

## **CURRICULUM VITAE**

**Piras Cristina**

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## **EDUCATION AND PROFESSIONAL QUALIFICATIONS**

**2008** - Master's Degree in Experimental and Applied Biology from the University of Cagliari

**2012** - PhD in Chemical Sciences and Technologies from the University of Cagliari

**2012-2013** - Research Fellow at the Department of Chemical and Geological Sciences, University of Cagliari

**2013-2018** - Specialization in Clinical Pathology obtained at the Faculty of Medicine and Surgery, University of Sassari

**2018-2019** - Research Fellow at the Department of Surgical Sciences, University of Cagliari

**2020-2021** - Research Fellow at the Department of Surgical Sciences, University of Cagliari

**2020** - Subject Expert in MED/05 Clinical Pathology (three-year period 2020-2023)

**2021-2024** - Type A Researcher at the Department of Biomedical Sciences for the competitive sector 06/A2 - General Pathology and Clinical Pathology (SSD MED/05 profile)

**2023** - Obtained National Scientific Qualification for the functions of Associate Professor in the Competitive Sector 06/A2 - General Pathology and Clinical Pathology

**2024** - Type B Researcher at the Department of Biomedical Sciences for the competitive sector 06/MEDS-02 - General Pathology and Clinical Pathology (SSD MEDS/02B profile)

## **TEACHING EXPERIENCE AT THE UNIVERSITY OF CAGLIARI, FACULTY OF MEDICINE**

Academic Year 2023/2024 - Lecturer at the School of Specialization in Pediatrics

Academic Year 2023/2024 - Head of the General and Clinical Pathology course for the Bachelor's Degree in Nursing Sciences

Academic Year 2023/2024 - Head of the General and Clinical Pathology course for the Bachelor's Degree in Dental Hygiene

November 2023 - Educational Tutor for the Clinical Pathology course in the Medicine and Surgery Degree Program at the Faculty of Medicine and Surgery

March 2023 - Pathology Seminars for the Bachelor's Degree in Motor and Sports Sciences at the Faculty of Medicine and Surgery

Academic Year 2022/2023 - Head of the General and Clinical Pathology course for the Bachelor's Degree in Dental Hygiene

December 2022 - Educational Tutor for the Clinical Pathology course in the Medicine and Surgery Degree Program at the Faculty of Medicine and Surgery

Academic Year 2022/2023 - Head of the General and Clinical Pathology course for the Bachelor's Degree in Nursing Sciences

April 2022–May 2022 - Pathology Seminars for the Bachelor's Degree in Motor and Sports Sciences at the Faculty of Medicine and Surgery

December 2021–January 2022 - Educational Tutor for the Clinical Pathology course in the Medicine and Surgery Degree Program at the Faculty of Medicine and Surgery

Academic Year 2021/2022 - Head of the General and Clinical Pathology course for the Bachelor's Degree in Nursing Sciences

Academic Year 2021/2022 - Head of the Clinical Pathology course for the Medicine and Surgery Degree Program

Academic Year 2020/2021 - Head of the General Pathology course for the Bachelor's Degree in Motor and Sports Sciences

December 2020–January 2021 - Educational Tutor for the Clinical Pathology course in the Medicine and Surgery Degree Program at the Faculty of Medicine and Surgery

December 2019–February 2020 - Educational Tutor for the Clinical Pathology course in the Medicine and Surgery Degree Program at the Faculty of Medicine and Surgery

February–September 2013 - Educational Tutor for the Biochemistry course in the Biomedical Laboratory Techniques Degree Program at the Faculty of Medicine and Surgery

May–June 2009 - Educational Tutor within the scientific degrees project for Chemistry at the Department of Inorganic and Analytical Chemistry, University of Cagliari

### **TEACHING ASSIGNMENTS IN ACCREDITED PhD PROGRAMS**

2019-2022: Responsible for teaching assignments on -omic sciences, particularly metabolomics and multivariate data analysis, at the PhD in Molecular and Translational Medicine, University of Cagliari

### **TEACHING OR RESEARCH ASSIGNMENTS (FELLOWSHIPS) AT QUALIFIED FOREIGN UNIVERSITIES AND RESEARCH INSTITUTES**

2010 - Visiting PhD student at the laboratory coordinated by Prof. Soren Balling Engelsen at the Department of Food Sciences, Quality & Technology, Faculty of Life Sciences, University of Copenhagen, Denmark

