

Maurizio Molinari, PhD

Director of Laboratory, Institute for Research in Biomedicine, Bellinzona
Assistant Professor, Global Health Institute, ETH-Lausanne

Place and Date of birth: Lugano, Switzerland, Mai 27, 1966

Protein Folding and Quality Control Laboratory
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Education

1995 PhD, Biochemistry, ETH-Zurich, Switzerland (Prof. Ernesto Carafoli)

Positions

1996-1997 PostDoc, Department of Biomedical Sciences, University Padua, Italy (Prof. Cesare Montecucco)
1998-2000 PostDoc, Biochemistry Institute, ETH-Zurich, Switzerland (Prof. Ari Helenius)
2000-date Director of Laboratory, Institute for Research in Biomedicine, Bellinzona, Switzerland
2008-date Assistant Professor, Global Health Institute, ETH-Lausanne, Switzerland

Other activities

2010-present Member of the Microbiology and Immunology PhD program, ETH-ZH/UNI-ZH
2010-present Member of the Graduate School in Cellular and Biomed Sciences, UNI-BE
2012-present Commissary for Biology and Chemistry High Schools teaching, Cantone Ticino
2013-present Member Research Committee Università della Svizzera Italiana
2015-2017 Swiss National Fond Sinergia project co-ordinator
2016-present Member Piattaforma Malattie Rare Svizzera italiana
2017-present Faculty Member, F1000Prime, Cell Biology, Membranes & Sorting Section
2017-present Ambassador American Society for Cell Biology

Memberships/Awards/Patents

- Swiss National Center of Competence in Research NCCR "Neural plasticity and Repair" (2001-2013)
- Swiss Society for Biochemistry
- American Society for Cell Biology (ASCB)
- American Society for Biochemistry and Molecular Biology (ASBMB)
- Patronatskomitee der Schweizerische Alzheimervereinigung
- Union of the Swiss Society for Experimental Biology (USGEB)
- Società Ticinese delle Scienze Biomediche e Chimiche (STSBC)
- Delegate at the Union of the Swiss Society for Experimental Biology board (2009)
- ETH-ZH alumni
- TRANSAUTOPHAGY member

1996 Long Term EMBO fellowship
2002 Science Award 2002 from the Foundation for Study of Neurodegenerative Diseases
2002 Kiwanis Club Award 2002 for Medical Science
2006 Friedrich-Miescher Award
2007 Research Award Aetas
2007 Finalist SwissAward
2014 Regli Foundation Award

System and method for *in vivo* delivery of antibodies and fragments thereof. (USPatentApp12/940,090)

Editorial Activities

- 2012-present DNA & Cell Biology: Section Editor for Protein Expression, Modification, Regulation
 2012-present BioResearch Open Access: Editorial Board
 2015 Guest Editor of the Special Issue of Semin Cell Dev Biol on Protein Quality Control

Publications of the last five years (2013-2017)

