## CONTENTS

**PART I General introduction**

CHAPTER 1 General introduction, aims and outline 12

**PART II Quantitative MRI biomarkers**

CHAPTER 2 Quantitative assessment of brain iron by R2* relaxometry in patients with clinically isolated syndrome and relapsing–remitting multiple sclerosis 44

CHAPTER 3 Determinants of brain iron in multiple sclerosis: a quantitative 3T MRI study 58

CHAPTER 4 Cognitive impairment in relation to MRI metrics in patients with clinically isolated syndrome 72

**PART III Body fluid biomarkers**

CHAPTER 5 Epitope specificity of serum antibodies directed against the extracellular domain of myelin oligodendrocyte glycoprotein: Influence of relapses and immunomodulatory treatments 86

CHAPTER 6 Levels of serum IgM antibody against native refolded MOG predict responsiveness to corticosteroids for treatment of acute multiple sclerosis relapses 102

CHAPTER 7 Serum secretogranin III as a marker for clinical subtyping in multiple sclerosis 108

**PART IV Quantitative MRI in relation to body fluid biomarkers**

CHAPTER 8 CSF neurofilament and N-acetylaspartate related brain changes in clinically isolated syndrome 122

CHAPTER 9 CSF neural cell adhesion molecule in relation to 3T MRI-metrics in early multiple sclerosis 134

**PART V General discussion**

CHAPTER 10 General discussion, recommendations for future research and concluding statements 148

Appendix 173

Summary 175

Nederlandse Samenvatting 179

List of abbreviations 185

List of publications 187

Curriculum vitae 191

Acknowledgement 193