conjugation of TDP-43 protects against aggregation. “Protein misfolding and aggregation in disease.” 12 - 14 February, Mantova, Italy. Organizers: F. Chiti, M. Nuvolone, S. Ricagno
14. SUMO2/3 conjugation of TDP-43 protects against aggregation. “RNA-binding Proteins in ALS: translating basic mechanisms into novel therapeutics”, Villa Vigoni, German-Italian Centre for the European Dialogue, 14 - 16 October 2024
15. Protein quality control of stress granules: implications in Amyotrophic Lateral Sclerosis. BML seminar series, ETH Zurich, 05 September 2024.
16. SUMO2/3 conjugation of TDP-43 protects against aggregation. EMBO, EMBL Symposium: Cellular mechanisms driven by phase separation. 14-17 May 2024, Heidelberg, Germany.
17. PML nuclear bodies and SUMOylation: new players in ALS-FTD? Third European C9orf72 workshop Feb 22-23 2024, Munich, Germany.
18. Small HSPs as molecular chaperones at the interface between proteins and lipids. SIBBM 2023, Frontiers in Molecular Biology. Beyond Genomics: Next Generation Molecular Biology. Bari, Italy, 26-28 June 2023
19. Small HSPs as molecular chaperones at the interface between proteins and lipids. EMBO Workshop, Protein quality control: From molecular mechanisms to therapeutic intervention, 21 – 26 May 2023, Srebreno-Dubrovnik, Croatia.

20. Condensate Colloquium Series: virtual, biweekly series organized by Rohit Pappu, Simon Alberti, Amy Gladfelter and Julia Mahamid. Losing the GRIP on DRiP? Implications for condensate dynamics upon stress and in human disease. 7 February 2023.
21. MLOpathy, Membrane-less organelle pathology in ALS: identification of causes and rescuing factors. AriSLA Meeting 2022, Research, development and innovation in ALS. 3-4 November 2022, The Westin Palace, Milan, Italy.
22. Losing the GRIP on DRiP? Implication for Amyotrophic Lateral Sclerosis and Frontotemporal degeneration. Amyotrophic lateral sclerosis – from mechanisms to novel therapeutics. Organizers: Tanya Levin and Prof. Dr. Jared Sternecker. Casa Santo nome di Gesù, October 27-28 2022, Florence, Italy.
23. Protein quality control in biomolecular condensates: where protein disorder and chaperones meet to keep proteostasis. Implications for Amyotrophic Lateral Sclerosis and Frontotemporal degeneration. Jacques Monod Conference "Protein phase transitions in ageing and age-related diseases: from atomic resolution to cellular solutions" - October 17-21, 2022, CNRS, Station Biologique de Roscoff, France.
24. Small heat shock proteins act on the α -synuclein lipid-induced aggregation process through multiple mechanisms. Invited speaker. Physics of Biomolecules: Structure, Dynamics and Function, Sept. 5-8, Bressanone, Italy.
25. ALS and FTD: Where RNA metabolism meets protein quality control. Invited seminar. Neurobiology, Experimental Neurology, VIB-KU Leuven, Center for Brain & Disease Research, Leuven, Belgium, 06 May 2022.
26. Misfolding proteico e protein quality control: implicazioni per la SLA. Workshop ALS 2022. Camera di Commercio di Modena, 08 April 2022.
27. Phase transitions and biomedical applications. Anhydrobiosis – cheating death and telling the tale, 21 – 23 March 2022.
28. Condensate targeting as a strategy to prevent irreversible protein aggregation: implications for Amyotrophic Lateral Sclerosis and Frontotemporal degeneration. Webinar for PARIS-DIDEROT CNRS, 9 March 2022.
29. Condensate targeting as a strategy to prevent irreversible protein aggregation: implications for ALS and FTD. I PhasAGE International Conference "Phase Transitions in Aging and Age-related Diseases", 12-14 October 2021.
30. Condensate targeting as a strategy to prevent irreversible protein aggregation: implications for ALS and FTD. FASEB Conference on Protein Aggregation: Function, Dysfunction, and Disease, June 23-25 2021.
31. Hsp90-mediated regulation of DYRK3 couples stress granule disassembly to stress adaptation and cell growth: implications for Amyotrophic Lateral Sclerosis. Targeted Protein Degradation: From Small Molecules to Complex Organelles". Keystone eSymposia, 7-8 June 2021.
32. Hsp90-mediated regulation of DYRK3 couples stress granule disassembly and growth via mTORC1 signaling: implications for ALS/FTD. Rapid Fire Presentation, Virtual ENCALS Meeting 12-14 May 2021.
33. Protein quality control of biomolecular condensates: implications for ALS and FTD. AriSLA Webinar 9 April 2021.
34. Protein quality control of biomolecular condensates: implications for Amyotrophic Lateral Sclerosis and Frontotemporal degeneration. Virtual 31st International Symposium on Amyotrophic Lateral Sclerosis / Motor Neuron Disease, Dec 9 - 11 2020.

