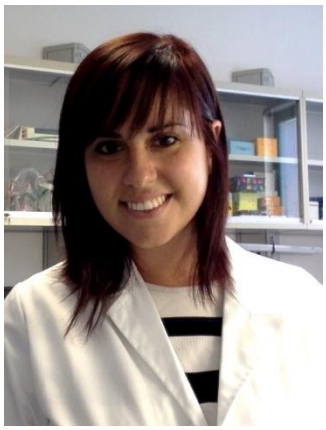

Rossana Bongianino

Date and place of birth: [redacted]

Profile: **Scientific Research** – Biotechnology, Molecular Biology and Genetics

Work Experience:

- February 2020 – Present
  Biologist at Molecular Cardiology Laboratory, ICS Maugeri – Pavia

- January 2016 – Decembre 2019

  Research Fellow as Molecular Biologist at Molecular Cardiology Laboratory, Molecular Medicine Department, University of Pavia and ICS Maugeri - Pavia

  Main activities and responsibilities: Development of gene therapy protocols for inherited arrhythmias; Infection of transgenic mice with viral vectors; electrocardiography monitoring in mice; Molecular and biochemical assays; Cell cultures and cellular assays; Training of students and junior team members.

- November 2012 - December 2015

  Research Fellow as a PhD student in Genetics, Molecular and Cellular Biology at Molecular Cardiology Laboratory, Molecular Medicine Department, University of Pavia and ICS Maugeri - Pavia

  Main activities and responsibilities: Development of gene therapy protocols for inherited arrhythmias; Infection of transgenic mice with viral vectors; electrocardiography monitoring in mice; Molecular and biochemical assays; Cell cultures and cellular assays; Training of students and junior team members.

- October 2010 - October 2012

  Trainee as a Molecular Biologist for the experimental thesis internship at Molecular Cardiology Laboratory, Molecular Medicine Department, University of Pavia and ICS Maugeri - Pavia

- September 2009 – September 2010

  Trainee as Biotechnologist for the experimental thesis internship Human Genetics Laboratory, Biology and Biotechnology Departmant, University of Pavia.

Education and training:

- November 2012 – December 2015

  PhD in Genetics, Molecular and Cellular Biology at University of Pavia

  Thesis Title: “Gene therapy as an innovative approach for the treatment of Catecholaminergic Polymorphic Ventricular Tachycardia” – Supervisors: Prof. Silvia Giuliana Priori, Full Professor of Cardiology and Prof. Antonio Torroni, Full professor of Genetic at University of Pavia.

- October 2010 - September 2012

  Master Degree held in English language **in Molecular Biology and Genetics**, Faculty of Mathematical, Physical and Natural Sciences, University of Pavia. Grade: 110/110 cum laude

  Thesis Title: “Functional and molecular characterization of a novel KCNQ1 mutation that causes Long QT Syndrome” – Supervisor: Prof. Silvia Giuliana Priori, Full professor of Cardiology and Prof. Franco Tanzi, Associate Professor of Physiology, University of Pavia.

  Exams sustained: Advanced Molecular Biology, Bioinformatics, Human Molecular Genetics, Methods in Biochemistry, Microbial Genetics, Molecular Pharmacology, Structural Biology and Pharmacology, Advanced Microscopy, Cellular Biochemistry, Developmental Biology and Molecular Microbiology.

- October 2007- September 2010

  Bachelor’s Degree in Biotechnology, University of Pavia. Grade: 110/110 cum laude

  Thesis Title: “Analysis of mitochondrial genome variability in a selected group of bulgarian population” - Supervisor Prof. Antonio Torroni, Full Professor of Genetics, University of Pavia.

  Principal subjects: Biotechnology, cellular biology, developmental biology, microbiology, molecular biology, genetics, organic and inorganic chemistry, biochemistry.

- September 2002 – July 2007

  Scientific High School Diploma at Liceo Scientifico “A. Gramsci” - Ivrea (TO). Grade: 90 / 100

Technical Skills and Competences

Bio-Molecular:

- Cloning techniques.

- Preparation of competent cells and transformation with DNA plasmids, amplification of plasmids in bacterial cultures.

- Purification of DNA plasmids.

