

## PERSONAL INFORMATION

Andrea Benzi



## WORK EXPERIENCE

01/09/2015–30/10/2018

**Undergraduate Internship for Bachelor and Master Degree**

Department of Experimental Medicine (DIMES), Section of Biochemistry, University of Genoa.

Research activities including molecular biology and biochemistry techniques

## EDUCATION AND TRAINING

01/10/2013–28/10/2016

**Bachelor's Degree in Biotechnology**

University of Genoa

Thesis Title: Expression and characterization of a glycosyl-transferase involved in sugar metabolism

01/10/2016–06/11/2018

**Master's Degree in Medical-Pharmaceutical Biotechnology**

University of Genoa

Thesis Title: Characterization of an enzyme involved in Cotel-Manzke syndrome

01/11/2018–31/01/2022

**PhD in Experimental medicine (Curriculum: Biochemistry)**

Department of Experimental Medicine, Section of Biochemistry, University of Genoa. Tutor: Prof. Santina Bruzzone

01/02/2022–present

**Research fellowship**

Department of Experimental Medicine, Section of Biochemistry, University of Genoa.

## Experience Abroad

**Erasmus+ Fellowship**From 17<sup>th</sup> August 2021 to 19<sup>th</sup> November 2021, 3 months research activity in Prof J. Heeren's lab, Department of Biochemistry and Molecular Cell Biology, University Medical Center Hamburg-Eppendorf, Hamburg (Germany)

## SCIENTIFIC SKILLS

## Technical Expertise

*Main laboratory techniques:*

Chromatographic techniques, HPLC

Purification of proteins and nucleotides

Electrophoresis, Western blotting and immunoenzymatic detection

Cell cultures

Fluorimetric studies of Ca<sup>2+</sup> homeostasis in different cell types

ELISA assay

Evaluation of cellular chemotaxis

Assay of nucleotides with cyclic enzymatic methods

Assay of Enzymatic activities with spectrophotometric and fluorimetric techniques

Molecular Biology Techniques: extraction, manipulation and analysis of nucleic acids; RT-PCR and

PCR; use of plasmids and restriction enzymes; cloning in vectors and bacterial transformation, expression of proteins in bacteria.

## Courses attendance

Workshop: Animal models for perinatal stress and metabolism (University of Genova, 19-20 Sept, 2018)  
Course for Animal Experimentation (Animal Facility IRCCS San Martino, Genova, 21-22 November, 2018)

## Teaching

Since 2017: Support in the practical course of Biochemistry for students in the Bachelor Degree in Biotechnology (organization of practical activities in a laboratory: assay of enzymatic activities; electrophoresis; ....)

Teaching activity in "Biochemistry and laboratory" course for the bachelor's degree in biotechnology (art. 23, comma 2)

## Third mission

Collaboration in departmental activities of science popularization to high school students, in organizing "hands-on" activities

## Other activities

Co-guest editor in the special issue "The Role of NAD<sup>+</sup> Metabolism in Cellular Processes during Aging and Age-Associated Diseases", on Cells (mdpi)

## Congresses

Meeting on Carbohydrate Chemistry (XVI CSCC 2018), Certosa di Pontignano, Siena, Italy, 17-20 June 2018. Poster presentation: The 6-deoxy hexoses metabolism in trichomonas vaginalis. Gaglianone M, Laugieri ME, Benzi A, Tonetti M.

Annual Meeting of the Italian Multiple Sclerosis Society, Roma, Italy, 29-31 May 2019. Poster presentation: SIRT6 inhibition as a therapeutic approach for treating multiple sclerosis. Ferrara G, Frumento D, Benzi A, Scaroni F, Petrosino V, Sturla L, Verderio C, Kerlero de Rosbo N, Uccelli A, Bruzzone S.

FASEB Summer Conference "The NAD Metabolism and Signalling Conference", Dublin, Ireland, 23-28 June 2019. Poster presentation: Role of CD38 in cold-induced thermogenesis. Benzi A, Heine M, Fischer A, Sturla L, Koch-Nolte F, Mittrücker H-W, Guse AH, Zocchi E, Heeren J, Bruzzone S.

