Targeting glycolysis in endothelial cells to prevent intraplaque neovascularization and atherogenesis in mice

Perrotta, P.

Curriculum Vitae

Paola Perrotta was born on 11 September 1986 in south of Italy (Puglia). After high-school, she moved to Tuscany to attend a 5-year Master Program at the School of Pharmacy of the University of Siena. During her course of study she became growingly interested in Pharmacology, and eventually joined the Pharmacology and Angiogenesis Laboratory under the supervision of Prof. Sandra Donnini and Prof. Marina Ziche. In 2012, after successfully defending her thesis about inflammatory angiogenesis, she graduated with a master degree in Pharmaceutical Chemistry. While continuing her research project with Prof. Ziche as post-graduate fellow, she also enrolled in an advanced master in oncological pharmacology at the University of Milan (academic year 2012-2013) where she graduated with a thesis discussion about monoclonal antibodies in cancer therapy. In 2013 she received a "Fellowship for Young Scientist" by the Italian Pharmacology Society to pursue of period of study and research in the Pharmacology laboratory directed by Prof. Sessa at Yale University (USA). In December 2015 she was selected for the MoGlyNet program, a Marie Curie European Joint doctoral program between the University of Antwerp and the University of Leiden. Paola started with a secondment in the laboratory of Prof. Paul Quax at LUMC and received initial training in advanced microsurgical techniques under the supervision of Dr. Margreet de Vries. After that she carried out her experimental doctoral thesis in the Physiopharmacology laboratory under the supervision of Prof. Wim Martinet at the University of Antwerp. Here she investigated the effect of glycolysis inhibition in endothelial cells in the context of atherosclerosis using advanced in vitro and in vivo models. During her doctoral period she attended multiple specialistic courses and presented scientific data at various international conferences. Paola is certified by Federation of European Laboratory Animal Science Associations (FELASA) for her skills in handling small laboratory animals. Other relevant professional experiences during her doctorate include an internship in a Contract Research Organization (PPD) in Milan (Italy) where she gained knowledge about clinical research and followed the development of clinical trials in various hospitals. In August 2020 she married with Federico, her long-term partner met in college, with whom she also shares the love for science. Currently, Paola is doing research activity in collaboration with the Yale Cardiovascular Research Center in the United States. *Erna Peters and Besa Emini Veseli, paranimfen*