### **RESEARCH INTERESTS AND FIELDS**

- Clinical Metabolomics
- Precision Medicine
- Identification of New Biomarkers

### **PUBLICATIONS IN SCIENTIFIC JOURNALS**

- Sanna, G.; Marongiu, A.; Firinu, D., **Piras, C.**; Palmas, V.; Galdiero, M.; Atzori, L.; Caria, P.; Campagna, M.; Perra, A.; Costanzo, G.; Coghe, F.; Littera, R.; Chessa, L.; Manzin, A. Humoral responses to wild type and ancient BA.1 SARS-CoV-2 variant after heterologous priming vaccination with ChAdOx1 nCoV-19 and BNT162b2 booster dose. *Clinical and Experimental Medicine* 2024 24:12.
- Kopec, K.K., Cannas, F., **Piras, C.**, Spada, M., Noto, A., Atzori, L., Fanos, V. Unlocking the secrets of metabolomics with Artificial Intelligence: a comprehensive literature review. *Journal of Pediatric and Neonatal Individualized Medicine* 2024;13, e130105.
- D'Erasmus, L.; Bini, S.; Casula, M.; Gazzotti, M.; Bertolini, S.; Calandra, S.; Tarugi, P.; Averna, M.; Iannuzzo, G.; Fortunato, G.; Catapano, A.L.; Arca M. and the LIPIGEN HoFH group (**C.Piras** et al.) Contemporary lipid-lowering management and risk of cardiovascular events in homozygous

familial hypercholesterolaemia: insights from the Italian LIPIGEN Registry. *European Journal of Preventive Cardiology* 2024, 00, 1–10.

- Casani, A.P.; Albera, R.; **Piras, C.**; Albera, A.; Noto, A.; Ducci, N.; Atzori, L.; Lucisano, S.; Mussap, M.; Fanos, V. Clinical Efficacy and Metabolomics Modifications Induced by Polyphenol Compound Supplementation in the Treatment of Residual Dizziness following Semont Maneuver in Benign Paroxysmal Positional Vertigo (BPPV) of the Posterior Semicircular Canal (PSC): Preliminary Results. *Metabolites* 2024, 14, 86.
- Dessì, A.; Bosco, A.; Cesare Marincola, F.; Pintus, R.; Paci, G.; Atzori, L.; Fanos, V.; **Piras, C.** Sardinian Infants of Diabetic Mothers: A Metabolomics Observational Study. *Int. J. Mol. Sci.* 2023, 24, 13724.
- Deidda, M.; Noto, A.; Firinu, D.; **Piras, C.**; Cordeddu, W.; Depau, C.; Costanzo, G.; del Giacco, S.; Atzori, L.; Mercurio, G.; Cadeddu Dessalvi, C. Right Ventricular Subclinical Dysfunction in SLE Patients Correlates with Metabolomic Fingerprint and Organ Damage. *Metabolites* 2023, 13, 781.
- Spada, M.; **Piras, C.\***; Diana, G.; Leoni, V.P.; Frau, D.V.; Serreli, G.; Simbula, G.; Loi, R.; Noto, A.; Murgia, F.; Caria, P.; Atzori, L. Glutamine Starvation Affects Cell Cycle, Oxidative Homeostasis and Metabolism in Colorectal Cancer Cells. *Antioxidants* 2023, 12, 683.  
**\*corresponding author**
- Rosa, A.; Nieddu, M.; Pollastro, F.; **Piras, C.** Fatty Acid Ratios as Parameters to Discriminate Between Normal and Tumoral Cells and Compare Drug Treatments in Cancer Cells. *Eur. J. Lipid Sci. Technol.* 2023, 2200128.
- Lai, G.; Caboni, P.; **Piras, C.**; Pes, M.; Sitzia, M.; Addis, M.; Pirisi, A.; Scano, P. Development and Chemico-Physical Characterization of Ovine Milk-Based Ingredients for Infant Formulae. *Appl. Sci.* 2023, 13, 653.
- **Piras, C.**; Pibiri, M.; Conte, S.; Ferranti, G.; Leoni, V.P.; Liggi, S.; Spada, M.; Muntoni, S.; Caboni, P.; Atzori, L. Metabolomics analysis of plasma samples of patients with fibromyalgia and electromagnetic sensitivity using GC–MS technique. *Scientific Reports* 2022, 12:21923.
- Noto, S.; **Piras, C.**; Atzori, L.; Mussap, M.; Albera, A.; Albera, R.; Casani, A.P.; Capobianco, S.; Fanos, V. Metabolomics in Otorhinolaryngology. *Front. Mol. Biosci.* 2022 9:934311.
- Sanna, G.; Marongiu, A.; Firinu, D.; **Piras, C.**; Franci, G.; Galdiero, M.; Pala, G.; Palmas, V.; Angius, F.; Littera, R.; Perra, A.; Orrù, G.; Campagna, M.; Costanzo, G.; Meloni, F.; Coghe, F.; Chessa, L.; Manzin, A. Neutralizing Antibodies Responses against SARS-CoV-2 in a Sardinian Cohort Group Up to 9 Months after BNT162b2 Vaccination. *Vaccines* 2022, 10, 531.
- **Piras, C.**; Pintus, B.M.; Noto, A.; Evangelista, M.; Fanos, V.; Musu, M.; Mussap, M.; Atzori, L., Sardo, S.; Finco, G. Metabolomics and Microbiomics: New Potential Strategies in Chronic Pain Syndrome. *Journal of Pain Research* 2022, 15, 723–731.
- **Piras, C.**; Mussap, M.; Noto, A.; De Giacomo, A.; Cristofori, F.; Spada, M.; Fanos, V.; Atzori, L., Francavilla, R. Alteration of the Intestinal Permeability Are Reflected by Changes in the Urine Metabolome of Young Autistic Children: Preliminary Results. *Metabolites* 2022, 12, 104.
- Deidda, M., Noto, A., Pasqualucci, D., Fattuoni, C., Barberini, L., **Piras, C.**, Bassareo, P.P., Porcu, M., Mercurio, G., Cadeddu Dessalvi, C. The Echocardiographic Parameters of Systolic Function Are Associated with Specific Metabolomic Fingerprints in Obstructive and Non-Obstructive Hypertrophic Cardiomyopathy. *Metabolites* 2021, 11, 787.

