1 INTRODUCTION

This PhD thesis on “Epidemiological investigations of relative telomere length in chronic kidney disease and atherosclerosis-related diseases” illustrates the investigation of the association between relative telomere length and various clinical endpoints in well-phenotyped cohorts with atherosclerosis and/or chronic kidney disease.

The thesis is structured into three parts with the first part on the biological background of telomere structure, biological meaning of telomere length and its relation to chronic diseases especially atherosclerosis-related diseases and chronic kidney disease. The methodological background addresses the method of telomere length measurement applied in this thesis in comparison to the earlier developed telomere length measurement method. Moreover, the term association analysis is introduced and an overview on applied study designs is given.

The second part demonstrates the four projects of this PhD thesis:

1. Julia Raschenberger*, Barbara Kollerits*, Angelika Hammerer-Lercher, Barbara Rantner, Marietta Stadler, Margot Haun, Peter Klein-Weigel, Gustav Fraedrich, Florian Kronenberg: **The association of a symptomatic peripheral arterial disease and relative telomere length: Results from the CAVASIC Study.** ***Atherosclerosis*** 229 (2013): 469-474

2. Julia Raschenberger*, Barbara Kollerits*, Stephanie Titze, Anna Köttgen, Barbara Bärthlein, Arif B. Ekici, Lukas Forer, Sebastian Schönherr, Hansi Weissensteiner, Margot Haun, Christoph Wanner, Kai-Uwe Eckardt, Florian Kronenberg, for the GCKD Study Investigators**: Association of relative telomere length with cardiovascular disease in a large chronic kidney disease cohort – the GCKD Study.** (Submitted for publication)

3. Julia Raschenberger*, Barbara Kollerits*, James Ritchie, Beverley Lane, Philip A Kalra, Eberhard Ritz, Florian Kronenberg: **Association of relative telomere length with progression of chronic kidney disease in two independent cohorts: effect modification by smoking and diabetes.** (Submitted for publication)

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4. Julia Raschenberger*, Claudia Lamina*, Margot Haun, Barbara Kollerits, Eva Boes, Lyudmyla Kedenko, Anna Köttgen, Florian Kronenberg: **"Same same but different"- Influence of DNA extraction methods on relative telomere length measurements and its possible impact on epidemiological studies.**

The first three projects cover results of telomere length investigations including three different study designs and emphasize its relevance for chronic diseases. The last project addresses the implementation of DNA extraction methods on relative telomere length measurements by quantitative polymerase chain reaction (qPCR) and its potential impact on epidemiological studies. Each project is structured as follows: short introduction, main aim of the project, most important findings and conclusion of the project.

The third part of the PhD thesis summarizes my contributions to each of the projects. In addition, it comprises an appendix including the publications and manuscripts. Moreover, other projects I was involved in are also mentioned. Although they are not part of this thesis they can be considered as related work.

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