**Curriculum vitae, Camilla Bean**

**Nationality**: Italian

**Date of Birth**: October,20 1975

**E-mail**: camilla.bean@uniud.it

**Institution**: University of Udine, Department of Medicine

**Education**

20/01/2004 **Ph.D. in Genetics and Molecular Biology**, University of Padua, Italy

10/07/2000 **Master of Science in Molecular Biology**, University of Padua, Italy

**Professional history**

From 07/2022 to present Senior Researcher (RTD-a), University of Udine

From 07/2020 to 06/2022 Senior Researcher VIMM-Venetian Institute of Molecular Medicine, Padova

From 07/2018 to 06/2020 Senior Researcher University of Padua

From 03/2016 to 06/2018 Senior Researcher University of Padua

From 06/2014 to 02/2016 Telethon Senior Researcher Telethon

From 03/2012 to 05/2014 Senior Researcher University of Padua

From 03/2009 to 03/2012 FIRB-Senior Researcher University of Milan

From 04/2004 to 03/2008 Junior Researcher University of Padua

**Teaching/supervising experience**

From 2022 to present Teaching of “Propedeutical Biochemistry”, University of Udine

2009/2010 AY Teaching of “Methods in Functional Genomics”, University of Padua.

From 2002/2003 AY to present: Teaching assistant in the courses “Genetic engineering”, “Genetics” and “Biochemistry” at the University of Padua.

From 2003 to present: supervising many MSc student’s dissertations at the University of Padua.

**Grants**

Trampoline Grant AFM2013/Project 16662 entitled "Single fiber transcriptomics to reveal the contribution of skeletal muscle to the SMA pathogenesis".

