

EUROPEAN FORMAT
FOR CURRICULUM
VITAE



PERSONAL INFORMATIONS

Name **[COLLIA DARIO]**
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Nationality Italiana
Date of birth [12/03/1986]

EDUCATION AND TRAINING

- (June 2022 – Actual) **RTD-a: “Development of new personalized engineering methodologies to predict the progression of cardiac diseases in pediatric patients at risk of heart failure”**
Università degli studi di Trieste
ING-IND/34 - Industrial Bioengineering

- (September 2021 – April 2022) **Post-Doc: “Blood flow analysis to identify the onset of pathologies”**
Alma Mater Studiorum - Università di Bologna
ICAR/01 - Idraulica

- (February 2020 – August 2021) **Post-Doc: “Development of numerical models for cardiovascular fluid dynamics and experimentation in clinical applications”**
Università degli studi di Trieste
ING-IND/34 - Industrial Bioengineering

- (November 2016 – November 2019) **Ph.D in Earth Science and Fluid Mechanics (International Ph.D.)**
Awarded cum laude.
Università degli studi di Trieste
Thesis title: Modelling and application of Mitral valve dynamics for reproducing the flow in the left ventricle of the human heart
ING-IND/34 - Industrial Bioengineering

- (November 2010 – May 2014)
 - Education Institution
- Level in national classification

Master's Degree in Biomedical Engineering

Università Campus Bio-Medico di Roma
LM-21

Thesys title: Uncertainty estimation of a non-invasive technique for cardiac output monitoring

- (September 2006 – July 2010)
 - Education Institution
- Level in national classification

Bachelor's Degree in Computer and Biomedical Engineering add. Biomedical

Università Magna Graecia di Catanzaro
9

Thesis title: Techniques for reverse engineering of gene regulation networks

- (July 2014)
 - Educational Institution
 - Qualification achieved

Esame di stato di abilitazione all'esercizio della Professione di Ingegnere (sez. A)

Università Campus Bio-Medico di Roma

Qualification to practice the profession of Engineer (section A)

INTERSHIP

- (Gennaio 2020 – Gennaio 2022)
 - Training Institute

Azienda sanitaria universitaria Giuliano Isontina (ASU GI) - Trieste, TS, Italia
Ospedale Maggiore - Cardiovascular Center, Trieste, TS, Italia

SCIENTIFIC COLLABOTATIONS

- (September 2018 – Active)
- (March 2021 – Active)
- (September 2021 – Active)
- (January 2018 – April 2019)
- (March 2017 – Active)
- (November 2017 – Active)

Ichan School of Medicine at Mount Sinai, New York, NY, USA

Mount Sinai Health System, New York, NY, USA

Piedmont Healthcare, Atlanta, USA

Cardiology - Piedmont Healthcare, Atlanta, USA

Policlinico Sant'Orsola-Malpighi, Bologna, BO, Italia

Pediatric and developmental cardiac surgery - Policlinico Sant'Orsola-Malpighi, Bologna,Bo, Italia

Azienda Ospedaliera di Padova, Padova, PD, Italia

Cardiac surgery – Azienda Ospedaliera di Padova, Padova, PD, Italia

International Centre for Genetic Engineering and Biotechnology (ICGEB), Trieste, TS, Italia

Molecular cardiology – ICGEB, Trieste, TS, Italia

Azienda Ospedaliero-Universitaria di Trieste, Trieste, TS, Italia

Cardiology – Azienda Ospedaliero-Universitaria di Trieste, Trieste, TS, Italia

• (November 2016 – October 2017)

Azienda Ospedaliero-Universitaria Policlinico Umberto I, Roma, Roma, Italia

Cardiology – Azienda Ospedaliero-Universitaria Policlinico Umberto I, Roma, Roma, Italia

• (May 2022 – Active)

Children's Hospital of Philadelphia, Philadelphia, PA, USA

Department of Pediatrics, Division of Cardiology.

