



Universiteit  
Leiden  
The Netherlands

## **Role of cardiac biomarkers in cognitive impairment and functional decline**

Mahin Rad, S.

### **Citation**

Mahin Rad, S. (2018, November 29). *Role of cardiac biomarkers in cognitive impairment and functional decline*. Retrieved from <https://hdl.handle.net/1887/67289>

Version: Not Applicable (or Unknown)

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/67289>

**Note:** To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/67289> holds various files of this Leiden University dissertation.

**Author:** Mahin Rad, S.

**Title:** Role of cardiac biomarkers in cognitive impairment and functional decline

**Issue Date:** 2018-11-29

---

## List of Publications

### *Peer-reviewed Journal papers:*

1. **Mahinrad S\***, Vriend AE\*, Jukema JW, van Heemst D, Sattar N, Blauw GJ, Macfarlane PW, Clark EN, de Craen AJ, Sabayan B. Left ventricular hypertrophy and cognitive decline in old age. *Journal of Alzheimer's Disease*. 2017 Jan 1;58(1):275-83. (\*Joint first-author)
2. **Mahinrad S**, de Craen AJ, Yasar S, van Heemst D, Sabayan B. Natriuretic peptides in the central nervous system: Novel targets for cognitive impairment. *Neuroscience & Biobehavioral Reviews*. 2016 Sep 1;68:148-56.
3. **Mahinrad S**, Jukema JW, van Heemst D, Macfarlane PW, Clark EN, de Craen AJ, Sabayan B. 10-Second heart rate variability and cognitive function in old age. *Neurology*. 2016 Mar 22;86(12):1120-7.
4. Ogliari G\*, **Mahinrad S\***, Stott DJ, Jukema JW, Mooijaart SP, Macfarlane PW, Clark EN, Kearney PM, Westendorp RG, de Craen AJ, Sabayan B. Resting heart rate, heart rate variability and functional decline in old age. *Canadian Medical Association Journal*. 2015 Oct 20;187(15):E442-9. (\*Joint first-author)
5. Rostamian S\*, **Mahinrad S\***, Stijnen T, Sabayan B, de Craen AJ. Cognitive impairment and risk of stroke: a systematic review and meta-analysis of prospective cohort studies. *Stroke*. 2014 Jan 1:STROKEAHA-114. (\*Joint first-author)
6. **Mahinrad S**, Ferguson I, Macfarlane PW, Clark EN, Stott DJ, Ford I, Mooijaart SP, Trompet S, van Heemst D, Jukema JW, Sabayan B. Spatial QRS-T angle and cognitive function in old age. *Submitted*

---

**7. Mahinrad, S.**, Bulk, M., van der Velpen, I., Mahfouz, A., van Roon-Mom, Fedarko, N., Yasar, S., W., Sabayan, B., van Heemst, D. & van der Weerd, L. Natriuretic peptides in post-mortem brain tissue and cerebrospinal fluid of non-demented humans and Alzheimer's disease patients.

***Conference abstracts:***

**8. Mahinrad S**, Vriend AE, Jukema JW, Macfarlane PW, van Buchem MA, van der Grond J, Sabayan B, On behalf of PROSPER study group. QT Interval Prolongation and Cognitive Impairment in Older Subjects. *VasCog 2016, Amsterdam, the Netherlands – Oral presentation*

**9. Mahinrad S**, Van Heemst D, Macfarlane PW, Stott DJ, Jukema JW, de Craen, AJM, Sabayan B, On behalf of PROSPER study group. Short-term heart rate variability and cognitive function in older subjects at risk of cardiovascular disease. *25th European Conference on Hypertension and Cardiovascular Protection. Milan, Italy, June 2015 – Oral presentation*

**10. Mahinrad S**, Bulk M, Van der Velpen I, Mahfouz A, van Roon-Mom W, Sabayan B, van Heemst D, van der Weerd L. Mapping of natriuretic peptides and their receptors in the brains of non-demented human subjects and patients with Alzheimer's disease. *AAIC 2018, Chicago, US – Poster presentation*