35. Protein quality control of membraneless organelles: implications for the stress response and age-related diseases, Cellular and protein homeostasis webinars, Jun 17, 2020 09:30 AM Zurich - Organisers: P. De Los Rios, P. Goloubinoff, A. Barducci and N. Nillekoda.
36. Quality control of membraneless organelles, Webinars in: "Molecular and cellular mechanism of DISEASES", 15 May 2020, University La Sapienza, Rome, Italy.
37. Aberrant phase transitions and neurodegenerative diseases. 20 February 2020, seminar, European Research Institute for the Biology of Ageing, ERIBA, Groningen, The Netherlands.
38. Implication of derailed phase separation and molecular chaperones in the stress response and in age-related neurodegenerative diseases, Physics of biomolecules: structure, dynamics and functions, 5 - 8 February 2020, Bressanone, Italy
39. Deregulated phase transitions as driver of cellular aging and disease. 14 January 2020, seminar, University of Lausanne, Switzerland.
40. Aberrant phase transitions and neurodegenerative diseases. 5 December 2019, seminar, CRMB, Montpellier, France.
41. Deregulated phase transitions as driver of cellular aging and disease. 12 September 2019, ICGEB - International Centre for Genetic Engineering and Biotechnology, Trieste, Italy.
42. Protein quality control of membraneless organelles. 06 September 2019, Department of Biomedical Sciences, University of Padova, Italy.
43. Symposium chair and speaker, Symposium title: Chaperone networks and signaling pathways in disease and aging, *23rd ESN Biennial Meeting - 7th Conference on Molecular Mechanisms of Regulation in the Nervous System*, September 1-4, 2019, Milan, Italy.
44. Protein Quality Control of Membraneless Organelles: Implications in ALS and Neurodegenerative Diseases. Gordon Research Conference, Amyotrophic Lateral Sclerosis (ALS) and Related Motor Neuron Diseases, Mechanisms of Motor Neuron Degeneration and Therapeutic Intervention, Mount Snow, US, July 21 - 26, 2019.
45. Newly synthesized aberrant proteins impair nuclear condensate dynamics: implications for nuclear function and cell viability. "*Cell Death and Disease*", Italian-German Center For European Excellence, June 26-29, 2019, Villa Vigoni, Como, Italy
46. Defective ribosomal products challenge nuclear function by impairing nuclear condensate dynamics. *Protein quality control: From mechanisms to disease*, 28 April - 3 May 2019, Costa de la Calma, Mallorca, Spain.
47. Implication of derailed phase separation and molecular chaperones in the stress response and in age-related neurodegenerative diseases. CABIMER Andalusian Center for Molecular Biology and Regenerative Medicine, University of Seville, 01 March 2019, Seville, Spain.
48. Implication of derailed phase separation and molecular chaperones in the stress response and in age-related neurodegenerative diseases. Seminar for PhD School in Genetic and Molecular Biology, University "La Sapienza" Rome, 14 December 2018, Rome Italy.
49. Implication of deregulated proteostasis and phase separation in age-related neurodegenerative diseases. Seminar for PhD School in Biomedical Science and Biotechnology, University of Udine, 6 December 2018, Udine Italy.

