

# Roberta Rolla

## *Curriculum vitae*

### **DATI ANAGRAFICI**



Born in Turin on 04.12.1972

Resident in Novara, in Rotonda Massimo D'Azeglio 3.

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### **CURRICULUM VITAE ET STUDIORUM**

1986-1991: Classical High School Degree (59/60).

1991-1996: Master Degree in Biological Sciences at the University of Pavia (110/110 with distinction).

1995: Erasmus Project at University of Greenwich, U.K. (Dr Alistair H Bishop).

1996-2001: Clinical Pathology Specialization at the University of East Piedmont "Amedeo Avogadro" of Novara (110/110 with distinction).

### **CARRIERA ACCADEMICA**

2016-oggi	Professional assignment "Laboratory Diagnosis of Hemoglobinopathies" at Clinical Chemistry Unit, "Maggiore della Carità" Hospital of Novara
2006-today	Researcher (Discipline, Clinical Pathology) at University of UPO
2006-today	Lecturer (Discipline, Clinical Pathology) at University of UPO
2006-today	Person in charge and coordinator of Molecular Diagnostics Laboratory at Clinical Chemistry Unit, "Maggiore della Carità" Hospital of Novara (research, tutoring of students and medical assistance)
2006-today	Biologist in charge of Hematology and Coagulation Laboratory, at Clinical Chemistry Unit, "Maggiore della Carità" Hospital of Novara (research, tutoring of students and medical assistance)

2008-2014	Person in charge and coordinator of Molecular Diagnostics Laboratory at Clinical Chemistry Unit, Ospedale San Rocco di Galliate (research, tutoring of students and medical assistance)
2001-2006	Research fellowship, UPO
2001-2006	Research, tutoring of students and medical assistance in Clinical Chemistry Unit, "Maggiore della Carità" Hospital of Novara
1996-2001	Clinical Pathology Specialization period. Didactic and scientific activity at the Department of Medical Sciences, UPO and at Clinical Chemistry Unit, "Maggiore della Carità" Hospital of Novara

### INCARICHI ACCADEMICI

2016-oggi	Member of the Student-Professor Joint Committee University of East Piedmont "Amedeo Avogadro", Novara (UPO)
2016-today	Council member of Oncology Specialization, UPO, Novara
2016-today	Council member of Endocrinology Specialization, UPO, Novara
2016-today	Council member of Master's Degree in "Molecular Diagnostics", UPO, Novara
2016-today	Lecturer (Discipline, Clinical Pathology) in Master's Degree in "Molecular Diagnostics", UPO, Novara
2015-today	Education Committee member of Biotechnology Degree, UPO, Novara
2014-today	Council member of the Master Degree in Medical Biotechnologies, UPO, Novara
2014-today	Lecturer (Discipline, Clinical Pathology) in Integrated Course of "Molecular Diagnostics", Master Degree in Medical Biotechnologies, UPO, Novara
2014-today	Student guidance in the Degree Course of Biomedical Laboratory Techniques, UPO, Novara
2013-today	"Third party" Commission member, Department of Health Sciences, UPO, Novara
2013-today	Teaching staff member of Sciences and Medical Biotechnology PhD, UPO, Novara
2012-2015	Education Committee member of the Master Degree in Medical Biotechnologies, UPO, Novara
2010-today	Lecturer coordinator of the Integrated Course of "Biotechnological Applications in the Clinical Laboratory", Degree in Biotechnology, UPO, Novara
2010-today	Lecturer coordinator of the Integrated Course of "Molecular Diagnostics in Clinical Pathology", Degree Course in Biomedical Laboratory Techniques, UPO, Novara
2010-today	Lecturer (Discipline, Clinical Pathology) of "Biotechnological Applications in the Clinical Laboratory" Course, Degree in Biotechnology, UPO, Novara
2010-today	Lecturer (Discipline, Clinical Pathology) of "Molecular Diagnostics in Clinical Pathology", Degree Course in Biomedical Laboratory Techniques, UPO, Novara
2010-today	Lecturer (Discipline, Clinical Pathology) of the Integrated Course of "Molecular Diagnostics II", Master Degree in Medical Biotechnologies, UPO, Novara
2010-today	Lecturer (Discipline, Clinical Pathology) in General Surgery Specialization, UPO,