- **Piras, C.**, Noto, A., Ibba, L., Deidda, M., Fanos, V., Muntoni, S., Leoni, V.P., Atzori, L. Contribution of Metabolomics to the Understanding of NAFLD and NASH Syndromes: A Systematic Review. *Metabolites* 2021, *11*, 694.
- Fulghesu, A.M., **Piras, C.**, Dessì, A., Succu, C., Atzori, L., Pintus, R., Gentile, C., Angioni, S., Fanos, V. Urinary Metabolites Reveal Hyperinsulinemia and Insulin Resistance in Polycystic Ovarian Syndrome (PCOS). *Metabolites* 2021, *11*, 437.
- **Piras, C.**, Neri, I., Pintus, R., Noto, A., Petrella, E., Monari, F., Dessì, A., Fanos, V., Atzori, L., Facchinetti, F. First trimester metabolomics 1H-NMR study of the urinary profile predicts gestational diabetes mellitus development in obese women. *The Journal of Maternal-Fetal & Neonatal Medicine* 2021, 1-9.
- Santoru, M.L., **Piras, C.\***, Murgia, F., Leoni, V.P., Spada, M., Murgia, A., Liggi, S., Lai, M.A., Usai, P., Caboni, P., Manzin, A., Atzori, L. Metabolic Alteration in Plasma and Biopsies From Patients With IBD. *Inflammatory Bowel Diseases* 2021, izab012. **\*corresponding author**
- Tronci, L., Serreli, G., **Piras, C.**, Frau, D.V., Dettori, T., Deiana, M., Murgia, F., Santoru, M.L., Spada, M., Leoni, V.P., Griffin, J.L., Vanni, R., Atzori, L., Caria, P. Vitamin C Cytotoxicity and Its Effects in Redox Homeostasis and Energetic Metabolism in Papillary Thyroid Carcinoma Cell Lines. *Antioxidants*, 2021, *10*, 809.
- Piras, A., **Piras, C.**, Porcedda, S., Rosa, A. Comparative evaluation of the composition of vegetable essential and fixed oils obtained by supercritical extraction and conventional techniques: a chemometric approach. *International Journal of Food Science and Technology*, 2021.
- Mussap, M., Noto, A., **Piras, C.**, Atzori, L., Fanos V. Slotting metabolomics into routine precision medicine. *Expert Review of Precision Medicine and Drug Development*, 2021 DOI: 10.1080/23808993.2021.1911639
- Panisi, C., Guerini, F.R., Abruzzo, P.M., Balzola, F., Biava, P.M., Bolotta, A., Brunero, M., Burgio, E., , Chiara, A., Clerici, M., Croce, L., Ferreri, C., Giovannini, N., Ghezzi, A., Grossi, E., Keller, R., Manzotti, A., Marini, M., Migliore, L., Moderato, L., Moscone, D., Mussap, M., Parmeggiani, A., Pasin, V., Perotti, M., **Piras, C.**, Saresella, M., Stoccoro, A., Toso, T., Vacca, R.A., Vagni, D., Vendemmia, S., Villa, L., Politi, P., and Fanos, V. Autism Spectrum Disorder from the Womb to Adulthood: Suggestions for a Paradigm Shift *J. Pers. Med.* 2021, *11*, 70.
- **Piras, C.**, Pibiri, M., Leoni, V.P., Balsamo, A., Tronci, L., Arisci, N., Mariotti, S., Atzori, L. Analysis of metabolomics profile in hypothyroid patients before and after thyroid hormone replacement. *J Endocrinol Investigation* 2020, <https://doi.org/10.1007/s40618-020-01434-y>.
- Bardanzellu, F., **Piras, C.**, Atzei, A., Neroni, P., Fanos, V. Early Urinary Metabolomics in Patent Ductus Arteriosus anticipates the fate: preliminary data. *Front. Pediatr.* 2020, *8*, 613749 doi: 10.3389/fped.2020.613749.
- **Piras, C.**, Conte, S., Pibiri, M., Rao, G., Muntoni, S., Leoni, V.P., Finco, G., Atzori, L. Metabolomics and psychological features in fibromyalgia and electromagnetic sensitivity. *Sci Rep* 2020, *10*, 20418.
- **Piras, C.**, Pibiri, M., Leoni, V.P., Cabras, F., Restivo, A., Griffin, J.L., Fanos, V., Mussap, M., Zorcolo, L., Atzori, L. Urinary 1H-NMR Metabolic Signature in Subjects Undergoing Colonoscopy for Colon Cancer Diagnosis. *Appl. Sci.* **2020**, *10*, 5401.