BraYn, Milano, Italy, 14-16 November 2019. Poster presentation: SIRT6 inhibition as a therapeutic approach in multiple sclerosis. Benzi A, Ferrara G, Frumento D, Scaroni F, Petrosino V, Spinelli S, Sturla L, Verderio C, Kerlero de Rosbo N, Uccelli A, Bruzzone S.

The 45<sup>th</sup> FEBS (Federation of the European Biochemical Societies) Virtual Congress, Online meeting, 3-8 July 2021. Poster presentation: Role of CD38 during thermogenesis in adipose tissues and liver. Benzi A, Spinelli S, Heine M, Fischer A, Abbotto E, Sturla L, Koch-Nolte F, Mittrücker H-W, Guse AH, De Flora A, Zocchi E, Heeren J, Bruzzone S.

FASEB Summer Conference "The NAD Metabolism and Signalling Conference", Online meeting, 15-16 June 2021. Poster presentation: Role of CD38 during thermogenesis in adipose tissues and liver. Benzi A, Spinelli S, Heine M, Fischer A, Abbotto E, Sturla L, Koch-Nolte F, Mittrücker H-W, Guse AH, De Flora A, Zocchi E, Heeren J, Bruzzone S.

Congresso Nazionale Società Italiana Biochimica e Biologia molecolare (SIB), Online meeting, 23-24 September 2021. Poster presentation: Role of CD38 during thermogenesis in adipose tissues and liver. Benzi A, Spinelli S, Heine M, Fischer A, Abbotto E, Sturla L, Koch-Nolte F, Mittrücker H-W, Guse AH, De Flora A, Zocchi E, Heeren J, Bruzzone S.

FASEB "The NAD<sup>+</sup> Metabolism and Signaling Conference", Steamboat Springs, Colorado, 26-30 June 2022. Poster presentation: "Extracellular nicotinamide adenine dinucleotide (NAD) arrests endothelial cell proliferation". Astigiano C, Piacente F, Laugieri ME, Benzi A, Soncini D, Cea M, Di Buduo C, Antonelli A, Balduini A, Magnani M, Bruzzone S.

XXIII national congress of Italian association of myology (AIM), Padova, Italy, 8-10 June 2023. Oral presentation: The role of the NAD<sup>+</sup>/CD38 axis in the pathophysiology of  $\alpha$ -sarcoglycanopathy. Benzi A, Amaro A, Pintus S, Antonini F, Reggiani F, Baratto S, Principi E, Del Zotto G, Cassandrini D, D'Amico A, Malandrini A, Malfatti E, Mongini T, Pegoraro E, Previtali S, Rodolico C, Tasca G, Morandi F, Malavasi

F, Pfeffer U, Bruzzone S, Bruno C, Raffaghello L.

## Publications

Sociali G, Liessi N, Grozio A, Caffa I, Parenti MD, Ravera S, Tasso B, **Benzi A**, Nencioni A, Del Rio A, Robina I, Millo E, Bruzzone S. Differential modulation of SIRT6 deacetylase and deacylase activities by lysine-based small molecules. *Mol Divers*. 2020; 24:655-671.

Ferrara G, **Benzi A\***, Sturla L, Marubbi D, Frumento D, Spinelli S, Abbotto E, Ivaldi F, von Holtey M, Murone M, Nencioni A, Uccelli A, Bruzzone S. Sirt6 inhibition delays the onset of experimental autoimmune encephalomyelitis by reducing dendritic cell migration. *J Neuroinflammation*. 2020;17:228. \*co-first author

**Benzi A**, Sturla L, Heine M, Fischer AW, Spinelli S, Magnone M, Sociali G, Parodi A, Fenoglio D, Emionite L, Koch-Nolte F, Mittrücker HW, Guse AH, De Flora A, Zocchi E, Heeren J, Bruzzone S. CD38 downregulation modulates NAD<sup>+</sup> and NADP(H) levels in thermogenic adipose tissues. *Biochim Biophys Acta Mol Cell Biol Lipids*. 2021;1866:158819.