	Novara
2007-today	Lecturer (Discipline, Clinical Pathology) in Clinical Pathology Specialization, UPO, Novara
2007-today	Council member of Clinical Pathology Specialization, UPO, Novara
2008-2010	Lecturer (Discipline, Clinical Pathology) of Emergency Diagnostics Course, Degree Course in Biomedical Laboratory Techniques, UPO, Novara
2007-2012	Teaching staff member of Molecular Medicine PhD, UPO, Novara
2007-2010	Lecturer (Discipline, Clinical Pathology) of “Experimental design” Course, Integrated Course of Clinical Pathology, Degree Course in Biomedical Laboratory Techniques, UPO, Novara
2007-2010	Lecturer (Discipline, Clinical Pathology) of “Molecular Diagnostics II” Course, Integrated Course of Clinical Pathology, Master Degree in Medical and Pharmaceutical Biotechnology, UPO, Novara

### INCARICHI SCIENTIFICI

2016-oggi	Member of Integrated Hematology Diagnostic Study Group (SIBioC)
2016-oggi	Member of SIBioC (SOCIETÀ ITALIANA DI BIOCHIMICA CLINICA E BIOLOGIA MOLECOLARE CLINICA)
2013-today	Founding member and member of GEPAL Group (Hemostasis laboratories Group of Piedmont and Valle D'Aosta)
2009-today	Member of the CRIF (Interdepartmental Research Center of Pharmacology and Pharmacogenetics)

### CAMPI DI INDAGINE DELLA RICERCA

1. Pharmacogenetics
2. Genetic factors of cardiovascular risk
3. Hemostasis
4. Coagulation
5. Platelet function
6. Antiplatelet agents
7. Anticoagulants
8. Thalassemia
9. Hemochromatosis
10. Iron overload
11. Oxidative stress
12. Molecular Diagnostics

## TEMI DI RICERCA

### 1. Laboratory Diagnostics.

The research activity is carried out at Clinical Chemistry Unit, "Maggiore della Carità" Hospital of Novara, in highly specialized fields of Specialist Biochemistry, Specialist Coagulation, Specialist Hematology and Molecular Diagnostics.

In these areas we carry out applied research based on critical observation of analytical data, in order to daily redesign and improve the criteria used to produce analytical data, the basis of all clinical diagnostics.

This type of research requires high concentration and critical analytical ability, since the laboratory produces daily an enormous amount of patient data concerning heterogeneous diseases. In this "sea" of information, the clinical pathologist is an essential guide towards specific diagnosis.

Applied laboratory research is extremely versatile, dynamic and evolving, therefore one cannot afford to follow single-issue research guidelines.

Such research has marked and continues to mark the history of medicine, since its scrupulous application allows to redesign and improve each day the criteria used to produce analytical data, the basis of all clinical diagnostics.

Applied laboratory research also has the fundamental aim of: verifying the application of new discoveries in diagnosis, that have been formalized in basic research; and of assessing the economic impact on the national health system.

***"The innovation comes from basic research, it grows by applied research and it becomes social product in industrial research. Any advanced society that ignores this process will disappear. "***

### 2. Cardiovascular disease studies.

Coronary artery disease (CAD) and its clinical manifestations are among the leading causes of morbidity and mortality in the Western world. Not all clinical cases are attributable to traditional risk factors (age, sex, hypertension, diabetes mellitus, dyslipidemia, smoking, etc). Particularly in "premature" forms of coronary artery disease the only clear risk factor is a family history of cardiovascular disease, suggesting the genetic component as a determinant in the genesis of the disease. Recently many studies have been conducted to identify the genes involved in this complex pathology. Interesting results have emerged from GWA (genome-wide association studies), based on the screening of the human genome to identify common DNA variants associated with the phenotype of interest. With this technique several SNPs associated with coronary artery disease have been identified: these SNPs are new compared to traditional cardiovascular risk factors.

We conduct several studies in this area, with particular attention to new genetic risk factors for cardiovascular disease.

### **3. Platelet function studies.**

Platelets play a major role in physiological hemostasis but also in the development of arterial thrombosis (myocardial infarction and stroke). We conduct different parallel studies on platelets in order to: (i) study the disorders of hereditary or acquired platelet function; (ii) monitor antiplatelet drugs and (iii) study the etiology of any therapeutic resistance.

