

## Curriculum vitae Maria Elena Regonesi

Assistant Professor of Biochemistry BIO10 (05/E1) and member of the Milan Center for Neuroscience (NeuroMI) and of the Bicocca center of Science and Technology for FOOD (BEST4FOOD).

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### *Professional experience and Research interests*

The research activity of Maria Elena Regonesi has been focused in three areas:

- The studies on the mechanisms governing stability, turnover and processing of bacterial mRNA.
- The investigations on the mechanisms of aggregation and toxicity of proteins responsible for neurodegenerative diseases, in particular the polyglutamine-containing protein ataxin-3 , and the discovery of natural compounds and drugs able to prevent or counteract the onset and the progression of the disease. She employed *Caenorhabditis elegans* as a model organism for the screening of anti-amyloidogenic compounds and for the studies of the effect of natural extract on aging.
- The employment of the *C. elegans* for the studies of nanomaterials toxicity.

### *Education and training*

- 1998: Master Degree in Biological Sciences, University of Studies of Milan.
- 1999-2000 Fellowship for a collaboration to research in the field of Biochemistry at University of Milan.
- 2003: PhD in Biochemistry, University of Milano-Bicocca. Topic: Studies on degradosome of *Escherichia coli*, a multiprotein complex involved in the maturation and degradation of prokaryotic transcripts.
- 2003-2006: Post-doc position at the Department of Bimolecular and Biotechnologies Sciences (University of Milan). Research in the field of Genetics and Microbiology. Project title: "Identification of genes involved in the cold-adaptation of *E. coli*".
- 2006-curr: Permanent position as Assistant Professor in Biochemistry (RTD BIO/10) at the University of Milano-Bicocca.

Other academic activities:

- A.a. 2006-2017 Teaching courses: Laboratory of Biochemistry, Master in Biology

Elements of Biology, Master in Biostatistics

- Supervisor and tutor of master and bachelor thesis of Biology and Biotechnology
- Member of academy boards for thesis and PhD

#### *Grants:*

- 2007-2009: takes part to the project PRIN from the Italian Ministry for Instruction, University and Research (PRIN 2007: "A multidisciplinary approach to the study of in vivo and in vitro aggregation of polyglutamine containing proteins. Role of molecular and environmental factors").
- 2008-2011: takes part to the project N.O.B.E.L from Fondazione Cariplo (Italy).
- 2011-2013: takes part to the project NEDD (Network Enabled Drug Design) from Regione Lombardia (Italy).
- 2013: takes part to the project EARLY SYSTEM NANOTECHNOLOGY from the Fondazione Regionale per la Ricerca Biomedica (Italy).
- 2015-2016: co-PI of the project 'Caffè Corretto - la via del caffè tra Guatemala, El Salvador e Italia' from Fondazione Cariplo, Regione Lombardia and Comune di Milano.
- 2016-2019: takes part to the project "Del productor al consumidor: por una cadena de valor sostenible de café, ñil y hortalizas." from the COMISIÓN EUROPEA Delegación El Salvador (DELEG SV). Bando EuropeAid/150279/DD/ACT/SV-1.
- 2016-2019: takes part of the project "Network REGIONALE per lo sviluppo di metodi Diagnostici in risposta rapida a epidemie emergenti e bioemergenze (READY)" from REGIONE LOMBARDIA.
- 2016-2019: RU of the project "Food Social Sensor Network (Food NET) from REGIONE LOMBARDIA.

#### *Publications:*

Author of 27 papers in peer-reviewed journals, 2 chapters book.

