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## **Modulation of leukocyte homeostasis in atherosclerosis**

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# Author's Biography

The author of this thesis dissertation was born in Bogota, Colombia, on July 11th 1976. Following a Bachelor program in Chemical Engineering (Meritorious), she conducted an M.Sc. (Cum Laude) in biology in the University of Leiden with Professor Dr. Herman Spaink and Dr. Annemarie Meijer. During her M.Sc. she used zebrafish as model of infectious disease to investigate its innate immune responses to fish tuberculosis infection.

Thereafter, the author started her research as part of a project supported by the Netherlands Heart Foundation under supervision of Professor Dr. Theo van Berkel and Professor Dr. Erik Biessen. During her Ph.D. her studies centered on modulating immune responses to change the fate of atherosclerotic lesions in mice. This was achieved by using bone marrow transplantation of hematopoietic stem cells with genetic deficiencies or over-expressing human or mouse engineered genes. This methodology allowed her to activate or repress multiple immune responses, which in turn either promoted the resolution of inflammation, leading to atherosclerotic lesion stabilization; or caused induction of tissue injury and lesion vulnerability to rupture, which in humans leads to myocardial infarction or stroke and sudden death.

Complementing her experimental studies, she used her background in engineering to develop algorithms for transcriptome-scale analysis of gene expression in macrophages stimulated in-vitro with different cytokines. This has allowed her the identification of gene networks responsible for some of the phenotypes observed in-vivo. Additionally, she has used machine learning computational tools, to find gene signatures indicative of human atherosclerotic lesion stability or vulnerability to rupture.

Indira's focus lies on finding immune signatures and networks that can be used for personalized diagnosis and prognosis of disease as well as for modulation of immune responses.

# Author's Publications

## Poster Presentations:

- **Medina, IA**; Beckers, C; Westra, MM; Bot, I; Van Berkel, TJ; Tanaka, M and Biessen, EAL. Metallophilic Macrophage Ablation Stabilizes Atherosclerotic Plaques in Mice. *Circulation*. 2010; 122: A20705.
- **Medina, IA**; Cougoule, C; Maridonneau-Parini, I; Soehnlein, O; Koenen, R; Weber, C and Biessen, EAL. Hck and Fgr, Potential Targets for Intervention in Atherosclerosis? *Circulation*. 2010; 122: A21360.
- Herias, MV; Bai, L; **Medina, IA**; Wijnands, E; Delsing, D; Pham, C; Biessen, EAL and Heeneman, S. Leukocyte Cathepsin C Deficiency Attenuates Atherosclerosis in LDL Receptor Deficient Mice. *Circulation*. 2009; 120: S1166.
- **Medina, IA**; Bot, I; de Jager, S; van Berkel, TJC and Biessen, EAL. Deficiency Of Hck And Fgr Src Kinases Leads To Delayed Atherosclerosis In LDL Receptor Deficient Mice. *Circulation*. 2008; 118: S474.

## Journal Papers:

- **Medina, IA**; Soehnlein, O; Cougoule, C; Koenen, RR; Doering, Y; Drechsler, M; Bermudez, B; Wolfs, I; Herias, MV; Bot, I; de Jager, S; Weber, C; Cleutjens, J; van Berkel, TJC; Maridonneau-Parini, I; and Biessen, EAL. Janus Role of Hck and Fgr in Atherosclerosis Progression and Stability. *Circulation*. Submitted.
- Bermudez, B; **Medina, IA**; Dahl, T; Groeneweg, M; Otten, J; Herias, MV; Pol, J; Rousch, M; Holm, S; Varela, LM; Ortega, A; Abia, R; Nagy, L; Aukrust, P; Muriana, F; Halvorsen, B and Biessen, EAL. Hematopoietic NAMPT Over-Expression Attenuates Atherosclerosis. *Cell Metabolism*. Submitted.
- **Medina, IA**; Herias, MV; Otten, J; van Berkel, TJC and Biessen, EAL. Biessen. Metallophilic Macrophage Ablation Stabilizes Atherosclerotic Lesions in LDLr<sup>-/-</sup> Mice. *Atherosclerosis, Thrombosis and Vascular Biology*. Submitted.
- Vérollet, C; Zhang, YM; Le Cabec, V; Mazzolini, J; Charrière, G; Labrousse, A; Bouchet, J; **Medina, IA**; Biessen, EAL, Niedergang, F; B´nichou, S and Maridonneau-Parini, I. HIV-1 Nef triggers macrophage fusion in a p61Hck- and protease-dependent manner. *J Immunol*. 2010 Jun 15;184(12):7030-9.
- Meijer, AH; Gabby Krens, SF; **Medina, IA**; He, S; Bitter, W; Ewa Snaar Jagalska, B; Spaink, HP. Expression analysis of the Toll-like receptor and TIR domain adaptor families of Zebrafish. *Mol Immunol*. 2004 Jan; 40 (11): 773-83.

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