- PCR, RT-PCR, Real-Time PCR.

- Analysis of DNA polymorphisms using restriction enzymes (RFLP)

- Extraction of RNA and DNA from tissues and cells.

- Sequencing analysis.

Cellular:

- Preparation of mammalian cell cultures.

- Transient transfection of cell cultures.

- Methods of cellular and subcellular fractionation.

- Direct and indirect immunofluorescence techniques.

- Immunohistochemistry

- Techniques of Optical and Confocal Fluorescence Microscopy.

Biochemistry:

- Visible spectrophotometer, UV and IR.

- Electrophoretic techniques (agarose and acrylamide gel)

- Western blot.

- Immunoprecipitation techniques for protein.

Animals:

- Implantation of telemetry for ECG recording in mice

- Isolation of murine cardiomyocytes

- Intraperitoneal and tail vein injection in mice

Informatic Skills:

- Good use of major software in Windows XP, Vista, Windows 7 (Office, Adobe) and Windows 8.

- Good knowledge of Internet and e-mail management.

- Research in major scientific databases (PubMed, OMIM, Nucleotide, Ensemble, etc.) and use of BLAST and FASTA to search for sequence similarity in gene databases.

- Good use of software for Genetics and Molecular Biology (SnapGene, Mutation Surveyor, Chromas, Image J. etc.)

- Basic competence with graphic software (Photoshop, Illustrator)

Languages:

First language: Italian

Other languages: English

Reading: Very good
Listening: Very good
Writing: Very good
Speaking: Very good
Certifications: Preliminary English Test (PET) - Passed with Merit (2006)

Relational and organizational skills:

The studies and knowledge gained in these years have allowed me to achieve excellent learning and adaptation skills in multidisciplinary and multicultural working environments, occupying positions where communication is important and facing situations where it is essential to work in groups.

In my experience over university education and scientific research I have gained good organizational skills and management of both study programs and experimental projects. I had also the possibility to train student and junior team member in the laboratory environment.

Annexes

Annex 1: Courses, Seminars and Congresses

Annex 2: Abstracts

Annex 3: Publications and Patents

I hereby authorise the use of my personal details solely for circulation within the company in relation to the Italian Legislative Decree n° 196/2003

Rossana Bongianino

Annex 1 Courses, seminars and congresses

28 May 2012: “Gene Therapy Using Adeno-Associated Virus Vectors”, Prof. Kenneth I. Berns, IGM-CNR, Pavia, Italy.

31 August - 1 September 2012: 4th Annual Meeting Fondation Leducq, Transatlantic CAMKII Alliance. Pavia, Italy

12 November 2012: “Biological membranes”. Prof. Ingolf Bernhardt. Pavia University.

13 November 2012: “Radioactivity in the environment, medicine and industry”. Prof. Ingolf Bernhardt. Pavia University

14 November 2012: “Transport of ions and molecules across biological membranes”. Prof. Ingolf Bernhardt. Pavia University

20 – 22 November 2012: “Short course on Cromosome Structure and Dinamics”. Prof. Kevin Sullivan, IGM-CNR, Pavia, Italy

23 - 24 November 2012: 1st SIRC Workshop on New Roads on Cardiovascular Research, Milano, Italy

26-30 November 2012: Course on “Microscopic techniques”. Included in the PhD program in Genetic, Molecular and Cellular Biology. Pavia University.

3 December 2012: “The Nrf2 transcription factor in disease, aging and stem cell function”. Prof. Dirk Bohmann. IGM-CNR, Pavia, Italy

10-19 December 2013: Course of “Biostatistics”. Included in the PhD program in Genetic, Molecular and Cellular Biology. Pavia University.

17 January 2013: “Misfolding and protein aggregation: evolutionary, biological and medical aspects”. Prof. Massimo Stefani. Pavia University.

8 February 2013: “Clinical human genome sequencing: promises and pitfalls”. Prof. Joris Vermeesch . Pavia University.

8 March 2013: “Pathogenetic mechanism of AA amyloidosis: insights from a new transgenic mouse model”. Prof. Paul Simons. Pavia University

15-19 April 2013: Course “Molecular basis of cellular processes: Chromosome dynamics and genome stability”. Included in the PhD program in Genetic, Molecular and Cellular Biology. Pavia University.