### **4. Thrombophilia studies.**

Thrombophilia is a genetically inherited or acquired condition that predisposes to the development of venous thromboembolism and / or arterial at a young age (<50 years), with no apparent cause and with a tendency to relapse.

The genetic defects that determine the condition of thrombophilia include:

- Deficiency of natural anticoagulants (antithrombin, protein S, protein C);
- Mutations of genes coding for coagulation factors (factor V Leiden, G20210A mutation of the prothrombin gene).

Congenital thrombophilic abnormalities may be extremely rare, such as antithrombin deficiency whose prevalence in the general population is estimated at 0.02%, or more frequent, such as Factor V Leiden, present in about 5% of the general population.

The factors that determine the condition of acquired thrombophilia are antiphospholipid antibodies:

- Lupus anticoagulant (LAC)
- Anti-cardiolipin antibodies
- Anti-beta 2 glycoprotein antibodies ( $\beta$ 2GPI).

We conduct studies in this area, with particular attention to genetic risk factors.

### **5. Pharmacogenetic studies.**

Recent acquisitions on the organization and structure of the human genome and identification of individual genetic profiles involved in the genesis and evolution of chronic or neoplastic diseases, have favored the introduction of targeted therapy and personalized medicine. In this context, Pharmacogenetics, the study the genetic factors involved in the metabolism of drugs and in their efficacy, is emerging.

One of the major problems in clinical practice is the variability in drug response: different subjects respond differently to the same drug given at the same dose.

This variability is not only in the beneficial effects (drug efficacy), but also in undesirable side effects (adverse drug reactions and toxic reactions). It has been known that the variability in drug response (inter-individual and inter-ethnic) is due to a combination of many factors (physiological, pathological and environmental factors). However, taken into account all the factors listed above, in order to carefully choose the right therapy, today there is no guarantee that a given treatment will be effective and well tolerated by the patient. Thanks to pharmacogenetic studies, we now know that the most important factor in the different

response to drugs is the genetic variability of individuals, in particular in genes involved in drug-kinetics and pharmaco-dynamics.

Our research in this area is focused particularly on the superfamily of microsomal cytochrome P450 (CYP450), which includes various isoforms and subgroups already well characterized for their substrate specificity and their mechanism of action. CYP450 is responsible for the metabolism of almost the totality of drugs.