http://scholar.google.com/citations?user=s_s06AYAAAAJ&hl=en

Total number of publications in peer reviewed journals: 85

Total citations: 12,000 H-index: 44

1. Merulla, J., Fasana, E., Soldà, T. and Molinari, M. (2013) *Specificity and Regulation of the Endoplasmic Reticulum-Associated Degradation Machinery*. **Traffic** 14, 767-777.
2. Bernasconi, R. and Molinari, M. (2013) *Endoplasmic Reticulum-Associated Protein Degradation*. In Encyclopedia of Biological Chemistry. Elsevier, Oxford, Vol. 2, 200-203.
3. Ferris, S.P., Jaber, N.S., Molinari, M., Arvan, P. and Kaufman R.J. (2013) *UDP-glucose: Glycoprotein Glucosyltransferase (UGGT1) Promotes Substrate Solubility in the Endoplasmic Reticulum*. **Mol. Biol. Cell** 24, 2597-2608.
4. Paganetti, P., Reichwald, J., Bleckmann, D., Abramowski, D., Ammatturo, D., Barske, C., Danner, S., Molinari, M., Müller, M., Papin, S., Rabe, S., Schmid, P. and Staufenbiel, M (2013) *Transgenic Expression of β 1 Antibody in Brain Neurons Impairs Age-Dependent Amyloid Deposition in APP23 Mice*. **Neurobiology of Aging** 34, 2866-2874.
5. Noack, J., Bernasconi, R. and Molinari, M. (2014) *Non-Lipidated LC3 is Essential for Mouse Hepatitis Virus Infection*. In Autophagy. Hayat, M.A. Ed. Elsevier, Oxford, Vol 2. 129-136.
6. Noack, J., Bernasconi, R. and Molinari, M. (2014) *How Viruses Hijack the ERAD Tuning Machinery*. **J. Virology** 88, 10272-10275.
7. Noack, J., Brambilla-Pisoni, G. and Molinari, M. (2014) *Proteostasis: Bad News and Good News From the Endoplasmic Reticulum*. **Swiss Medical Weekly** 144:w14001, 1-13.
8. Noack, J. and Molinari, M. (2014) *RESETting proteostasis*. **Nature Chem. Biol.** 10, 881-882.
9. Merulla, J., Soldà, T. and Molinari, M. (2015) *A novel UGGT1 and p97-dependent checkpoint for native ectodomains with ionizable intramembrane residue*. **Mol. Biol. Cell** 26, 1532-1542.
Recommended by the Faculty of 1000
10. Tannous, A., Brambilla Pisoni, G., Hebert, D.N. and Molinari, M. (2015) *N-Linked Sugar-Regulated Protein Folding and Quality Control*. **Semin. Cell Dev. Biol.** 41, 79-89.
11. Torres, M., Medinas, D.B., Matamala, J.M., Woehlbier, U., Cornejo, V.H., Soldà, T., Andreu, C., Rozas, P., Matus, S., Muñoz, N., Vergara, C., Cartier, L., Soto, C., Molinari, M., and Hetz, C (2015) *The Protein Disulfide Isomerase ERp57 Regulates the Steady-State Levels of the Prion Protein*. **J. Biol. Chem.** 290, 23631-23645.
12. Molinari, M. and Hebert, D.N. (2015) *Glycoprotein maturation and Quality Control*. **Semin. Cell Dev. Biol.** 41, 70.
13. Brambilla Pisoni, G. Ruddock, L.W., Bulleid, N. and Molinari, M. (2015) *Division of labor between oxidoreductases: TMX1 preferentially acts upon transmembrane polypeptides*. **Mol. Biol. Cell** 26, 3390-3400.
14. Klionsky D.J. et al (2016) *Guidelines for the Use and Interpretation of Assays for Monitoring Autophagy*. **Autophagy** 12, 1-222.
15. Brambilla Pisoni, G. and Molinari, M. (2016) *Five Questions (with their Answers) on ER-associated Degradation*. **Traffic** 17, 341-350.
16. Fumagalli, F., Noack, J., Bergmann, T.J., Cebollero, E., Brambilla Pisoni, G., Fasana, E., Fregno, I., Galli, C., Loi, M., Soldà, T., D'Antuono, R., Raimondi, A., Jung, M., Melnyk, A., Schorr, S., Schreiber, A., Simonelli, L., Varani, L., Wilson-Zbinden, C., Zerbe, O., Hofmann, K., Peter, M., Quadroni, M., Zimmermann, R. and Molinari, M. (2016) *Translocon component Sec62 acts in endoplasmic reticulum turnover during stress recovery*. **Nature Cell Biol.** 18, 1173-1184. - *Recommended by the Faculty of 1000*
17. Fregno, I. and Molinari, M. (2016) *Post ER quality control: a role for UDP-glucose:glycoprotein glucosyl transferase and p97*. **J Clin Res on Rare Diseases** 1, 40-42.

18. Bergmann, T.J., Brambilla Pisoni, G. and Molinari, M. (2016) *Quality control mechanisms of protein biogenesis: Proteostasis dies hard*. **AIMS Biophysics** 3, 456-478.
19. Bergmann, T.J., Fumagalli, F., Loi, M. and Molinari, M. (2017) *Role of Sec62 in ER maintenance: a link with ER stress tolerance in SEC62 overexpressing-tumors?* **Molecular and Cellular Oncology** 4, e1264351.
20. Fregno, I., Bergmann, T.J., Fasana, E., Raimondi, A., Loi, M., Soldà, T., Galli, C., D'Antuono, R., Paganetti, P., van Anken, E. and Molinari, M. (2017) Endoplasmic Reticulum-to-Lysosome-Associated Degradation of Proteasome-Resistant Protein Polymers (Submitted)
21. Bergmann, T.J., Fregno, I., Fumagalli, F., Rinaldi, A., Bertoni, F., Borsema, P., Picotti, P. and Molinari, M. (2017) Comparison between drugs- and unfolded proteins-induced responses reveals induction of an ER-resident multimeric complex binding unfolded proteins (Submitted)
22. Fregno, I. and Molinari, M. (2018) Five questions (with their answers) on lysosomal-associated degradation of protein aggregates from the ER. **Critical Reviews in Biochem. and Mol. Biol.**
23. Loi, M., Ilaria Fregno, I., Guerra, C. and Molinari, M. (2018) ERAD and ERLAD: Proteasomal and lysosomal degradation of misfolded proteins from the ER **Biochemical Society Transactions**