50. Small Heat shock proteins and their implication in age-related neurodegenerative diseases. *First Autumn School on Proteostasis*, 12-16 November 2018, Medils, Split, Croatia.
51. Implication of derailed phase separation and molecular chaperones in the stress response and in age-related neurodegenerative diseases. CIBIO, University of Trento, 16 October 2018, Trento, Italy.
52. VCP AND AUTOPHAGOLYSOSOMAL PATHWAY: GUARDIANS OF PROTEOSTASIS AND STRESS GRANULE DYNAMICS. UNRAVELING THEIR IMPLICATIONS IN ALS. *Focus SLA*, Palazzo della Meridiana, 27-29 September, Genova, Italy.
53. HSPB2 and HSPB3 affect lamin organization with consequences on nuclear morphology and function: implications in neuromuscular diseases. *3rd CSSI Workshop on Small Heat Shock Proteins*, 26-29 August 2018, Quebec, Canada.
54. HSPB2 forms nuclear compartments that affect lamin A and compromise nuclear function: implications in neuromuscular diseases. *SIBBM, Italian Society of Biophysics and Molecular Biology, Frontiers in Molecular Biology*, La Sapienza University, 20-22 June, 2018, Rome, Italy.
55. HSPB2 forms nuclear compartments that affect lamin A and compromise nuclear function. *Cell Death and Disease Meeting*, Villa Vigoni, Italian-German Center For European Excellence, 27-30 June, 2018, Villa Vigoni, Menaggio (Como), Italy
56. HSPB2 forms nuclear compartments that affect lamin A and compromise nuclear function. *EMBO | EMBL Symposium: Cellular Mechanisms Driven by Liquid Phase Separation*, 14-17 May 2018, Heidelberg, Germany.
57. Protein Quality Control of stress Granules, *Cold Spring Harbor Meeting: Protein Homeostasis in Health & Disease*, April 17-21, 2018, USA.
58. Implication of derailed phase separation and molecular chaperones in the stress response and in age-related neurodegenerative diseases. 11th January 2018, invited seminar at *Italian Institute of Technology*, Genoa, Italy.
59. The HSPB8-BAG3-HSP70 complex: implication in protein homeostasis and neurodegenerative diseases. 12th December 2017, invited seminar at *TIGEM*, Pozzuoli, Naples, Italy
60. New functions of chaperones in disease. *234th ENMC (European NeuroMuscular Centre) workshop on Chaperone*, 8-10 December 2017, Naarden, The Netherlands
61. Granulostasis: protein quality control of ribonucleoprotein particles. *XVII Congress Italian Society for Neurosciences (SINS)* 1-4 October 2017, Lacco Ameno, Ischia, Naples, Italy
62. The everyday life of HSPB8: buffering and clearing to avoid irreversible protein aggregation. *The 8th international congress on stress proteins in biology and medicine*, August 13-17, 2017, Turku, Finland
63. Granulostasis: protein quality control of stress granules. *Meeting on Cell Death and Disease*, 14-17 June 2017, Villa Vigoni, Italy
64. Aberrant compartment formation by HSPB2 mislocalizes lamin A and compromises nuclear integrity and function. *EMBO Conference, Protein Quality Control: Success and failure in health and disease*, 14th to 19th May 2017, Sant Feliu de Guixols, Girona, Spain.
65. Molecular chaperones and protein aggregation: from cellular function to disease. *Telethon, THE SCIENTIFIC CONVENTION, Riva del Garda, Trento*, 13-15 March 2017.