- Santoru, M.L., **Piras, C.**, Murgia, F., Spada, M., Tronci, L., Leoni, V.P., Serreli, G., Deiana, M., Atzori, L. Modulatory Effect of Nicotinic Acid on the Metabolism of Caco-2 Cells Exposed to IL-1 $\beta$  and LPS. *Metabolites* 2020, 10, 204.
- **Piras, C.**, Pintus, R., Pruna, D., Dessì, A., Atzori, L., Fanos, V. Pediatric Acute-onset Neuropsychiatric Syndrome and Mycoplasma Pneumoniae infection: A Case Report analysis with a metabolomics approach. *Curr Pediatr Rev.* 2020, 16, 183-193.
- Tronci, L., Caria, P., Frau, D.V., Liggi, S., **Piras, C.**, Murgia, F., Santoru, M.L., Pibiri, M., Deiana, M., Griffin, J.L., Vanni, R., Atzori, L. Crosstalk between Metabolic Alterations and Altered Redox Balance in PTC-Derived Cell Lines. *Metabolites* 2019, 9, 23.
- Deidda, M., **Piras, C.**, Binaghi, G., Congia, D., Pani, A., Boi, A., Sanna, F., Rossi, A., Loi, B., Cadeddu Dessalvi, C., Atzori, L., Porcu, M., Mercurio, G. Metabolomic fingerprint of coronary blood in STEMI patients depends on the ischemic time and inflammatory state. *Sci. Rep.* 2019, 9, 312.
- Murgia, A., Hinz, C., Liggi, S., Denes, J., Hall, Z., West, J., Santoru, M.L., **Piras, C.**, Manis, C., Usai, P., Atzori, L., Griffin, J.L., Caboni, P. Italian cohort of patients affected by inflammatory bowel disease is characterised by variation in glycerophospholipid, free fatty acids and amino acid levels. *Metabolomics* 2018, 14, 140.
- Lussu, M., Camboni, T., **Piras, C.**, Serra, C., Del Carratore, F., Griffin, J., Atzori, L., Manzin, A. 1H NMR spectroscopy-based metabolomics analysis for the diagnosis of symptomatic E. coli-associated urinary tract infection (UTI). *BMC Microbiol.* 2017, 17, 201.
- Santoru, M.L., **Piras, C.**, Murgia, A., Palmas, V., Camboni, T., Liggi, S., Ibba, I., Lai, M.A., Orrù, S., Blois, S., Loizedda, A.L., Griffin, J.L., Usai, P., Caboni, P., Atzori, L., Manzin, A. Cross sectional evaluation of the gut-microbiome metabolome axis in an Italian cohort of IBD patients. *Sci. Rep.* 2017, 7, 9523.
- **Piras, C.**, Arisci, N., Poddighe, S., Liggi, S., Mariotti, S., Atzori, L. Metabolomic profile in hyperthyroid patients before and after antithyroid drug treatment: Correlation with thyroid hormone and TSH concentration. *Int. J. Biochem. Cell Biol.* 2017, 93, 119–128.
- Deidda M., Cadeddu Dessalvi C., Binaghi G., Congia D., Boi A., Loi B., Sanna F., Pani A., **Piras C.**, Atzori L., Mercurio G., Porcu M. STEMI metabolic fingerprint depends on ischemic time and inflammation status. *European Heart Journal* 2017.
- Deidda, M., **Piras, C.**, Cadeddu Dessalvi, C., Congia, D., Locci, E., Ascedu, F., De Candia, G., Cadeddu, M., Lai, G., Pirisi, R., Atzori, L., Mercurio, G. Blood metabolomic fingerprint is distinct in healthy coronary and in stenosing or microvascular ischemic heart disease. *J Transl Med* 2017, 15, 112.
- Deidda, M., **Piras, C.**, Cadeddu Dessalvi, C., Locci, E., Barberini, L., Orofino, S., Musu, M., Mura, M.N., Manconi, P.E., Finco, G., Atzori, L., Mercurio, G. Distinctive metabolomic fingerprint in scleroderma patients with pulmonary arterial hypertension. *Int. J. Cardiol.* 2017, 241, 401–406.
- Deidda, M., **Piras, C.**, Bassareo, P.P., Cadeddu Dessalvi, C., Mercurio, G. Metabolomics, a promising approach to translational research in cardiology. *IJC Metabolic & Endocrine* 2015, 9, 31–38.