19 April 2013: Workshop “Genetically modified animals: technical and managerial aspects” organized by Tecniplast. Bologna University. Ozzano dell’Emilia (BO), Italy.

21 May - 7 June 2013: Course “Evolution: from phenotype to molecular approaches. The driving force of life: evolution”. Included in the PhD program in Genetic, Molecular and Cellular Biology. Pavia University.

4 June 2013: Arturo Falaschi lecture “The Cell Biology of Genomes: Bringing the Double Helix to Life”. Prof. Tom Misteli. IGM-CNR Pavia, Italy.

5-7 June 2013: SIBBM "Frontiers in Molecular Biology" Congress**:** Revisiting the Central Dogma: Emerging New Concepts in Replication, Transcription, and Translation. Pavia, Italy.

20 June 2013: “Workshop on genome editing with ZFN nucleases: creation of predictive research models” organized by Sigma-Aldrich. Pavia University.

4-5 February 2014: Course “Tecnologie innovative e strumenti bioinformatici per l'analisi dei viventi”. Included in the PhD program in Genetic, Molecular and Cellular Biology. Pavia University.

4 April – 8 may 2014: Course of Human Molecular Genetics “New players in cancer development and innovative therapeutic approaches”. Included in the PhD program in Genetic, Molecular and Cellular Biology. Pavia University.

9-20 June 2014: Course of Genome Manipulation “Genome-scale engineering: from transgenesis to editing”. Included in the PhD program in Genetic, Molecular and Cellular Biology. Pavia University.

23 June 2014: Arturo Falaschi lecture “Assembly, function and structural dynamics of the spliceosome, one of the most complex molecular machines in the cell”. Prof. Reinhard Lührmann. IGM-CNR Pavia, Italy

3 October- 10 December 2014: Course “English Scientific Writing”. Included in the PhD program in Genetic, Molecular and Cellular Biology. Pavia University.

9-19 February 2015: Course of Molecular bases of hereditary and complex human diseases “Towards an understanding of the molecular basis of Mendelian and non-Mendelian diseases”. Included in the PhD program in Genetic, Molecular and Cellular Biology. Pavia University.

14 February 2015: Arturo Falaschi lecture “New genes for old hearts”. Prof. Mauro Giacca. Joint Conference DBB –IGM. Pavia university.

11-13 March 2015: XVIII Telethon Scientific Convention, Riva del Garda (TN), Italy.

10- 29 April 2015: Course of Molecular microbiology and virology “Emerging and re-emerging pathogens: control strategies and drug-resistance”. Included in the PhD program in Genetic, Molecular and Cellular Biology. Pavia University.

9 October 2015: Workshop “Animal models in preclinical research: scientific and regulatory aspects and applied technologies” organized by Tecniplast. Buguggiate (VA), Italy.

27 October 2015: Course “How to write a winning grant application” Progetto Rete IRCCS/DI per l'Europa. IRCCS Fondazione Cà Granda - Ospedale Policlinico Maggiore. Milano

16-18 June 2016: SIBBM "Frontiers in Molecular Biology" Congress: From Single Cell Analysis to Precision Medicine. Napoli, Italy

12-16 November 2016: American Heart Association Scientific Session 2016. New Orleans, Louisiana, USA.

13-15 March 2017: XIX Telethon Scientific Convention, Riva del Garda (TN), Italy.

25-26 September 2017: course "How to write a successful ERC proposal", organized inside the program of the “INROAD” project and conducted by the Yellow Research society. Pavia University.

