

BOLOGNESI, Benedetta

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Website: www.ibecbarcelona.eu/protein-phase-transitions-in-health-and-disease/

RESEARCH INTERESTS

The central question to my research is understanding how protein self-assembly can cause toxicity. This is a complex question that individual disciplines failed to exhaustively address. I have tackled this problem by means of several approaches during my career. I first focused on **biophysical methods** during my **PhD** at the **University of Cambridge**, and then complemented this with **cell models and genomics** during my **Post-Doc** at the **Centre for Genomic Regulation (CRG)** in Barcelona. Thanks to this trajectory, I now see a combination of these disciplines as the most promising strategy to understand the implications of protein self-assembly in biology and disease.

EDUCATION

- 2012 **PhD in Chemistry. University of Cambridge, UK.** Supervisor: Prof. Chris Dobson. Thesis: "A biophysical study of Amyloid-Beta aggregation and toxicity determinants". Fellow of St. John's College and awarded with the Alzheimer's Research Trust PhD fellowship.
- 2007 **Master in Industrial Biotechnology and Biomolecular Research.** Honours. **University of Pavia, Italy.** Supervisor: Prof. Vittorio Bellotti. Thesis: "Two Tryptophans in Beta-2-microglobulin: a balance between function and tendency to misfold".
- 2007 **Diploma of the School of Advanced Studies (IUSS), University of Pavia, Italy**
- 2005 **BA in Biotechnology. Honours. University of Pavia, Italy**

CURRENT AND PREVIOUS POSITIONS

- 2018 – now **Junior Group Leader** of the Protein Phase Transition in Health and Disease group, Institute for Bioengineering of Catalunya (**IBEC**); Barcelona, Spain.
- 2015– 2018 **Senior Post-Doctoral Fellow**, Centre for Genomic Regulation (**CRG**); Barcelona, Spain.
- 2012 – 2015 Marie Skłodowska Curie **COFUND Post-Doctoral fellow** (INTERPOD program), **CRG**; Barcelona, Spain.
- 2007 - 2012 **Early-Stage Researcher**, Department of Chemistry, **University of Cambridge, UK.**

RESEARCH VISITING POSITIONS

- 2006 Department of Physics, **University of Udine**; Italy. Gaetano Esposito's Lab (1 month)
- 2005 Institute of Molecular Biology, **University of Oregon**; Brian Matthews' Lab (5 months)

FELLOWSHIPS, AWARDS AND ATTRACTED FUNDING

- 2019-21 **Principal Investigator** of project awarded under the "Retos Investigación" R&D projects program. Spanish Ministry of Science, Innovation and Universities.
- 2017 Selected to be trained by the **H2020 Libra Program** <https://www.eu-libra.eu/>

2016	WOSS – Women Scientist Support Grant . CRG; Barcelona, Spain.
2012	Marie Skłodowska Curie COFUND Fellowship , INTERPOD program for post-doctoral researchers. CRG; Barcelona, Spain.
2007	Alzheimer's Research Trust Full Cost PhD scholarship . University of Cambridge, UK.