66. Granulostasis: A Surveillance Function of the HSPB8-BAG3-HSP70 Chaperone Complex That Maintains Stress Granule Integrity and Dynamism. *The Eighth International Symposium on Heat Shock Proteins in Biology and Medicine, Hilton Old Town Alexandria, VA, USA, October 29 - November 2, 2016.*
67. Unexpected properties of HSPB2 and HSPB3: implications in neuromuscular diseases. *The small HSP World, Second International Workshop of Cell Stress Society International (CSSI), 12-15 October 2016 – Bertinoro, Italy.*
68. The HSPB8-BAG3-HSPA1A complex ensures stress granule integrity and dynamism. *Protein Homeostasis in Health and Disease, Cold Spring Harbor, April 18-22, 2016, New York, USA.*
69. Impairment of the Protein Quality Control System Affects Stress Granule Response and Dynamics. *VIIth Cell Stress Society International Congress on Stress and Health, September 15-19, 2015 Huangshan, PRC.*
70. Characterization of the interplay between the protein quality control and the stress granule response: implication in neurodegenerative diseases. Invited speaker at: VI Meeting on the Molecular Mechanisms of Neurodegeneration, May 28th-30th, 2015, Milan, Italy.
71. Investigating the interplay between the protein quality control system, molecular chaperones and stress granules: from cell stress response to disease. Invited speaker at: EMBO Workshop "Macromolecular assemblies at the crossroads of cell stress and function", 31 May - 4 June, 2015, Jerusalem, Israel.
72. Inhibition of autophagy, lysosome and VCP alters stress granule morphology and composition. *EMBO Workshop on the Regulation of Aging and Proteostasis, Israel February 15-20, 2015.*
73. Upregulation of HSPB8 as potential therapeutic approach in Amyotrophic Lateral Sclerosis. *The small HSP World, A Workshop of Cell Stress Society International (CSSI), Québec, October 2-5, 2014.*
74. Inhibition of autophagy, lysosome and VCP function impairs stress granule assembly. *MND Satellite FENS Meeting, Milano 3-4 July 2014.*
75. Inhibition of autophagy, lysosome and VCP function impairs stress granule assembly: implications in neurodegenerative diseases. *Rijks University Groningen, University Medical Center Groningen, The Netherlands, 01 July 2014.*
76. Implications of the HSPB8-BAG3 complex in neurodegenerative and neuromuscular disorders. *Rijks University Groningen, University Medical Center Groningen, The Netherlands, 17 May 2011.*
77. HSPB8 participates in protein quality control by a non-chaperone like mechanism that requires eIF2a phosphorylation. *EMBO meeting, Dubrovnik, Croatia, 23-28 May 2009.*
78. HspB8/Bag3: a new chaperone complex involved in protein quality control. *8th Dutch Chaperone Meeting, VU Medical Center, Amsterdam, The Netherlands, 22 February 2008.*
79. The new chaperone complex HspB8/Bag3 and its implication in neurodegenerative disorders. *Rijks University Groningen, University Medical Center Groningen, Groningen, The Netherlands, 22 January 2008.*
80. A new chaperone complex involved in the degradation of mutated huntingtin protein by macroautophagy. *Università degli Studi di Modena e Reggio Emilia, Dipartimento di Scienze Biochimiche. Modena, Italy, April 2006.*

81. Effect of the small heat shock protein HspB8 on mutated huntingtin aggregation. *Università degli Studi di Milano*, Centro di Neuropsicofarmacologia. Milano, July 2005.
82. In vivo chaperone activity of the small heat shock protein HspB8 towards polyglutamine proteins. *Università degli Studi di Modena e Reggio Emilia*, Dipartimento di Scienze Farmaceutiche. Modena, Italy, December 2004.

Organization of international meetings

1. *EMBO Workshop "Protein quality control: From molecular mechanisms to aging and disease"*, 18-23 May 2025, Hersonissos, Greece; organizers: Prof. Franz-Ulrich Hartl and Prof. Serena Carra
2. *Fourth International Workshop of Cell Stress Society International (CSSI)*, 17-18 November 2022 – online event; organizers: Prof. Heath Ecroyd, Prof. Serena Carra and Prof. Justin Benesch
3. *Workshop ALS 2022: dialogue between preclinical and clinical research*. Camera di Commercio di Modena, 08 April 2022. Organizers: Prof. Jessica Mandrioli and Prof. Serena Carra.
4. *3rd sHSP International Workshop of Cell Stress Society International (CSSI)*, 26-29 August 2018 – Québec, Canada; organizers: Prof. Robert M. Tanguay, Prof. Serena Carra and Prof. Lawrence Hightower
5. *The small HSP World, Second International Workshop of Cell Stress Society International (CSSI)*, 12-15 October 2016 – Bertinoro, Italy; organizers: Prof. Serena Carra, Prof. Robert M. Tanguay and Prof. Lawrence Hightower

Ongoing Research support

1. **Telethon** (2026-2029); PI: Carra S.; partner: Rosa Al. Exploring the role of HSPB3 in chromatin remodeling for neuromuscular junction maintenance: implications for peripheral motor neuropathies.
2. **Armenise-Harvard & AirAlzh** (2023-2027); PI: Carra S. SUMO2/3 as a solubility tag to prevent the misfolding and aggregation of key RNA-binding proteins associated with amyotrophic lateral sclerosis (ALS) and Frontotemporal dementia (FTD).
3. **AriSLA** (2023-2027); PI: Carra S; co-PI: Rosa A.; Buratti E. SUMOsolvable.