- Deidda, M., **Piras, C.**, Dessalvi, C.C., Locci, E., Barberini, L., Torri, F., Ascedu, F., Atzori, L., Mercurio, G. Metabolomic approach to profile functional and metabolic changes in heart failure. *J Transl Med* 2015, 13, 297.
- Rosa, A., Atzeri, A., Deiana, M., Scano, P., Incani, A., **Piras, C.**, Cesare Marincola, F. Comparative antioxidant activity and <sup>1</sup>H NMR profiling of Mediterranean fruit products. *Food Research International* 2015, 69, 322–330.
- **Piras, C.**, Scano, P., Locci, E., Sanna, R., Marincola, F.C. Analysing the effects of frozen storage and processing on the metabolite profile of raw mullet roes using <sup>1</sup>H NMR spectroscopy. *Food Chem* 2014, 159, 71–79.
- Sanna, R., **Piras, C.**, Marincola, F., Lecca, V., Maurichi, S., Scano, P. Multivariate Statistical Analysis of the UV-Vis Profiles of Wine Polyphenolic Extracts during Vinification. *J. of Agricultural Sci.* 2014, 6, p152.
- **Piras, C.**, Cesare Marincola, F., Savorani, F., Engelsen, S.B., Cosentino, S., Viale, S., Pisano, M.B. A NMR metabolomics study of the ripening process of the Fiore Sardo cheese produced with autochthonous adjunct cultures. *Food Chem* 2013, 141, 2137–2147.
- Scano, P., Rosa, A., Pisano, M.B., **Piras, C.**, Cosentino, S., Dessi', M.A. Lipid components and water soluble metabolites in salted and dried tuna (*Thunnus thynnus* L.) roes. *Food Chemistry* 2013, 138, 2115–2121.
- Cesare Marincola, F., **Piras, C.**, Russina, O., Gontrani, L., Saba, G., Lai, A. NMR investigation of imidazolium-based ionic liquids and their aqueous mixtures. *Chemphyschem* 2012, 13, 1339–1346.
- Locci, E., **Piras, C.**, Mereu, S., Cesare Marincola, F., Scano, P. <sup>1</sup>H NMR metabolite fingerprint and pattern recognition of mullet (*Mugil cephalus*) bottarga. *J. Agric. Food Chem.* 2011, 59, 9497–9505.
- Scano, P., Rosa, A., Mereu, S., **Piras, C.**, Atzeri, A., Dessi, M.A. Multivariate fatty acid and fatty alcohol profile of mullet bottarga. *Eur. J. of Lipid Sci. and Technol.* 2010, 112, 1369–1374.