29 August – 1 September 2020: ESC Congress 2020 - The Digital Experience

17-20 December 2020: SIC Digital 2020 81° National Congress of “Società Italiana di Cardiologia”

23 September 2021: online course “Sperimentazione animale: aggiornamenti sulla Direttiva 010/63/UE e sulla Decisione 2020/569/UE” organized by Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale" Teramo, I

22-24, 29-30 November – 1 decembre 2021: FELASA Course “Scienza degli animali da laboratorio” CERC-Fondazione Santa Lucia, Roma

9-12 December 2021: SIC 2021 82° National Congress of “Società Italiana di Cardiologia”

Annex 2 Abstracts and congresses

Lodola F, Di Pasquale E, Novelli V, Avelino Cruz JE, Denegri M, Leccioli V, Bongianino R, Buoncuore M, Bloise R, Condorelli G, Napolitano C, Priori SG: "CamKII inhibition in human induced pluripotent stem cells derived from Catecholaminergic Polymorphic Ventricular Tachycardia patients" - 4th Annual Meeting - Foundation Leducq - Transatlantic CamKII Alliace - I.R.C.C.S. Fondazione Salvatore Maugeri, Pavia, Italy. 31 August - 1 September, 2012.

Denegri M, Avelino Cruz JE, De Giusti VC, Lodola L, Curcio A, Bongianino R, Leccioli V, Boncompagni S, Protasi F, Auricchio A, Napolitano C and Priori SG: "Adeno-associated viral gene delivery of calsequestrin 2 protects adult calsequestrin 2-R33Q knock-in mice from developing ventricular tachycardias" American Heart Association Scientific Sessions – Los Angeles CA, USA. 3 - 7 November, 2012**.**

Bongianino R, De Giusti VC, Avelino-Cruz JE, Lodola F, Leccioli V, Denegri M, Tanzi F, Napolitano C, Priori SG: "Functional and molecular characterization of a novel KCNQ1 mutation that causes Long QT Syndrome" – 1st SIRC Workshop on New Roads on Cardiovascular Research, Milano, Italy. 23 - 24 November 2012. **ORAL PRESENTATION**

Denegri M, Lodola F, Bongianino R, Avelino-Cruz JE, De Giusti VC, Curcio A, Villani L, Volpe P, Boncompagni S, Protasi F, Auricchio A, Valle G, Napolitano C, Priori SG: "Mutations of cardiac calsequestrin and cardiac arrhythmias: novel insights on pathogenesis and therapy" – XVII Telethon Scientific Convention, Riva del Garda (TN), Italy. 11-13 March 2013.

Lodola F, Curcio A, Denegri M, Bongianino R, Liu N, Persampieri S, Novelli V, Napolitano C and Priori SG: "CaMKII inhibition prevents ventricular and supraventricular tachyarrhythmias in a murine model of recessive CPVT" - 5th Annual Meeting - Foundation Leducq - Transatlantic CamKII Alliace, Iowa City, Iowa, USA. 11-13 July 2013.

Bongianino R, Lodola F, Denegri M, Avelino-Cruz JE, De Giusti VC, Curcio A, Boncompagni S, Protasi F, Auricchio A, Napolitano C and Priori SG. – "Viral gene transfer is able to revert phenotypical manifestation of recessive Catecholaminergic Polymorphic Ventricular Tachycardia in highly symptomatic adult knock-in mice" – XIX SIRC (Italian Society of Cardiovascular Research) Congress, Imola (BO), Italy. 17-18 October 2013 **ORAL PRESENTATION**

Denegri M, Bongianino R, Lodola F, Boncompagni S, De Giust VC, Avelino-Cruz JE, Liu N, Persampieri S, Curcio A, Pietrangelo L, Villani L, Auricchio A, Protasi F, Napolitano C, and Priori SG. – "Viral Gene Transfer is Able to Revert Phenotypical Manifestation of Recessive Catecholaminergic Polymorphic Ventricular Tachycardia in Highly Symptomatic Adult Knock-In Mice" - American Heart Association Scientific Sessions – Dallas, Texas, USA. 16 - 20 November, 2013

Curcio A, Denegri M, Lodola F, Bongianino R, Persampieri S, Avelino-Cruz JE, Liu N, Napolitano C, Indolfi C, Priori SG - CaMKII inhibition prevents ventricular and supraventricular tachyarrhythmias in a murine model of recessive CPVT. ESC Congress 2014, Barcellona, Spain. 30 August-3 September 2014

Barrales Fuentes B, Bongianino R, Denegri M, Lodola F, Priori SG, Avelino-Cruz JE. "Caracterización de la mutación R1032W y T337S en el gen KCNH2 codificante del canal potasio hERG". LVII Congreso Nacional Sociedad Mexicana de Ciencas logicagicas, A.C. Oaxaca, Mexico. 31 August - 4 September 2014