Completed Research Support

1. **PRIN** (2023-2026); PI: Carra S.; Partner: Rosa A. HSPB3: understanding its role in the pathophysiology of the neuromuscular system and testing its druggability for future therapeutic purposes.
2. **Telethon** (2023-2025); PI: Carra S. "Boosting HSPB3 to prevent neuromuscular degeneration in peripheral neuropathies"
3. **MDA** (2022-2025); PI: Carra S; co-PI: Rosa A. "HSPB3: a promising candidate for the maintenance of the neuromuscular system"
4. **AFM** (2021-2023); PI: Carra S; co-PI: Rosa A. "Unraveling HSPB3 physiological functions to understand its implication in neuromuscular diseases"

5. **FAR2020** (2021-2023); PI: Carra S; co-PI: Vilella A. Targeting the lipid and protein homeostasis systems with Trodusquemine to fight Alzheimer's Disease
6. **PRIN** (2019-2022); PI: Poletti A; Partners: Carra S; Bonanno G.; D'Agostino V.; Pennuto M. THE INTERPLAY BETWEEN THE "RNA/PROTEIN QUALITY CONTROL SYSTEM" AND "EXOSOMES" AS A SPREADING MECHANISM IN AMYOTROPHIC LATERAL SCLEROSIS [EX_ALS]
7. **AIFA** (2017-2020); Italian PI: Mandrioli J; Partners: Carra S.; D'Amico R.; Chiò A.; Silani V.; Ceroni M.; Simone I.L.; Riva N.; Sabatelli M.; Monsurrò M.R.; Sorarù G.; Poletti A.; Cereda C.; Bonetto V. "Colchicine for Amyotrophic Lateral Sclerosis: a phase II, randomized, double blind, placebo controlled, multicenter clinical trial"
8. **AriSLA** (2019-2022); PI: Carra S; Partners: Poletti A.; Pansarasa O. "Membrane-less organelle pathology in ALS: identification of causes and rescuing factors"
9. **Ministero degli Affari Esteri e della Cooperazione Internazionale** (Nov. 2017- Apr. 2020); Italian PI: Carra S; Israeli PI : Ben-Zvi A. Tissue-specific protein folding environment can impact metabolic disease etiology
10. **PRIN** (February 2017 – February 2020); Coordinator: Poletti A.; partners: Carra S; Carrì MT; Cozzolino M; Crosio C; Ratti A; Chiò A. "From RNA to Protein toxicity in motorneuron diseases"
11. **JPND** (April 2016-March 2019); Coordinator: Alberti S. (Germany); partners: Carra S; Poletti A; Kaganovich D.; Aguzzi A.; Sternecker J.; Dantuma N. "Stress granules and proteostasis in motor neurons: towards a mechanistic understanding of ALS"
12. **FAR 2016 University of Modena** (March 2017-Feb. 2019); PI : Carra S; partner : Cecconi C. "Biochemical and biophysical characterization of disease-linked mutants of HSPB8 and BAG3: unravelling their impact on protein-RNA homeostasis."
13. **Ministero degli Affari Esteri e della Cooperazione Internazionale** (Oct. 2016-Sept. 2018); Italian PI: Carra S; Israeli PI : Kaganovich D. "Dynamics and function of stress granules and other protein-RNA assemblies in Amyotrophic Lateral Sclerosis/Dissolve_ALS"
14. **Telethon Research Grant** (Nov. 2015-Oct. 2018); PI : Carra S. "The HSPB2-HSPB3 complex: unraveling new functions that affect nuclear homeostasis and their implication in neuromuscular and muscular diseases."
15. **Cariplo research grant** (June 2015- May 2018); PI: Poletti A.; partners: Carra S; Biciato S.; Quattrone A.; Provenzano A. "RAN-translation of normal and expanded nucleotide repeat containing transcripts to neurotoxic polypeptides in neurodegenerative diseases."
16. **AriSLA Research Grant** (April 2015- March 2018); PI: Carra S; partners: Poletti A., Mandrioli J., Cereda C. "VCP AND AUTOPHAGOLYSOSOMAL PATHWAY: GUARDIANS OF PROTEOSTASIS AND STRESS GRANULE DYNAMICS. UNRAVELING THEIR IMPLICATIONS IN ALS."
17. **Association française contre les myopathies (AFM): Research Grant** (October 2012-December 2015); PI: Carra S. "Identification of HSPB3 mutations in myopathic patients: understanding the mechanisms of disease."
18. **AriSLA Research Grant** (March 2012- February 2015); PI: Poletti A.; partner: Carra S. "ALS_HSPB8"
19. **Telethon Exploratory Project** (November 2012- October 2013); PI: Carra S. "Characterization of the R7S mutation of Heat Shock Protein HSPB3 and of two novel