List of publications

1. Emini Veseli, B., Perrotta, P., Van Wielendaele, P., Lambeir, A. M., Abdali, A., Bellosta, S., Monaco, G., Bultynck, G., Martinet, W., and De Meyer, G. R. Y. (2020) Small molecule 3PO inhibits glycolysis but does not bind to 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase-3 (PFKFB3). *FEBS Lett*
2. Perrotta, P., Pintelon, I., de Vries, M. R., Quax, P. H. A., Timmermans, J. P., De Meyer, G. R. Y., and Martinet, W. (2020) Three-Dimensional Imaging of Intraplaque Neovascularization in a Mouse Model of Advanced Atherosclerosis. J Vasc Res, 1-7
3. De Dominicis, C., Perrotta, P., Dall'Angelo, S., Wyffels, L., Staelens, S., De Meyer, G. R. Y., and Zanda, M. (2020) [(18)F]ZCDD083: A PFKFB3-Targeted PET Tracer for Atherosclerotic Plaque Imaging. ACS Med Chem Lett 11, 933-939
4. Perrotta, P., Van der Veken, B., Van Der Veken, P., Pintelon, I., Roosens, L., Adriaenssens, E., Timmerman, V., Guns, P. J., De Meyer, G. R. Y., and Martinet, W. (2020) Partial Inhibition of Glycolysis Reduces Atherogenesis Independent of Intraplaque Neovascularization in Mice. Arterioscler Thromb Vasc Biol 40, 1168-1181
5. Zhou, H., Mehta, S., Srivastava, S. P., Grabinska, K., Zhang, X., Wong, C., Hedayat, A., Perrotta, P., Fernandez-Hernando, C., Sessa, W. C., and Goodwin, J. E. (2020) Endothelial cell-glucocorticoid receptor interactions and regulation of Wnt signaling. JCI Insight 5
6. Perrotta, P., Emini Veseli, B., Van der Veken, B., Roth, L., Martinet, W., and De Meyer, G. R. Y. (2019) Pharmacological strategies to inhibit intra-plaque angiogenesis in atherosclerosis. Vascul Pharmacol 112, 72-78
7. Emini Veseli, B., Perrotta, P., De Meyer, G. R. A., Roth, L., Van der Donckt, C., Martinet, W., and De Meyer, G. R. Y. (2017) Animal models of atherosclerosis. Eur J Pharmacol 816, 3-13
8. Ulrich, V., Rotllan, N., Araldi, E., Luciano, A., Skroblin, P., Abonnenc, M., Perrotta, P., Yin, X., Bauer, A., Leslie, K. L., Zhang, P., Aryal, B., Montgomery, R. L., Thum, T., Martin, K., Suarez, Y., Mayr, M., Fernandez-Hernando, C., and Sessa, W. C. (2016) Chronic miR-29 antagonism promotes favorable plaque remodeling in atherosclerotic mice. EMBO Mol Med 8, 643-653
9. Landskroner-Eiger, S., Qiu, C., Perrotta, P., Siragusa, M., Lee, M. Y., Ulrich, V., Luciano, A. K., Zhuang, Z. W., Corti, F., Simons, M., Montgomery, R. L., Wu, D., Yu, J., and Sessa, W. C. (2015) Endothelial miR-17 approximately 92 cluster negatively regulates arteriogenesis via miRNA-19 repression of WNT signaling. Proc Natl Acad Sci U S A 112, 12812-12817

Acknowledgments

I would like to thank all the fantastic people and great scientists in Antwerp, Leiden and all over Europe who made my PhD an exciting scientific and personal journey.
I spent the first 7 months of my PhD in the laboratory of Prof. Paul Quax in Leiden. Paul, thank you very much for your constant guidance and encouragements. Your positive attitude and energy have always provided me with motivation throughout my PhD. Your enthusiasm for science and your ability to involve young scientists, taught me that science may begin with experiments but continues with the sharing of experiences and results. I have always been able to count on your support and for that, I am very thankful to you.
In Leiden I learned micro-surgery techniques with the extraordinary help of Dr. Margreet de Vries. Margreet, I want to thank for your guidance and for teaching me to be tenacious. I still remember when you came to Antwerp to help with my project, and our pleasant chats during dinner with pizza and Belgian soups. I have always appreciated your honesty in our scientific meetings and your feedback has greatly improved my scientific work.
I want to thank all the colleagues of the laboratory in Leiden. You are all very kind people and great scientists, I wish you all the best for your future!
I would like to thank my promoter in Antwerp, Prof. Wim Martinet. Wim you have been closely involved in my research and I have learned a lot from your scientific rigor. You have always helped me to overcome experimental hurdles and encouraged me to not give up. In our meetings, we talked a lot about cellular metabolism and autophagy and I gained a lot scientific knowledge from these discussions. Thanks for always being straightforward, I have always been able to count on your support. I thank you for everything!
Then, Prof. Guido De Meyer, who I also consider my supervisor. Guido, your positivity and your enthusiasm for science are contagious. I loved the words that you said when I was facing with difficult reviewers questions for the first time. You said "when the going gets tough, the tough get going!". Thank you for everything!
A big thank you to all the members of the Physiopharmacology laboratory (PhD students, Professors, technician and people from administration) who have become friends and with whom I have shared many great moments. This has contributed to make my PhD journey one of the most exciting and rewarding time of my life. Thank

you very much for your support and friendship. You all have conquered a special place in my heart!
Finally, I want to thank my family and my husband Federico. Thank you for always being there and for the love you always show me. Without you, everything would have been much more difficult!