Bongianino R, Lodola F, Denegri M, Boncompagni S, Valle G, Persampieri S, Liu N, Auricchio A, Protasi F, Volpe P, Napolitano C, Priori SG. "Mutations of cardiac calsequestrin and cardiac arrhythmias: novel insights on pathogenesis and therapy". XVIII Telethon Scientific Convention, Riva del Garda (TN), Italy. 11-13 March 2015. **POSTER PRESENTER**

Bongianino R, Vollero A, Lodola F, Denegri M, Boncompagni S, Fasciano S, Mazzanti A, Mangione D, Barbaro S, Rizzo G, Auricchio A, Napolitano C, Protasi F, Priori SG. "Allele specific silencing of mutant mRNA rescues ultrastructural and arrhythmic phenotype in mice carriers of the R4496C mutation in the Ryanodine Receptor gene (*RYR2*)". SIBBM "Frontiers in Molecular Biology" Congress, Napoli, Italy. 16-18 June 2016. **POSTER PRESENTER**

Vollero A, Lodola F, Bongianino R, Denegri M, Rizzo G, Rutigliano L, Nakahama H, Auricchio A, Napolitano C, Condorelli G, Di Pasquale E, Priori SG. “Efficacy of a biological therapy for recessive Catecholaminergic Polymorphic Ventricular Tachycardia in human induced pluripotent stem cells-derived cardiomyocytes”. SIBBM "Frontiers in Molecular Biology" Congress, Napoli, Italy. 16-18 June 2016.

Bongianino R, Vollero A, Lodola F, Denegri M, Boncompagni S, Fasciano S, Mazzanti A, Mangione D, Barbaro S, Rizzo G, Auricchio A, Napolitano C, Protasi F, Priori SG. “Allele specific silencing prevents malignant arrhythmias and ultrastructural abnormalities in Ryanodine Receptor mutant mice”. American Heart Association Scientific Sessions, New Orleans, Louisiana, USA. 11 - 16 November, 2016. **POSTER PRESENTER**

Vollero A, Bongianino R, Denegri M, Lodola F, Boncompagni S, Valle G, Liu N, Auricchio A, Protasi F, Volpe P, Napolitano C, Priori SG. “Mutations of cardiac calsequestrin and cardiac arrhythmias: novel insights on pathogenesis and therapy”. XIX Telethon Scientific Convention, Riva del Garda (TN), Italy. 13-15 March 2017.

Novelli V, Memmi M, Malovini A, Mazzanti A, Liu N, Yanfei R, Bongianino R, Monteforte N, Bloise R, Morini M, Napolitano C, Priori SG. “Role of CACNA1Cvariants in Brugada syndrome: clinical aspects and genetic testing strategies” ESC Congress 2020 - The Digital Experience. 29 August-1 September 2020

Bongianino R, Foroni BG, Cancemi A, Sperindio R, Fasciano S, Denegri M, Priori SG. “Disruption of the architecture of the junctional sarcoplasmic reticulum in recessive catecholaminergic polymorphic ventricular tachycardia is caused by the er-shaping proteins reep5 and climp63” ESC Congress 2020 - The Digital Experience. 29 August-1 September 2020 **POSTER PRESENTER**

Bongianino R. “Modelli animali di cardiopatie aritmogene ereditarie”. SIC 2021 82° National Congress of “Società Italiana di Cardiologia” 9-12 December 2021 **ORAL PRESENTATION**