Becherini P, Caffa I, Piacente F, Damonte P, Vellone VG, Passalacqua M, **Benzi A**, Bonfiglio T, Reverberi D, Khalifa A, Ghanem M, Guijarro A, Tagliafico L, Sucameli M, Persia A, Monacelli F, Cea M, Bruzzone S, Ravera S, Nencioni A. SIRT6 enhances oxidative phosphorylation in breast cancer and promotes mammary tumorigenesis in mice. *Cancer Metab*. 2021;9:6.

**Benzi A**, Grozio A, Spinelli S, Sturla L, Guse AH, De Flora A, Zocchi E, Heeren J, Bruzzone S. Role of CD38 in Adipose Tissue: Tuning Coenzyme Availability? *Nutrients*. 2021;13:3734.

Raffaghello L, Principi E, Baratto S, Panicucci C, Pintus S, Antonini F, Del Zotto G, **Benzi A**, Bruzzone S, Scudieri P, Minetti C, Gazzo E, Bruno C. P2X7 Receptor Antagonist Reduces Fibrosis and Inflammation in a Mouse Model of Alpha-Sarcoglycan Muscular Dystrophy. *Pharmaceuticals (Basel)*. 2022;15:89.

Piacente F, Bottero M, **Benzi A**, Vigo T, Uccelli A, Bruzzone S, Ferrara G. Neuroprotective Potential of Dendritic Cells and Sirtuins in Multiple Sclerosis. *Int J Mol Sci*. 2022;23:4352.

Franco J, Piacente F, Walter M, Fratta S, Ghanem M, **Benzi A**, Caffa I, Kurkin AV, Altieri A, Herr P, Martínez-Bailén M, Robina I, Bruzzone S, Nencioni A, Del Rio A. Structure-Based Identification and Biological Characterization of New NAPRT Inhibitors. *Pharmaceuticals (Basel)*. 2022;15:855.

Astigiano C, **Benzi A**, Laugieri ME, Piacente F, Sturla L, Guida L, Bruzzone S, De Flora A. Paracrine ADP Ribosyl Cyclase-Mediated Regulation of Biological Processes. *Cells*. 2022;11:2637.

Spinelli S, Guida L, Vigliarolo T, Passalacqua M, Begani G, Magnone M, Sturla L, **Benzi A**, Ameri P, Lazzarini E, Bearzi C, Rizzi R, Zocchi E. The ABA-LANCL1/2 Hormone-Receptors System Protects H9c2 Cardiomyocytes from Hypoxia-Induced Mitochondrial Injury via an AMPK- and NO-Mediated Mechanism. *Cells*. 2022;11:2888.

**Benzi A**, Baratto S, Astigiano C, Sturla L, Panicucci C, Mamchaoui K, Raffaghello L, Bruzzone S, Gazzo E, and Bruno C. Aberrant ATP release and impairment of P2Y2-mediated signaling in sarcoglycanopathies. *Lab Invest*. 2023;103:100037.

**Benzi A**, Spinelli S, Sturla L, Heine M, Fischer AW, Koch-Nolte F, Mittrücker HW, Guse AH, De Flora A, Heeren J, Bruzzone S. Role of liver CD38 in the regulation of metabolic pathways during cold-induced thermogenesis in mice. *Cells*. 2022;11:3812.

Becherini P, Soncini D, Ravera S, Gelli E, Martinuzzi C, Giorgetti G, Cagnetta A, Guolo F, Ivaldi F, Miglino M, Aquino S, Todoerti K, Neri A, **Benzi A**, Passalacqua M, Nencioni A, Perrotta I, Gallo Cantafio ME, Amodio N, De Flora A, Bruzzone S, Lemoli RM, Cea M. CD38-Induced Metabolic Dysfunction Primes Multiple Myeloma Cells for NAD<sup>+</sup>-Lowering Agents. *Antioxidants (Basel)*. 2023;12:494.

Conforti I, **Benzi A**, Caffa I, Bruzzone S, Nencioni A, Marra A. Anti-pancreatic cancer agents containing an iminosugar unit. (*Pharmaceutics*). 2023;15:1472.

PERSONAL SKILLS

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Mother tongue Italian

Foreign languages (s) English: advanced  
French: average