- mutations found in patients suffering of congenital myopathy: understanding the mechanisms leading to disease."
20. **MIUR: Rita Levi Montalcini grant** (July 2011- July 2014).
 21. **Association française contre les myopathies (AFM): Trampoline Grant** (1st October 2010-30th September 2011); PI: Carra S.
 22. **Prinses Beatrix Fonds/Dutch Huntington Association** (1st September 2010- 31st August 2014); PI: Carra S; partners: Kampinga H.H.; Sibon O.C.M.
 23. **Marie Curie International Reintegration Grant** (15th May 2009- 14th May 2012)
 24. **Young Investigator Award** (1st January 2008- 31st December 2009), National Ataxia Foundation, USA
 25. **Ministero della Salute**, Bando 2011-2012, Progetti di Ricerca Giovani Ricercatori (November 2014- November 2017); PI: Crippa V.; partner: Carra S. "Protective role of HSPB8 in motor neuron diseases (MNDs)"

External referee for scientific journals and organizations and Editorial board member

External referee for scientific journals : BBA - Molecular Cell Research, Biomolecular Concepts, Cell Death and Differentiation, Cell Death and Disease, Cell Reports, Cell Stress and Chaperones, Essays in Biochemistry, Expert Review of Proteomics, Frontiers, Journal of Molecular Neuroscience, Heliyon, Mechanisms of Ageing and Development, Nature Communication, Neuropathology and Applied Neurobiology, Neuroscience, Plos One, Redox, TIBS, Trends in Pharmacological Sciences, The International Journal of Biochemistry & Cell Biology, Neurobiology of Aging, The Journal of Cell Biology.

External referee for scientific foundations: Ataxia UK, DFG, Deutsche Forschungsgemeinschaft, ERC 2020 Grant Calls, ERC 2023 Grant Calls, the Portuguese Foundation for Science and Technology, Israel Science Foundation, Czech Science Foundation, FWF Austrian Science Fund, Swiss National Science Foundation, BIRAX British Council, KU Leuven Research Funding, United States-Israel Binational Science Foundation.

Editorial board membership:

From September 2021 - Editorial Board member of Essays in Biochemistry

From 2019 - Frontiers in Molecular Neuroscience

From 2023 - Guest Associate Editor Frontiers Molecular Biosciences, Research Topic: Celebrating Women's Contribution to Protein Folding, Misfolding, and Degradation In Honor of Susan Lindquist (1949-2016)

Collaborators

Prof. Simon Alberti	Biotechnology Center (BIOTEC), Center for Molecular and Cellular Bioengineering (CMCB), Technische Universität Dresden, Germany
Prof. Michele Vendruscolo	Department of Chemistry, University of Cambridge, UK
Prof. Alessandro Rosa	Department of Biology and Biotechnology Charles Darwin, Sapienza University of Rome, Italy.
Prof. Monika Fuxreiter	Department of Biomedical Sciences, Department of Physics and Astronomy, University of Padova, Italy

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Prof. Emanuele Buratti	International Centre for Genetic Engineering and Biotechnology (ICGEB), Trieste, Italy
Prof. Ciro Cecconi	Department of Physics, University of Modena and Reggio Emilia, Italy
Prof. Anand Goswami	Assistant Professor of Neurological Sciences, Columbia University, NY (USA)
Prof. Jessica Mandrioli	Department of Neurosciences, St. Agostino Estense Hospital, Azienda Ospedaliero Universitaria di Modena, Modena, Italy
Prof. Jared Sternecker	Center for regenerative therapies Dresden (CRTD), Center for Molecular and Cellular Bioengineering, TU Dresden, Germany