Annex 3 Publications and Patents

Publications

- Denegri M*, Bongianino R*, Lodola F*, Boncompagni S, DeGiusti VC, Avelino-Cruz JE, Liu N, Persampieri S, Curcio A, Esposito F, Pietrangelo L, Marty I, Villani L, Moyaho A, Baiardi P, Auricchio A, Protasi F, Napolitano C, Priori SG. A single delivery of an adeno-associated construct to transfer casq2 gene to knock-in mice affected by catecholaminergic polymorphic ventricular tachycardia is able to cure the disease from birth to advanced age. *Circulation*. 2014;129(25):267381
  *equal contribution
- Bongianino R, Priori SG. Gene therapy to treat cardiac arrhythmias. *Nat Rev Cardiol*. 2015 Sep;12(9):531-46. Review
- Coperchini F, Pignatti P, Carbone A, Bongianino R, Di Buduo CA, Leporati P, Croce L, Magri F, Balduini A, Chiovato L, Rotondi M. TNF-α increases the membrane expression of the chemokine receptor CCR6 in thyroid tumor cells, but not in normal thyrocytes: potential role in the metastatic spread of thyroid cancer. *Tumour Biol.* 2015 Nov 17; 37(4):5569-75.
- Mosca B, Eckhardt J, Bergamelli L, Treves S, Bongianino R, De Negri M, Priori SG, Protasi F, Zorzato F. Role of the JP45-calsequestrin complex on calcium entry in slow twitch skeletal muscles. *J Biol Chem*. 2016 May 4.
- Lodola F, Morone D, Denegri M, Bongianino R, Nakahama H, Rutigliano L, Gosetti R, Rizzo G, Vollero A, Buonocore M, Napolitano C, Condorelli G, Priori SG and Di Pasquale E. Adeno-associated virus-mediated CASQ2 delivery rescues phenotypic alterations in a patient-specific model of recessive catecholaminergic polymorphic ventricular tachycardia**.** *Cell Death Dis*. 2016 Oct 6; 7(10):e2393.
- Priori SG, Denegri M, Bongianino R and Napolitano C. Gene therapy to treat cardiac arrhythmias. In: Zipes DP, Jalife J, Stevenson WG, editors. Cardiac Electrophysiology: From Cell to Bedside. 7th Edition. Elsevier Health Sciences; 2017. p. 531-540.
- Bongianino R, Denegri M, Mazzanti A, Lodola F, Vollero A, Boncompagni S, Fasciano S, Rizzo G, Mangione D, Barbaro S, Di Fonso A, Napolitano C, Auricchio A, Protasi F, Priori SG. Allele-Specific Silencing of Mutant mRNA Rescues Ultrastructural and Arrhythmic Phenotype in Mice Carriers of the R4496C Mutation in the Ryanodine Receptor Gene (*RYR2*). Circ Res. 2017 Aug 18;121(5):525-536.
- Novelli V, Memmi M, Malovini A, Mazzanti A, Liu N, Yanfei R, Bongianino R, Denegri M, Monteforte N, Bloise R, Morini M, Napolitano C. The role of CACNA1C in Brugada syndrome: prevalence and phenotype of probands referred for genetic testing. Heart Rhythm. 2022 Jan 6:S1547-5271(22)00002-9.
- Santiago Castillo D, Bongianino R, Trancuccio A, Kukavica D, Tarifa C, Denegri M, Mazzanti A, Priori SG, Overexpression of cardiac calsequestrin as a novel gene-therapy approach to treat CPVT1: in silico and in vivo proves of principle, *European Heart Journal*, Volume 44, Issue Supplement_2, November 2023, https://doi.org/10.1093/eurheartj/ehad655.3135
- Porta-Sánchez A, Mazzanti A, Tarifa C, Kukavica D, Trancuccio A, Mohsin M, Zanfrini E, Perota A, Duchi R, Hernandez-Lopez K, Jáuregui-Abularach ME, Pergola V, Fernandez E, Bongianino R, Tavazzani E, Gambelli P, Memmi M, Scacchi S, Pavarino LF, Colli Franzone P, Lentini G, Filgueiras-Rama D, Galli C, Julián Santiago D & Priori SG, Unexpected impairment of INa underpins reentrant arrhythmias in a knock-in swine model of Timothy syndrome. Nat Cardiovasc Res 2, 1291–1309 (2023).

Patents

- Co-inventor in a patent on gene therapy as a therapeutic approach for autosomal dominant catecholaminergic polymorphic ventricular tachycardia:
  METHOD OF ALLELE_SPECIFIC SILENCING FOR THE TREATMENT OF AUTOSOMAL DOMINANT CATECHOLAMINERGIC POLYMORPHIC VENTRICULAR TACHYCARDIA (CPVT) Publication number: 20210189401