PUBLICATIONS (10 most relevant) For full list: [PubMed](#) *

1. **Bolognesi B**; Faure A; Seuma M; Schmiedel J; Tartaglia GG; Lehner B. The mutational Landscape of a Prion-like Domain. *Nature Communications* (2019)
 2. Cid-Samper F, Gelabert-Baldrich M, Lang B, Lorenzo-Gotor N, Ponti RD, Severijnen LWF, **Bolognesi B**, Gelpi E, Hukema RK, Botta-Orfila T, Tartaglia GG. An Integrative Study of Protein-RNA Condensates Identifies Scaffolding RNAs and Reveals Players in Fragile X-Associated Tremor/Ataxia Syndrome. *Cell Reports* (2018).
 3. **Bolognesi B**; Lehner B. Reaching the limit. *Elife* (2018).
 4. **Bolognesi B**; Lorenzo Gotor N; Dhar R; Cirillo D; Baldrighi M; Tartaglia G; Lehner B. A Concentration-Dependent Liquid Phase Separation Can Cause Toxicity upon Increased Protein Expression. *Cell Reports* (2016).
 5. Porcari R, Proukakis C, Waudby CA, **Bolognesi B**, Mangione PP, Paton JF, Mullin S, Cabrita LD, Penco A, Relini A, Verona G, Vendruscolo M, Stoppini M, Tartaglia GG, Camilloni C, Christodoulou J, Schapira AH, Bellotti V. The H50Q mutation induces a ten-fold decrease in the solubility of alpha-synuclein. *Journal of Biological Chemistry* (2014).
 6. **Bolognesi B**; Cohen SI; Aran Terol P; Esborner EK; Giorgetti S; Mossuto MF; Natalello A; Brorsson AC; Knowles TP; Dobson CM; Luheshi LM. Single point mutations induce a switch in the molecular mechanism of the aggregation of the Alzheimer's disease associated A β 42 peptide. *ACS Chemical Biology* (2014).
 7. Zanzoni A; Marchese D; Agostini F; **Bolognesi B**; Cirillo D; Botta-Orfila M; Livi CM; Rodriguez-Mulero S; Tartaglia GG. Principles of self-organization in biological pathways: a hypothesis on the autogenous association of alpha-synuclein. *Nucleic Acid Research* (2013).
 8. Abelein A; **Bolognesi B**; Dobson CM; Gräslund A; Lendel C. Hydrophobicity and conformational change as mechanistic determinants for nonspecific modulators of amyloid- β self-assembly. *Biochemistry* (2012).
 9. Narayan P; Orte A; Clarke RW; **Bolognesi B**; Hook S; Ganzinger KA; Meehan S; Wilson MR; Dobson CM; Klenerman D. The extracellular chaperone clusterin sequesters oligomeric forms of the amyloid- β (1-40) peptide. *Nature Structural Molecular Biology* (2012) > **100 citations**.
 10. **Bolognesi B**; Kumita JR; Barros TP; Esbjorner EK; Luheshi LM; Crowther DC; Wilson MR; Dobson CM; Favrin G; Yerbury JJ. ANS binding reveals common features of cytotoxic amyloid species. *ACS Chemical Biology* (2010). > **200 citations**.
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SELECTED TALKS IN INTERNATIONAL CONFERENCES

I have participated in >**15** international conferences. A selection of the most relevant oral presentations is shown here:

1. "The Mutational Landscape of a Prion-like Domain". CRISPR and Beyond: Understanding Genomes. Wellcome Genome Campus. September 2019; Hinxton, UK.
 2. "Liquid Phase-Separation as a mechanism of Dosage Sensitivity". VIB Conference Series: Phase Transitions in Biology and Disease; May 2017. Leuven, Belgium.
 3. "The N-terminus of Amyloid-Beta peptide plays an intrinsic role in its aggregation and toxicity". Alzheimer's Research Trust Conference. March 2010 Southampton, UK.
 4. "The N-terminus of Amyloid-Beta peptide plays an intrinsic role in its aggregation and toxicity". FASEB Conference: Amyloid Fibrils Formation and Disease. June 2009; Snowmass (CO), USA.
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INVITED SEMINARS

- 2020 CIG Seminars (upcoming – accepted invitation). Center for Integrative Genomics (CIG); Lausanne, Switzerland.
- 2020 Structural Biology Series (upcoming – accepted invitation). Institute for Research in Biomedicine (IRB); Barcelona, Spain.
- 2020 Mutational Scanning Symposium (upcoming – accepted invitation). Brotman Baty Institute; Seattle, USA.
- 2019 BioInfo4Women Seminars. Barcelona Super Computing Center; Barcelona, Spain
- 2018 IBEC Seminars, Institute for Bioengineering of Catalonia; Barcelona, Spain
- 2017 BioMed Seminars. Institute for Research in Biomedicine (IRB); Barcelona, Spain.
- 2016 IBB Seminars. Institute of Biotechnology and Biomedicine, Universitat Autònoma de Barcelona; Bellaterra, Spain.
- 2016 Department of Biochemistry, University of Pavia, Italy
- 2015 PostDoc Symposium, CRG, Barcelona, Spain.
- 2012 BioMed Seminars. IRB Barcelona, Spain.