**Publications**

1. Zaninello, M., **Bean, C.**, Highly Specialized Mechanisms for Mitochondrial Transport in Neurons: From Intracellular Mobility to Intercellular Transfer of Mitochondria (2023) Biomolecules, 13(6), 938
2. Semenzato, M., Zambello, L., Fumarola, S., Motta, E., Piroli, L., Scorrano, L., **Bean, C.** A Novel Benchtop Device for Efficient and Simple Purification of Cytokines, Growth Factors and Stem Cells from Adipose Tissue (2023) Biomedicines, 2023, 11(4), 1006
3. Vianello, C., Dal Bello, F., Shin, S.H., Schiavon, S., **Bean, C.**, Magalhães Rebelo, A.P., Knedlík, T., Esfahani, E.N., Costiniti, V., Lacruz, R.S., Covello, G., Munari, F., Scolaro, T., Viola, A., Rampazzo, E., Persano, L., Zumerle, S., Scorrano, L., Gianelle, A., Giacomello, M.[High-Throughput Microscopy Analysis of Mitochondrial Membrane Potential in 2D and 3D Models](https://www.scopus.com/record/display.uri?eid=2-s2.0-85152358412&origin=resultslist&sort=plf-f). Cells (2023) 12(7), 1089
4. Chemello, F., Pozzobon, M., Tsansizi, L.I., Varanita, T., Quintana-Cabrera, R., Bonesso, D., Piccoli, M., Lanfranchi, G., Giacomello, M., Scorrano, L., **Bean, C.** [Dysfunctional mitochondria accumulate in a skeletal muscle knockout model of Smn1, the causal gene of spinal muscular atrophy](https://www.scopus.com/record/display.uri?eid=2-s2.0-85148976509&origin=resultslist&sort=plf-f). Cell Death Dis (2023) 14 (2), 162
5. **Bean, C.**, Audano, M., Varanita, T., Favaretto, F., Medaglia, M., Gerdol, M., Pernas, L., Stasi, F., Giacomello, M., Herkenne, S., Muniandy, M., Heinonen, S., Cazaly, E., Ollikainen, M., Milan, G., Pallavicini, A., Pietiläinen, KH., Vettor, R., Mitro, N., Scorrano, L. The mitochondrial protein Opa1 promotes adipocyte browning that is dependent on urea cycle metabolites. Nat Metab. (2021) 12:1633-1647.
6. Audano, M., Pedretti, S., Ligorio, S., Gualdrini, F., Polletti, S., Russo, M., Ghisletti, S., **Bean, C.**, Crestani, M., Caruso, D., De Fabiani, E., Mitro, N. Zc3h10 regulates adipogenesis by controlling translation and F-actin/mitochondria interaction. J Cell Biol. (2021). 220(3): e202003173.
7. Herkenne,S., Ek,O., Zamberlan,M., Pellattiero,A., Chergova,M., Chivite,I., Novotná,E., Rigoni,G., Fonseca,TB., Samardzic,D., Agnellini,A., **Bean,C.**, Di Benedetto,G., Tiso,N., Argenton,F., Viola,A., Soriano,MA., Giacomello,M., Ziviani,E., Sales,G., Claret,M., Graupera,M., and Scorrano,L. Developmental and Tumor Angiogenesis Requires the Mitochondria-Shaping Protein Opa1. Cell Metab. (2020) 31:987-1003**.**
8. Chemello,F., Grespi,F., Zulian,A., Cancellara,P., Hebert-Chatelain,E., Martini,P., **Bean,C.**, Alessio,E., Buson,L., Bazzega,M., Armani,A., Sandri,M., Ferrazza,R., Laveder,P., Guella,G., Reggiani,C., Romualdi,C., Bernardi,P., Scorrano,L., Cagnin,S., and Lanfranchi, G. Transcriptomic analysis of single isolated myofibers identifies miR-27a-3p and miR-142-3p as regulators of metabolism in skeletal muscle. Cell Reports (2019) 26: 3784-3797.
9. Burtscher,J., **Bean,C.**, Zangrandi,L., Kmiec,I., Agostinho,A., Scorrano,L., Gnaiger,E., and Schwarzer C. Proenkephalin Derived Peptides Are Involved in the Modulation of Mitochondrial Respiratory Control During Epileptogenesis. Front Mol Neurosci. (2018) 11:351.
10. Pernas, L., **Bean, C.**, Boothroyd, J., and Scorrano, L. Mitochondria restrict growth of the intracellular parasite toxoplasma gondii by limiting its uptake of fatty acids. Cell Metab. (2018) 27: 886-897. **Citations: 47; IF: 27.287**
11. Angori, S., Capanni, C., Faulkner, G., **Bean, C.**, Boriani, G., Lattanzi, G., and Cenni, V. Emery-Dreifuss Muscular Dystrophy-Associated Mutant Forms of Lamin A Recruit the Stress Responsive Protein Ankrd2 into the Nucleus, Affecting the Cellular Response to Oxidative Stress. Cell Physiol Biochem. (2017) 42(1):169-184.
12. **Bean, C.\*§**, Verma, N.K.\*, Yamamoto, D., Chemello, F., Cenni, V., Filomena, M.C., Chen, J., Bang, L§. and Lanfranchi, G§. Ankrd2 is a modulator of NF-kB mediated inflammatory responses during muscle differentiation. Cell Death Dis. (2014) 5:e1002. **\* Co-First Authors;§Co-corresponding Authors**
13. Chemello, F.\*, **Bean, C.\***, Cancellara, P., Laveder, P., Reggiani, C., and Lanfranchi, G. Microgenomic Analysis in Skeletal Muscle: Expression Signatures of Individual Fast and Slow Myofibers PLoS One. (2011) 6 (2): e16807. **\* Co-First Authors**
14. **Bean, C.**, Facchinello, N., Faulkner, G., and Lanfranchi, G. The effects of Ankrd2 alteration indicate its involvement in cell cycle regulation during muscle differentiation. Biochim Biophys Acta-Molecular Cell Research. (2008) 1783(6):1023-35.
15. Raffaello, A., Laveder, P., Romualdi, C., **Bean, C.**, Toniolo, L., Germinarlo, E., Megighian, A., Danieli-Betto, D., Reggiani, C., and Lanfranchi, G. Denervation in Murine Fast-Twitch Muscle: Short Term Physiological Changes and Temporal Expression Profiling. Physiol Genomics. (2006) 25 (1): 60-74.
16. **Bean, C.**, Salamon, M.,Raffaello, A., Campanaro, S.,Pallavicini, A.,and Lanfranchi, G. The Ankrd2, Cdkn1c and Calcyclin Genes are Under the Control of MyoD During Myogenic Differentiation. J Mol Biol. (2005) 349 (2): 349-66.
17. Salamon, M., Millino, C., Raffaello, A., Mongillo, M., Sandri, C., **Bean, C.**, Negrisolo, E., Pallavicini, A., Valle, G., Zaccolo, M., Schiaffino, S., and Lanfranchi, G. Human MYO18B, a Novel Unconventional Myosin Heavy Chain Expressed in Striated Muscles Moves into the Myonuclei upon Differentiation. J Mol Biol. (2003) 326 (1): 137-49.
18. Pallavicini, A,.Kojic, S., **Bean, C.**, Vainzof, M., Salamon, M., Ievolella, C., Bortoletto, G., Pacchioni, B., Zatz, M., Lanfranchi, G., Faulkner, G. and Valle, G. Characterization of human skeletal muscle Ankrd2. Biochem. Biophys. Res. Commun. (2001) 285 (2): 378-86.

**Editorial activity**

Guess Editor for Biomolecules, Special Issue "Mitochondria and Central Nervous System Disorders II". Reviewer for scientific journals: *CDD, Journal of Molecular Biology, PLOS One*

**Honors or Awards**

01/05/2017 Poster Award at the Conference on Translational and Therapeutic Perspectives of Brown Adipose.

