

## Table of Contents

1 - General Introduction .....	1
1.1 Viticulture and its products in a dynamic world .....	2
1.2 Biology and diversity of grapevine.....	3
1.3 Grapevine breeding .....	8
1.4 Cluster architecture determines the physical resilience to pathogens.....	11
1.5 Aims and Scope .....	16
2 - Identification of co-located QTLs and genomic regions affecting grapevine cluster architecture.....	17
3 - Differential expression of transcription factor- and further growth related genes correlates with contrasting cluster architecture in <i>Vitis vinifera</i> 'Pinot Noir' and <i>Vitis</i> spp. genotypes.....	37
4 - General Discussion.....	62
4.1 Considerations on grapevine cluster architecture as breeding target .....	63
4.2 QTLs related to cluster architecture .....	68
4.3 Proof-of-concept for marker assisted selection of dense cluster architecture.....	71
4.4 Candidate genes derived in the framework of the 'MATA' project .....	72
4.5 Differentially expressed transcription factors and related candidate genes.....	74
4.6 Conclusion and outlook .....	81
5 - Summary .....	82
6 - Zusammenfassung .....	84
7 - References.....	87
8 - Appendices .....	98
Appendix I: Electronic supplementary materials from Chapter 2 Richter et al. (2019) .....	99
Appendix II: Electronic supplementary materials from Chapter 3 Richter et al. (2020) .....	119
Appendix III: Supplementary materials from Chapter 4.....	154
List of Abbreviations.....	164
Declaration .....	167
Acknowledgments.....	168