#### ARTICLES ON INTERNATIONAL SCIENTIFIC JOURNALS RIVISTA 2012-2017

1. Daffara V, Verdoia M, **Rolla R**, Nardin M, Marino P, Bellomo G, Carriero A, De Luca G; Novara Atherosclerosis Study Group (NAS). Impact of polymorphism rs7041 and rs4588 of Vitamin D Binding Protein on the extent of coronary artery disease. *Nutr Metab Cardiovasc Dis.* 2017;27(9):775-783. doi: 10.1016/j.numecd.2017.06.002. Epub 2017 Jun 24. PMID: 28779988.
2. Verdoia M, Daffara V, Pergolini P, **Rolla R**, Marino P, Bellomo G, Carriero A, De Luca G; Novara Atherosclerosis Study Group (NAS). Vitamin D Binding Protein rs7041 polymorphism and high-residual platelet reactivity in patients receiving dual antiplatelet therapy with clopidogrel or ticagrelor. *Vascul Pharmacol.* 2017;93-95:42-47. doi: 10.1016/j.vph.2017.04.001. Epub 2017 Apr 19. PMID: 28433569
3. Verdoia M, Nardin M, **Rolla R**, Marino P, Bellomo G, Suryapranata H, De Luca G; Novara Atherosclerosis Study Group (NAS). Immature platelet fraction and the extent of coronary artery disease: A single centre study. *Atherosclerosis* 2017; 260:110-115. doi: 10.1016/j.atherosclerosis.2017.03.044. Epub 2017 Mar 31. PMID: 28388444
4. Verdoia M, Pergolini P, **Rolla R**, Nardin M, Schaffer A, Barbieri L, Daffara V, Marino P, Bellomo G, Suryapranata H, De Luca G; Novara Atherosclerosis Study Group (NAS). Impact of high-dose statins on vitamin D levels and platelet function in patients with coronary artery disease. *Thromb Res.* 2017 Feb;150:90-95. doi: 10.1016/j.thromres.2016.12.019. Epub 2016 Dec 28.
5. Verdoia M, Pergolini P, **Rolla R**, Sartori C, Nardin M, Schaffer A, Barbieri L, Daffara V, Marino P, Bellomo G, Suryapranata H, Luca GD; Novara Atherosclerosis Study Group (NAS). Vitamin D levels and high-residual platelet reactivity in patients receiving dual antiplatelet therapy with clopidogrel or ticagrelor. *Platelets.* 2016;27(6):576-82.
6. **Rolla R**, De Mauri A, Vidali M, Valsesia A, Chiarinotti D, Bellomo G. Polymorphisms Associated with Increased Cardiovascular Risk in the General Population do not Predict Acute Events in Hemodialysis Patients. *Clin Lab.* 2016;62(4):639-44. PMID: 27215083
7. Nardin M, Verdoia M, Sartori C, Pergolini P, **Rolla R**, Barbieri L, Schaffer A, Bellomo G, Suryapranata H, De Luca G; Novara Atherosclerosis Study Group (NAS). Diabetes mellitus, glucose control parameters and platelet reactivity in ticagrelor treated patients. *Thromb Res.* 2016 Apr 27;143:45-49. doi: 10.1016/j.thromres.2016.04.021. [Epub ahead of print] No abstract available.
8. Nardin M, Verdoia M, Pergolini P, **Rolla R**, Barbieri L, Schaffer A, Marino P, Bellomo G, Suryapranata H, De Luca G; Novara Atherosclerosis Study Group (NAS). Serum uric acid levels during dual antiplatelet therapy with ticagrelor or clopidogrel: Results from a single-centre study. *Nutr Metab Cardiovasc Dis.* 2016 Mar 15. pii: S0939-4753(15)30156-3. doi: 10.1016/j.numecd.2016.03.001. [Epub ahead of print] PMID: 27134063
9. Verdoia M, Pergolini P, **Rolla R**, Nardin M, Barbieri L, Schaffer A, Bellomo G, Marino P, Suryapranata H, De Luca G; Novara Atherosclerosis Study Group (NAS). Parathyroid hormone levels and high-residual platelet reactivity in patients receiving dual antiplatelet therapy with acetylsalicylic acid and clopidogrel or ticagrelor. *Cardiovasc Ther.* 2016 Apr 17. doi: 10.1111/1755-5922.12188. [Epub ahead of print]
10. Verdoia M, Pergolini P, Nardin M, **Rolla R**, Barbieri L, Schaffer A, Marino P, Bellomo G, Suryapranata H, De Luca G. Impact of diabetes on immature platelets fraction and its relationship with platelet