• Date (May 2022 – Active)

Children's Hospital & Medical Center, Omaha, NE, USA

Pediatric Cardiology, Department of Pediatrics, Child Health Research Institute

SCIENTIFIC PUBLICATIONS

[1] Collia D., Vukicevic M., Meschini V., Zovatto L., Pedrizzetti G. "Simplified mitral valve modelling for prospective clinical application of left ventricular fluid dynamics". JOURNAL OF COMPUTATIONAL PHYSICS, 2019. 10.1016/j.jcp.2019.108895

[2] Collia D., Zovatto L., Pedrizzetti G. "Analysis of mitral valve regurgitation by computational fluid dynamics". APL BIOENGINEERING, 2019. 10.1063/1.5097245

[3] Celotto C., Zovatto L., Collia D., Pedrizzetti G. "Influence of mitral valve elasticity on flow development in the left ventricle". EUROPEAN JOURNAL OF MECHANICS/ B FLUIDS, 2018. 10.1016/j.euromechflu.2018.11.018

[4] Dal Ferro M., De Paris V., Collia D., Stolfo D., Caiffa T., Barbati G., Korcova R., Zovatto L., Sinagra G., Pedrizzetti G. "Left Ventricular Response to Cardiac Resynchronization Therapy: Insights From Hemodynamic Forces Computed by Speckle Tracking". FRONTIERS IN CARDIOVASCULAR MEDICINE, 2019. 10.3389/fcvm.2019.00059

[5] Dal Ferro M., Stolfo D., De Paris V., Lesizza P., Korcova R., Collia D., Sinagra G., Pedrizzetti G. "Cardiac fluid dynamics meets deformation imaging". CARDIOVASCULAR ULTRASOUND, 2018. 10.1186/s12947-018-0122-2

[6] Collia D., Pedrizzetti G. "Cardiac fluid dynamics in prolapsed and repaired mitral valve", Proceeding of XXIV AIMETA conference 2019 - Lecture notes in mechanical engineering, 2020. SPRINGER, ISSN 2195-4364 (**Invitato**).

[7] Collia D., Pedrizzetti G. "Cardiac fluid dynamics of patient-specific geometries in pre and post mitral valve repair by direct numerical simulation". Proceeding of VII congress of the national group of bioengineering (GNB 2020+1), ISSN 2724-2129. PATRON EDITORE, 2021. (**Invitato**).

[8] Faganello G., Collia D., Furlotti S., Pagura L., Zaccari M., Pedrizzetti G., Di Lenarda A. "A New integrated approach to cardiac mechanics: reference values for normal left ventricle". INT. J. CARDIOVASC. IMAGING, 2020. 10.1007/s10554-020-01934-1.

[9] Collia D., Zovatto L., Tonti G., Pedrizzetti G. "Comparative analysis of right ventricle fluid dynamics". FRONTIERS IN BIOENG. AND BIOTECH. 2021. 10.3389/fbioe.2021.667408..

[10] Collia D. "Mitral valve asymmetry in healthy, pathological and repaired cases". PHYSICS OF FLUIDS, 2021. 10.1063/5.0055485.

[11] Collia D., Libero G., Pedrizzetti G., Ciriello V. "Surrogate models provide new insights on metrics based on blood flow for the assessment of left ventricular function". SCIENTIFIC REPORTS, 2022. 10.1038/s41598-022-12560-3.

[12] Faganello G., Pagura L., Croatto E., Collia D., Furlotti S., Padalino A., Dal Ferro M., Sinagra G., Di Lenarda A., Pedrizzetti G. "Prognostic value of echocardiographic evaluation of cardiac mechanics in patients with aortic stenosis and preserved left ventricular ejection fraction". INT. J. CARDIOVASCULAR IMAGING, 2022. 10.1007/s10554-022-02756-z.

[13] Collia D., Pedrizzetti G. "The Influence of Mitral Valve Asymmetry for an Improved Choice of Valve Repair or Replacement". FLUIDS, MDPI, 2022. 10.3390/fluids7090293.

[14] Collia D., Pedrizzetti G., Sato T., Matsubara D., Zovatto L., Gei M., Banerjee A., Pedrizzetti G. "Interplay between geometry, fluid dynamics, and structure in the ventricles of the human heart". PHYSICAL REVIEW APPLIED, 2022. Accepted.

CONFERENCE - PODIUM (TALK)

[1] Pandis D., Collia D., El-Eshmawi A., Pawale A., Boateng P., Lerakis S., Pedrizzetti G., Adams D.H. "Blood Flow Dynamics Drive Left Ventricular Remodeling in Severe Primary Mitral Regurgitation with Normal Ventricular Dimensions". AATS Mitral Conclave 2019. Maggio 2019, New York, NY, USA.

[2] Collia D., Pedrizzetti G. "Cardiac fluid dynamics of patients' specific geometries by Direct Numerical Simulation". ESB-ITA 2019. Settembre/Ottobre 2019, Bologna, BO, Italia.