1. Cennamo, N., Zeni, L., Tortora, P., **Regonesi, ME.**, Giusti, A., Staiano, M., D'Auria, S., Varriale, A. (2018) A High Sensitivity Biosensor to detect the presence of perfluorinated compounds in environment. *Talanta*, 178, 955-961.
2. Bonanomi, M., Roffia, V., De Palma, A., Lombardi, A., Aprile, FA., Visentin, C., Tortora, P., Mauri, P., **Regonesi, ME.** (2017) The polyglutamine protein ataxin-3 enables normal growth under heat shock conditions in the methylotrophic yeast *Pichia pastoris*. *Sci Rep.* 7(1):13417.
3. Amigoni, L., Stuknyté, M., Ciaramelli, C., Magoni, C., Bruni, I., De Noni, I., Airoldi, C., **Regonesi, ME.** \*, Palmioli, A.(2017) Green coffee extract enhances oxidative stress resistance and delays aging in *Caenorhabditis elegans*. *J. Funct. Food.*, 33, 297-306.
4. Visentin, C., Pellistri, F., Natalello, A., Vertemara, J., Bonanomi, M., Gatta, E., Penco, A., Relini, A., De Gioia, L., Airoldi, C., **Regonesi, ME.** \*, Tortora, P. (2017) Epigallocatechin-3-gallate and related phenol compounds redirect the amyloidogenic aggregation pathway of ataxin-3 towards non-toxic aggregates and prevent toxicity in neural cells and *Caenorhabditis elegans* animal model. *Hum Mol Genet.*, 26, 3271-3284.
5. Bonanomi, M., Visentin, C., Natalello, A., Spinelli, M., Vanoni, M., Airoldi, C., **Regonesi, ME.** \*, Tortora, P. (2015) How Epigallocatechin-3-gallate and Tetracycline Interact with the Josephin Domain of Ataxin-3 and Alter Its Aggregation Mode. *Chemistry*, 21, 18383-93.

6. Bonanomi, M., Visentin, C., Invernizzi, G., Tortora, P., **Regonesi, ME.** (2015) The Toxic Effects of Pathogenic Ataxin-3 Variants in a Yeast Cellular Model. *PLoS One*. 10(6):e0129727.
7. Sironi, E., Colombo, L., Lompo, A., Messa, M., Bonanomi, M., **Regonesi, ME.**, Salmona, M., Airoldi, C. (2014) Natural Compounds against Neurodegenerative Diseases: Molecular Characterization of the Interaction of Catechins from Green Tea with A $\beta$ 1-42, PrP106-126, and Ataxin-3 Oligomers. *Chemistry*, 20, 13793-13800.
8. Bonanomi, M., Natalello, A., Visentin, C., Pastori, V., Penco, A., Cornelli, G., Malabarba, M.G., Colombo, G., Doglia, S.M., Relini, A., **Regonesi, ME.** \*, Tortora, P. (2014) Epigallocatechin-3-gallate and tetracycline differently affect ataxin-3 fibrillogenesis and reduce toxicity in spinocerebellar ataxia type 3 model. *Hum. Mol. Genet.*, 23, 6542-6552.
9. Bonanomi, M., Mazzucchelli, S., D'Urzo, A., Nardini, M., Konarev, P.V., Invernizzi, G., Svergun, D.I., Vanoni, M., **Regonesi, ME.** \*, Tortora, P. (2014) Interactions of ataxin-3 with its molecular partners in the protein machinery that sorts protein aggregates to the aggresome. *Int. J. Biochem. Cell. Biol.*, 51, 58-64.
10. Carzaniga, T., Mazzantini, E., Nardini, M., **Regonesi, ME.**, Greco, C., Briani, F., De Gioia, L., Dehò, G., Tortora, P. (2014) A conserved loop in polynucleotide phosphorylase (PNPase) essential for both RNA and ADP/phosphate binding. *Biochimie*, 97, 49-59.
11. Pellistri, F., Bucciantini, M., Invernizzi, G., Gatta, E., Penco, A., Frana, A.M., Nosi, D., Relini, A., **Regonesi, ME.**, Gliozzi, A., Tortora, P., Robello, M., Stefani, M. (2013) Different ataxin-3 amyloid aggregates induce intracellular Ca<sup>2+</sup> deregulation by different mechanisms in cerebellar granule cells. *Biochim. Biophys. Acta*, 1833, 3155-3165.
12. Invernizzi, G., Lambrughi, M., **Regonesi, ME.**, Tortora, P., Papaleo, E. (2013) The conformational ensemble of the disordered and aggregation-protective 182-291 region of ataxin-3. *Biochim. Biophys. Acta*, 1830, 5236-5247.
13. Apicella, A., Soncini, M., Deriu, M.A., Natalello A., Bonanomi, M., Dellasega, D., Tortora, P., **Regonesi, ME.**\*, Casari, C.S. (2013) A hydrophobic gold surface triggers misfolding and aggregation of the amyloidogenic Josephin domain in monomeric form, while leaving the oligomers unaffected. *PLoS One*, 8, e58794.
14. Invernizzi, G., Aprile, F.A., Natalello, A., Ghisleni, A., Penco, A., Relini, A., Doglia, S.M., Tortora, P., **Regonesi, ME.** (2012) The relationship between aggregation and toxicity of polyglutamine-containing ataxin-3 in the intracellular environment of *Escherichia coli*. *PLoS One*, 7, e51890.
15. Apicella, A., Natalello, A., Frana, A.M., Baserga, A., Casari, C.S., Bottani, C.E., Doglia, S.M., Tortora, P., **Regonesi, ME.** (2012) Temperature profoundly affects ataxin-3 fibrillogenesis. *Biochimie*, 94, 1026-1031.
16. Santambrogio, C., Frana, A., Natalello, A., Papaleo, E., **Regonesi, ME.**, Doglia, S.M., Tortora, P., Invernizzi, G., Grandori, R. (2012) The role of the central flexible region on the aggregation and conformational properties of human ataxin-3. *FEBS J.*, 279, 451-463.