- reactivity in patients receiving dual antiplatelet therapy. *J Thromb Thrombolysis*. 2016 Mar 7. [Epub ahead of print]. PMID: 26951167
11. Verdoia M, Pergolini P, **Rolla R**, Nardin M, Barbieri L, Daffara V, Marino P, Bellomo G, Suryapranata H, Luca GD; Novara Atherosclerosis Study Group (NAS). Gender Differences in Platelet Reactivity in Patients Receiving Dual Antiplatelet Therapy. *Cardiovasc Drugs Ther*. 2016 Apr;30(2):143-50. doi: 10.1007/s10557-016-6646-5. PMID: 26868495.
  12. Barbieri L, Verdoia M, Pergolini P, Nardin M, **Rolla R**, Marino P, Bellomo G, Suryapranata H, De Luca G; Novara Atherosclerosis Study Group (NAS). Uric acid and high-residual platelet reactivity in patients treated with clopidogrel or ticagrelor. *Nutr Metab Cardiovasc Dis*. 2016 Apr;26(4):352-8. doi: 10.1016/j.numecd.2015.12.015. Epub 2016 Jan 6. PMID: 26857781
  13. Verdoia M, Nardin M, Sartori C, Pergolini P, **Rolla R**, Barbieri L, Marino P, Bellomo G, Suryapranata H, De Luca G; Novara Atherosclerosis Study Group (NAS). Impact of atorvastatin or rosuvastatin co-administration on platelet reactivity in patients treated with dual antiplatelet therapy. *Atherosclerosis*. 2015 Dec;243(2):389-94. doi: 10.1016/j.atherosclerosis.2015.10.005. Epub 2015 Oct 9. PMID: 26520891
  14. Barbieri L, Pergolini P, Verdoia M, **Rolla R**, Nardin M, Marino P, Bellomo G, Suryapranata H, De Luca G; Novara Atherosclerosis Study Group (NAS). Platelet reactivity in patients with impaired renal function receiving dual antiplatelet therapy with clopidogrel or ticagrelor. *Vascul Pharmacol*. 2016 Apr;79:11-5. doi: 10.1016/j.vph.2015.10.006. Epub 2015 Oct 28. PMID: 26518440
  15. Verdoia M, Pergolini P, **Rolla R**, Nardin M, Schaffer A, Barbieri L, Marino P, Bellomo G, Suryapranata H, De Luca G. Advanced age and high-residual platelet reactivity in patients receiving dual antiplatelet therapy with clopidogrel or ticagrelor. *J Thromb Haemost*. 2016 Jan;14(1):57-64. doi: 10.1111/jth.13177. Epub 2015 Dec 29. PMID: 26512550
  16. Verdoia M, Pergolini P, **Rolla R**, Nardin M, Barbieri L, Schaffer A, Bellomo G, Marino P, Suryapranata H, De Luca G; Novara Atherosclerosis Study Group (NAS). Platelet Larger Cell Ratio and High-on Treatment Platelet Reactivity During Dual Antiplatelet Therapy. *Cardiovasc Drugs Ther*. 2015 Oct;29(5):443-50. doi: 10.1007/s10557-015-6616-3. PMID: 26428927
  17. Verdoia M, Sartori C, Pergolini P, Nardin M, **Rolla R**, Barbieri L, Schaffer A, Marino P, Bellomo G, Suryapranata H, De Luca G. Immature platelet fraction and high-on treatment platelet reactivity with ticagrelor in patients with acute coronary syndromes. *J Thromb Thrombolysis*. 2016 May;41(4):663-70. doi: 10.1007/s11239-015-1279-2.
  18. Verdoia M, Pergolini P, **Rolla R**, Nardin M, Barbieri L, Schaffer A, Bellomo G, Marino P, Suryapranata H, De Luca G. Mean platelet volume and high-residual platelet reactivity in patients receiving dual antiplatelet therapy with clopidogrel or ticagrelor. *Expert Opin Pharmacother*. 2015;16:1739-47.
  19. Nardin M, Verdoia M, Sartori C, Pergolini P, **Rolla R**, Barbieri L, Schaffer A, Marino P, Bellomo G, Suryapranata H, De Luca G; Novara Atherosclerosis Study Group (NAS). Body Mass Index and Platelet Reactivity During Dual Antiplatelet Therapy With Clopidogrel or Ticagrelor. *J Cardiovasc Pharmacol*. 2015;66:364-70.
  20. **Rolla R**, De Mauri A, Valsesia A, Vidali M, Chiarinotti D, Bellomo G. Lipoprotein profile, lipoprotein-associated phospholipase A2 and cardiovascular risk in hemodialysis patients. *J Nephrol*. 2015;28:749-55.
  21. Verdoia M, Sartori C, Pergolini P, Nardin M, **Rolla R**, Barbieri L, Schaffer A, Marino P, Bellomo G, Suryapranata H, De Luca G; Novara Atherosclerosis Study Group (NAS). Prevalence and predictors of high-on treatment platelet reactivity with ticagrelor in ACS patients undergoing stent implantation. *Vascul Pharmacol*. 2015 [Epub ahead of print].
  22. Verdoia M, Schaffer A, Pergolini P, **Rolla R**, Barbieri L, Bellomo G, Sinigaglia F, Marino P, Suryapranata H, De Luca G; Novara Atherosclerosis Study Group (NAS). Homocysteine Levels Influence Platelet Reactivity in Coronary Artery Disease Patients Treated With Acetylsalicylic Acid. *J Cardiovasc Pharmacol*. 2015;66:35-40.
  23. **Rolla R**, Castagno M, Zaffaroni M, Grigollo B, Colombo S, Piccotti S, Dellora C, Bona G, Bellomo G. Neonatal screening for sickle cell disease and other hemoglobinopathies in "the changing Europe". *Clin Lab*. 2014;60:2089-93.