[3] Collia D., Pedrizzetti G. "Cardiac fluid dynamics in prolapsed and repaired mitral valve". AIMETA 2019. Settembre 2019, Roma, Roma, Italia.

[4] Collia D., Pedrizzetti G. "Analysis of cardiac fluid dynamics in prolapsed and repaired mitral valves". BIOMECH 2019 Sino-Italian Workshop on biomechanics Settembre/Ottobre 2019, Roma, Roma, Italia. **(Invited)**

[5] Collia D. "Dynamics and modelling of mitral valve for cardiac clinical predictive". SES 2018. Ottobre 2018, Leganés, Madrid, Spagna. **(Invited)**.

[6] Collia D., Domenichini F., Zovatto L., Pedrizzetti G. "Cinematica della valvola mitrale, dal modello teorico al caso clinico". IDRA 2018, Settembre 2018, Ancona, AN, Italia. **(Invited)**.

[7] Collia D., Pedrizzetti G. "From theoretical methods to clinical applications: Modelling and dynamics of mitral valve in the human heart". SIMAI 2018, Luglio 2018, Roma, Roma, Italia. **(Invited)**.

[8] Collia D., Pedrizzetti G. "Cardiac fluid dynamics of patient-specific geometries in pre and post mitral valve repair by direct numerical simulation" GNB 2020+1, June 2021, Trieste, TS, Italia.

[9] Collia D. "Assessment of cardiac fluid dynamics in patient's specific cases after mitral valve repair by computational fluid dynamics". SIMAI 2020+2021, Settembre, 2021 Parma, Parma, Italia **(Invited)**.

[10] Collia D., Pedrizzetti G. "Vortex formation across the tricuspid valve in the right heart". SIMAI 2020+2021, Settembre, 2021 Parma, Parma, Italia **(Invited)**.

[11] Ciucci G., Collia D., Cimmino G., Golino P., Pedrizzetti G., Sinagra G., Loffredo F. "A novel cryoinjury model to study cardiac regeneration in vitro" SIC Digital 2020, Dicembre 2020.

[12] Pagura L., Paldino A., Faganello G., Croatto E., Collia D., Furlotti D., Dal Ferro M., Di Lenarda A., Sinagra G., Pedrizzetti G. "Left ventricular force adaptation and cardiac deformation in the progression of aortic stenosis". SIC Digital 2020, Dicembre 2020.

[13] Ciucci G., Collia D., Cimmino G., Golino P., Pedrizzetti G., Sinagra G., Loffredo F. "Rat Engineered Heart Tissue is a Novel in vitro Model to Evaluate Cardiomyocyte Proliferation and Fibroblast Activation After Injury" AHA 2021, Novembre 2021, Boston USA.

[14] Collia D. "Cardiac fluid dynamics in pre and post mitral valve repair by computational fluid dynamics". ECCOMAS Congress 2022, June 2022, Oslo, Norway. **(Invited)**

CONFERENCE - POSTER

[1] Collia D., Di Micco L., Peruzzo P., Susin F.M., Fiocco A., Pedrizzetti G., Gerosa G., Colli A. "Numerical Analysis of the Intra-Ventricular Vortices After Implantation of Artificial Chords with Mini-Invasive Approach". AATS Mitral Conclave 2019. Maggio 2019, New York, NY, USA.

[2] Collia D., Celotto C., Domenichini F., Zovatto L., Pedrizzetti G. "Interazione tra flusso e tessuto nella dinamica della valvola mitrale". IDRA 2019. Settembre/Ottobre 2018, Ancona, AN, Italia.

TECHNICAL SKILLS

Matlab, TomTec 2D-CPA, TomTec 4D-LV-ANALYSIS, TomTec 4D-RV-ANALYSIS, TomTec 4D-MV-ASSESSMENT, Circle Cardiovascular Imaging Cvi42, AMID Mudy, Microsoft Office, Java e C++, Rhinoceros, SolidWorks, Autocad, 3D Studio, Pointwise, SQL, DBMS My SQL, IBM SPSS.

MOTHER TONGUE

[Italian]

OTHER LANGUAGE

[English]

LECTURES AND TUTORING ACTIVITY

- Course of Biomechanics for master's degree students in clinical engineering, University of Trieste, Department of Engineering and Architecture, academic year 2022/2023
- Tutoring to master's degree students in the development of thesis in biofluid dynamics
- Co-advisor for master's degree thesis.

EDITORIAL ACTIVITY

- Reviewer for major journals in fluid mechanics, biomechanics, cardiovascular engineering

Trieste, 19/12/2022