17. Natalello, A., Frana, A.M., Relini, A., Apicella, A., Invernizzi, G., Casari, C., Gliozzi, A., Doglia, S.M., Tortora, P., **Regonesi, ME.** (2011) A major role for side-chain polyglutamine hydrogen bonding in irreversible ataxin-3 aggregation. *PLoS One*, 6(4),e18789.
18. Némethi, B., **Regonesi, ME.**, Tortora, P., Gregus, Z. (2011) The mechanism of the polynucleotide phosphorylase-catalyzed arsenolysis of ADP. *Biochimie*, 93, 624-627.
19. Némethi, B., **Regonesi, ME.**, Tortora, P., Gregus, Z. (2010) Polynucleotide phosphorylase and mitochondrial ATP synthase mediate reduction of arsenate to the more toxic arsenite by forming arsenylated analogues of ADP and ATP. *Toxicol Sci.*, 117(2),270-81.
20. Mazzucchelli, S., De Palma, A., Riva, M., D'Urzo, A., Pozzi, C., Pastori, V., Comelli, F., Fusi, PA., Vanoni, M., Tortora, P., Mauri, P. and **Regonesi, ME.** (2009) Proteomic and biochemical analyses unveil tight interaction of ataxin-3 with tubulin. *International Journal Of Biochemistry & Cell Biology*, 41, 2485-2492.
21. Stawoska, I., Weselucha-Birczynska, A., **Regonesi, ME.**, Riva, M., Tortora, P. and Stochel, G. (2009) Interaction of selected divalent metal ions with human ataxin-3 Q36. *JBIC*, 14, 1175-1185.
22. Matus-Ortega, M.E., **Regonesi, ME.**, Piña-Escobedo, A., Tortora, P., Dehò, G. and García-Mena J. (2007) The KH and S1 domains of Escherichia coli polynucleotide phosphorylase are necessary for autoregulation and growth at low temperature. *Biochim. Biophys. Acta*, 1769, 194-203.
23. **Regonesi, ME.**, Del Favero, M., Basilio, F., Briani, F., Benazzi, L., Tortora, P., Mauri, P. and Dehò, G. (2006) Analysis of the Escherichia coli RNA degradosome composition by a proteomic approach. *Biochimie*, 88, 151-161.
24. **Regonesi, ME.**, Briani, F., Ghetta, A., Zangrossi, S., Ghisotti, D., Tortora, P. and Dehò, G. (2004) A mutation in polynucleotide phosphorylase from Escherichia coli impairing RNA binding and degradosome stability. *Nucleic Acid Research*, 32, 1006-1017.
25. **Regonesi, ME.**, Briani, F., Ghetta, A., Zangrossi, S., Ghisotti, D., Tortora, P., Dehò, G. (2004) A mutation in polynucleotide phosphorylase from Escherichia coli impairing RNA binding and degradosome stability". *Nucleic Acids Research*, 32, 1006-1017.
26. Zangrossi, S., Briani, F., Ghisotti, D., **Regonesi, ME.**, Tortora, P., Dehò, G. (2000) Transcriptional and post-transcriptional control of polynucleotide phosphorylase during cold acclimation in Escherichia coli. *Mol. Microbiol.*, 36, 1470-1480.

\* corresponding author

Chapters book:

**Regonesi, ME.**, Sacco, E., Tortora, P. Carboxypeptidase Ss1

Handbook of Proteolytic Enzymes Volume 2, 2013, Pages 1608-1611.

*WEB profiling*

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H INDEX : 12 ( SCOPUS 2018)

Total number of peer-reviewed articles: 26

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