24. **Rolla R**, Pergolini P, Vidali M, Pollarolo P, Appiani A, Cerutti C, Manzini M, Crisci A, Bellomo G. Routine coagulation tests are not useful as a screening tool for the FII G20210A polymorphism. *Clin Lab*. 2014;60:1725-33.
25. Lupi A, Rognoni A, Lazzero M, **Rolla R**, Pergolini P, Bellomo G, Rossi L, Sante Bongo A, Jaffe AS. Below normal pre-procedural cardiac troponin I levels are associated with an adverse prognosis after percutaneous coronary interventions. *EuroIntervention*. 2014 pii: 20140303-04. doi: 10.4244/EIJY14M11\_04. [Epub ahead of print]
26. Secco GG, Sansa M, Rognoni A, Parisi R, Fattori R, Rossi L, Lazzero M, **Rolla R**, Bellomo G, Bongo AS, Agostoni P, Di Mario C, Lupi A. Similar anti-inflammatory effects of intracoronary and intravenous abciximab during primary percutaneous coronary intervention: a randomized study. *J Cardiovasc Med (Hagerstown)*. 2015;16:189-96.
27. **R. Rolla**, M. Vidali, M. Sartori, S. Andorno, M. Pagliarulo, S. Carmagnola, M. Ballaré, M. Orsello, F. Montino, A. Anderloni, A. Suno, M. Del Piano, Giorgio Bellomo. Does Asymmetric Dimethylarginine (Adma) Plasma Concentration Predict Esophageal Varices in Patients with Cirrhosis? *Clin Lab*. 2014;60:791-8.
28. **R. Rolla**, Carla Gramaglia, Valentina Dalò, Francesca Ressico, Pierluigi Prosperini, Matteo Vidali, Silvia Meola, Paola Pollarolo, Giorgio Bellomo, Eugenio Torre, Patrizia Zeppego. An Observational Study of Venlafaxine and CYP2D6 in Clinical Practice. *Clin. Lab*. 2014;60:225-231.
29. **Rolla R**, Bellomo G. Combined and Sequential Use of Activated Protein C Resistance and Molecular Genetic Test for the Diagnosis of Factor V Leiden: A New Laboratory Approach. *Clin Lab*. 2013;59:1187-8..
30. Verdoia M, Pergolini P, Camaro C, Restifo M, **Rolla R**, Schaffer A, Di Giovine G, Marino P, Bellomo G, Suryapranata H, De Luca G; Novara Atherosclerosis Study Group (NAS). PIA(1)/PIA(2) polymorphism does not influence response to Gp IIb-IIIa inhibitors in patients undergoing coronary angioplasty. *Blood Coagul Fibrinolysis*. 2013;24:411-8.
31. **Rolla R**, Vidali M, Meola S, Pollarolo P, Fanello MR, Nicolotti C, Saggia C, Forti L, Agostino FD, Rossi V, Borra G, Stratica F, Alabiso O, Bellomo G. Side effects associated with ultrarapid cytochrome P450 2D6 genotype among women with early stage breast cancer treated with tamoxifen. *Clin Lab*. 2012;58:1211-8.
32. Vidali M, **Rolla R**, Parrella M, Cassani C, Manzini M, Portalupi MR, Serino R, Prando MD, Bellomo G, Pergolini P. Role of the laboratory in monitoring patients receiving dual antiplatelet therapy. *Int J Lab Hematol*. 2012;34:484-94.
33. Bellomo G, Sulas MG, Mairate E, Bardone MB, **Rolla R**. Hemolysis is a major cause of variability in insulin measurement during oral glucose tolerance test in children. *Clin Lab*. 2012;58:67-74.
34. Lupi A, Secco GG, Rognoni A, Rossi L, Lazzero M, Nardi F, **Rolla R**, Bellomo G, Bongo AS, Di Mario C. Plasma fibrinogen levels and restenosis after primary percutaneous coronary intervention. *J Thromb Thrombolysis*. 2012;33:308-17.