**Speaker at International and National congresses**

* 13th World Congress on Targeting Mitochondria  Berlin 26-28 October, 2022.Invited Speaker.
* Institute of Biochemistry I, Faculty of Medicine, Goethe University Frankfurt. 8 May 2019. The mitochondria and cristae shaping protein Opa1 controls fat browning. Seminar. Invited by Prof. Dmitry Namgaladze.
* 15th NuGOweek 2018 “Mitochondria, nutrition and health”. Newcastle upon Tyne 3-6 September 2018. Keeping mitochondria in shape: a matter of life, death and metabolism. Invited Speaker.
* Conference on Translational and Therapeutic Perspectives of Brown Adipose. Chopenagen 2-4 May 2017. The mitochondria and cristae shaping protein Opa1 controls fat browning. Poster Presentation.
* 13th International Congress on Obesity. Vancouver 1-4 May 2016. The mitochondria and cristae shaping protein Opa1 impinges on fat browning to control insulin sensitivity. Invited Speaker.
* Cold Spring Harbor Conferences Asia Shozou, China 12-16 October 2015. The mitochondria and cristae shaping protein Opa1 impinges on fat browning to control insulin sensitivity. Oral presentation.
* Conference on Myofibrillar Z-disk Structure and Dynamics EMBL Hamburg, Germany 14-17 October 2013 . Ankrd2 is a modulator of NF-kB mediated inflammatory responses in muscle.
* European Muscle Conference (EMC) Rhodes, Greece 1-5 September 2012. Interplay between Ankrd2, Akt/Gsk3b and NFkB pathways during myogenic differentiation. Abstract Presentation
* European Muscle Conference 2012, Rhodes, Greece 1-5 September 2012. A novel approach for transcriptional fibre typing in mouse hind limb muscles. Oral presentation.
* European Muscle Conference 2011, Berlin 14-18 September 2011. Transcriptional signatures of skeletal muscle fiber types. Oral presentation.
* European Muscle Conference 2009, Lille 12-16 September 2009. A genomic approach to study the gene expression of skeletal muscles at single-fibre level. Oral presentation. Published in: J Muscle Res Cell Motil. (2009) 30:332.
* European Muscle Conference 2007,Stockholm 8-12 September 2007.The effects of Ankrd2 alteration suggest an important role in cell cycle regulation during muscle differentiation. Abstract presentation.
* European Muscle Conference 2005, Hortobagy 17-21 September 2005. Characterization of gene networks regulating skeletal muscle development through gene silencing-overexpression and transcriptome analysis. Abstract presentation.
* Congresso Nazionale della Società Italiana di Neuroscienze, CNR di Pisa 26-28 September 2003. Identification of two novel putative targets downsteam the MyoD myogenic pathway. Abstract presentation.
* European Muscle Conference 2003, Monpellier 7-10 September 2003. Identification of two novel putative targets downsteam the MyoD myogenic pathway. Abstact Presentation. Published in: J Muscle Res Cell Motil. (2003) 24 (4-6):365.
* IV Convegno Federazione Italiana Scienze della Vita (FISV), Riva del Garda - TN, 20-23 September 2002. Human MYO18B, A Novel Unconventional Myosin Heavy Chain Expressed In Striated Muscles Moves Into The Myonuclei Upon Differentiation. Abstact Presentation.
* Terzo Incontro dell'Istituto di Neuroscienze, Abano Terme – Padova, 3 - 4 July 2002.Human MYO18B, a novel unconventional MYOSIN HEAVY CHAIN expressed in cardiac and skeletal muscle. Abstract Presentation.
* X Convention Scientifica Telethon, Riva del Garda, 18-20 November 2001.Functional genomics of skeletal muscle. Abstact Presentation
* Secondo incontro dell’Istituto di Neuroscienze, ISU – Milano, 18-19 June 2001.An archive of skeletal muscle cDNAs for functional and expression studies. Abstact Presentation
* IX Convention Scientifica Telethon, Rimini12-14 November 2000.From ESTs to gene function: analysis of novel human muscle mRNAs. Abstact Presentation

 **Scientific Career**

In the first part of my career, I studied the role of sarcomeric proteins in skeletal muscle structure, signaling, and function to dissect the relative molecular and physiological pathways. These studies were based on the analysis of various cellular models using a multidisciplinary approach including cellular, molecular, biochemical methods. This research experience has provided me with an excellent background in multiple biological disciplines including molecular biology, many aspects of genome-scale analysis, functional genomics, transcriptomics, and bioinformatics. In the 2014 I moved to the laboratory of Prof. Luca Scorrano where I get strong expertise in the mitochondrial field. In particular, my main project aimed to reveal the role of the inner mitochondrial membrane Opa1 in the adipose tissue. By integrating genetic, genomic and metabolomic approaches I showed that Opa1 improves adipocyte function resulting in physiological benefits on energy balance and glucose homeostasis. I discovered the molecular mechanism as Opa1 coordinates a nuclear gene expression program that drives a phenotypic switch in adipose tissue from energy storing white adipocytes to thermogenic beige adipocytes via the chromatin-remodelling protein Kdm3a. Metabolomics and fluxomic analyses revealed that the Opa1-dependent nuclear reprogramming is mediated by increased urea cycle flux with fumarate accumulation. I’m focused on understanding the role of mitochondria in the pathogenesis of spinal muscular atrophy (SMA). I revealed that SMA muscle accumulate dysfunctional mitochondria and these altered mitochondria constitute the major source of reactive oxygen species (ROS) production. Finally, ROS causes severe damage to the autophagy-lysosomal system. Currently, I’m investigating in SMA and other neuromuscular disease the contribution of the mitochondrial transition pore to the pathological mechanisms.