Peer Reviews in F1000

1. **Molinari, M.** and Fregno, I.: F1000Prime Recommendation of [Leuenberger P et al., Science 2017, 355(6327)]. In F1000Prime, 19 Apr 2017; DOI: 10.3410/f.727343483.793530534
2. **Molinari, M.** and Fregno, I.: F1000Prime Recommendation of [Ashkenazi A et al., Nature 2017, 545(7652):108-111]. In F1000Prime, 11 May 2017; DOI: 10.3410/f.727549875.793531539
3. **Molinari, M.** and Fregno, I.: F1000Prime Recommendation of [Caldieri G et al., Science 2017, 356(6338):617-624]. In F1000Prime, 19 May 2017; DOI: 10.3410/f.727609135.793532043
4. **Molinari, M.** and Fregno, I.: F1000Prime Recommendation of [Bodnar NO and Rapoport TA, Cell 2017, 169(4):722-735.e9]. In F1000Prime, 06 Jun 2017; DOI: 10.3410/f.727586495.793532545
5. **Molinari, M.** and Fregno, I.: F1000Prime Recommendation of [Grumati P et al., elife 2017, 6]. In F1000Prime, 25 Jul 2017; DOI: 10.3410/f.727719788.793534277

Publications in Newspapers

1. **Molinari, M.** Le Proteine impazzite che ci fanno ammalare. **Il Caffé** 9.10.2016 http://www.caffe.ch/stories/inchieste/55800_le_proteine_impazzite_che_ci_fanno_ammalare/
2. **Molinari, M.** Tutte le Malattie rare ancora da sconfiggere. **Il Caffé** 18.12.2016 http://www.caffe.ch/stories/societa/56561_tutte_le_malattie_rare_ancora_da_sconfiggere
3. **Molinari, M.** Ricerche non redditizie per l'industria dei farmaci. **Corriere del Ticino** 8.2.2017
4. **Molinari, M.** Ticino at the forefront of medical research. **Ticino Wellcome** March-Mai 2017 <http://www.ticinowelcome.ch/en/archive/publication/n-53-parte-/44?tmpl=component#page/30>

Lab members

PhD students

Ilaria Fregno (ETH-ZH, January 2015)
Marisa Loi (ETH-ZH, January 2016)
Concetta Guerra (ETH-ZH, January 2017)
Alessandro Marazza (UniBE, January 2017)

Research Assistants

Carmela Galli (Research Assistant, 60%, October 2000)
Tatiana Soldà (Research Assistant, 60%, April 2004)
Elisa Fasana (Research Assistant, 80%, October 2011)

Students who were awarded a PhD since the group is at the IRB

Klara Kristin Eriksson

Glycoprotein folding, quality control and degradation: studies in chaperone-depleted cells and in cells with defective regulation of the unfolded protein response

ETH-ZH, 2004

Silvia Olivari

EDEM1, EDEM2 and EDEM3 as endoplasmic reticulum associated degradation regulators

UNI-FR, 2007

Omar Vanoni

Protein folding in the ER: the fate of β -secretase N-glycosylation mutants

ETH-ZH, 2008

Tito Cali

Tuning endoplasmic reticulum associated degradation

UNI-BE, 2008

Riccardo Bernasconi

Identification and characterization of novel players regulating protein quality control and degradation in the mammalian endoplasmic reticulum

ETH-ZH, 2010

Julia Noack

Mechanisms regulating the recovery from transient endoplasmic reticulum stress in mammalian cells

ETH-ZH, 2014

Jessica Merulla

Deciphering the complexity of mammalian ERAD pathways

UNI-BE, 2014

Giorgia Brambilla Pisoni

In vivo characterization of TMX1: TMX1 preferentially acts upon transmembrane polypeptides

ETH-ZH, 2016

Fiorenza Fumagalli

Unraveling the molecular pathways controlling recovery from transient ER stress in mammalian cells

UNI-BE, 2017

Timothy J Bergmann

Molecular mechanisms regulating cellular proteostasis

ETH-ZH, 2017