TABLE OF CONTENTS

[ABSTRACT i](#_Toc425123007)

[RESUMEN iii](#_Toc425123008)

[RESUM v](#_Toc425123009)

[1. INTRODUCTION 1](#_Toc425123010)

[1.1 DISCOVERY, CHEMICAL FEATURES AND ABA PHYSIOLOGICAL ROLE IN THE PLANT 3](#_Toc425123011)

[1.1.1. The role of ABA in abiotic stress 6](#_Toc425123012)

[1.1.2 The role of ABA in biotic stress 10](#_Toc425123013)

[1.1.3 The role of ABA in plant growth and development 12](#_Toc425123014)

[1.2 THE CORE ABA SIGNALING PATHWAY 14](#_Toc425123015)

[1.2.1 PYR/PYL/RCAR proteins: soluble ABA receptors 16](#_Toc425123016)

[1.2.1.1 Discovery and function of the PYR/PYL/RCAR receptors 16](#_Toc425123017)

[1.2.1.2 Structural insights into PYR/PYL/RCAR proteins as ABA specific receptors 19](#_Toc425123018)

[1.2.1.3 Combinatorial interaction of the ABA signalosome. 25](#_Toc425123019)

[1.2.2 Clade A type 2C protein phosphatases (PP2C) 26](#_Toc425123020)

[1.2.1.1 Clade A PP2Cs type as negative regulators of ABA signaling 26](#_Toc425123021)

[1.2.2.1 Targets of clade a PP2Cs 28](#_Toc425123022)

 [Protein kinases 28](#_Toc425123023)

 [Transcriptional regulators 33](#_Toc425123024)

 [Membrane targets 35](#_Toc425123025)

[1.2.3 Secondary messengers in ABA signal transduction 36](#_Toc425123026)

[1.2.4 Membrane recognition by phospholipid-binding domains 38](#_Toc425123027)

[1.2.4.1 C2 domains as calcium-dependent lipid binding domain 43](#_Toc425123028)

[2. OBJECTIVES 49](#_Toc425123029)

[3. CHAPTER I 53](#_Toc425123030)

[3.1 INTRODUCTION 55](#_Toc425123031)

[3.2 RESULTS 60](#_Toc425123032)

[3.3 MATERIALS AND METHODS 67](#_Toc425123033)

[4. CHAPTER II 71](#_Toc425123034)

[4.1 INTRODUCTION 73](#_Toc425123035)

[4.2 RESULTS 75](#_Toc425123036)

[4.3 MATERIALS AND METHODS 94](#_Toc425123037)

[5. GENERAL DISCUSSION 101](#_Toc425123038)

[6. CONCLUSIONS 113](#_Toc425123039)

[7. REFERENCES 117](#_Toc425123040)

[8. APPENDIX I 145](#_Toc425123041)

[9. APPENDIX II 179](#_Toc425123042)

[10. APPENDIX III 211](#_Toc425123043)