---

## About the Author

Simin Mahin Rad was born on March, 1986 in Tehran, Iran. After completing her high school education in Tehran, she moved to Minsk, Belarus with her family. She received her medical degree from Belarusian State Medical University, Minsk, Belarus in 2011. In the same year, she obtained a scholarship from Leiden University Medical Centre (LUMC), the Netherlands, to study the Master of Science program on Vitality and Ageing. After receiving her MSc degree in 2012, she joined the department of Gerontology and Geriatrics at LUMC as a PhD student and scientific researcher. During her PhD, she has collaborated with the department of Gerontology and Geriatrics, Human Genetics and Radiology at LUMC, and the John Hopkin's Medicine to investigate the contribution of cardiac biomarkers in cognitive brain ageing. Currently, she is a postdoctoral fellow at the department of Neurology, the cerebrovascular laboratory of prof. Sorond at Northwestern University in Chicago, USA. Her current research focusses on exploring early markers of cerebrovascular damage in midlife and their relation to clinical and brain MRI outcomes.



---

## Acknowledgments

I would like to express my deepest gratitude to all those who supported and helped me during my PhD journey, and all the patients, participants and donors without whom this PhD thesis would have been incomplete.

I am especially grateful for the support of my wonderful teacher and supervisor Behnam Sabayan. I could not have asked for a more supportive and encouraging supervisor, who was not just my supervisor but also a great friend. Behnam, thank you for always being there, I truly appreciate all your help and support. I also would like to thank Anton JM de Craen, who gave me the opportunity to start my PhD journey. He was a wonderful scientist and a source of inspiration. Ton, I have learned many things from you, and I wish you stayed longer among us: RIP. My warm thanks goes to Diana van Heemst for being such a great support, especially during the last year of my PhD. Diana, many thanks for your open door policy, guidance and encouragements during the challenges. I am grateful to prof. Gerard Jan Blauw for all the help and support in finalizing my PhD thesis and graduating.

I thank all my wonderful colleagues and friends in the department of Gerontology and Geriatrics. It was a great experience working in this department, especially with all the cakes, coffees and happy hours! Thanks Roelof for the Dutch summary of this thesis, all the helpful discussions and always being so nice. All my roomies at C7-125: Evie, Mariette, Anne-Suzanne, Jelle, Maxime, Nicolien, Abi, Laura and Marijan: Thanks for being such wonderful colleagues and roommates. Thanks to my colleague and co-author Giulia Ogliari, for all the long hours of working together and for being so determined in achieving our goal. Somayeh Rostamian, I will not forget our first paper together, all the challenges, hard works and fun moments. Thanks for being a joyful friend and colleague. Thanks to the lovely secretaries of Ouderengeneeskunde for their helpful organizations, especially Marian de Jeu for being so lively and all the Dutch conversations: Heel veel dank!

---

Thanks to all my co-authors, Isabelle van der Velpen, Annelotte Vriend, Ian Ferguson, and all the collaborators from PROSPER group, David J Stott, J Wouter Jukema, Naveed Sattar, Ian Ford, Simon P Mooijaart, Stella Trompet and Elaine N Clark, for all their great suggestions and discussions in improving my manuscripts. Thanks to Peter Macfarlane, for your expert guidance and help in analysing and better understanding the world of ECG. I am also grateful to Sevil Yasar from John Hopkin's Medicine, for her fruitful collaboration and all the continued effort that helped me move my research project forward.

My sincere thanks to my colleagues at the department of Human Genetics and Radiology who helped me learning new techniques and extend my knowledge in neuroscience. Thank you Louise van der Weerd for giving me the opportunity to collaborate with your great team. Marjolein, thanks for all your help, and for sharing your experience with me. Your sense of humour made this experience a pleasant one too. Linda van der Graaf, I appreciate all your contribution in the lab, thank you for being patient with me. I am thankful to Willeke van Roon-Mom, for sharing your knowledge and expert opinion, and to Ahmed Mahfouz for helping me in analysing the Allen Brain Atlas data. I would also like to thank the staff from the Netherlands Brain Bank and Normal Ageing Brain Collection, who helped me in obtaining the brain tissue samples in an efficient manner.

Finally, I cannot thank enough my parents, for making me who I am, and for their unconditional support throughout these years. Mom and dad, thanks for giving me the opportunity to explore the world and follow my dreams. Last but not least, the one person who deeply inspired, motivated and encouraged me through all the challenges, and who was always there, even from a long distance, was my lovely husband, partner and closest friend Mohammed. Mohammed, I owe this success to your support, wisdom and love. Thank you for always believing in me, even more than myself, and for caring and supporting me wholeheartedly.