

Contents

Abbreviations	i
Figures	iii
Tables	v
Summary	1
Zusammenfassung	3
1 Introduction	5
1.1 MicroRNAs in skeletal muscle cell differentiation	5
1.2 Aim of the study	11
2 Materials and Methods	13
3 Results and Discussion	19
3.1 Quality control and processing of miRNA profiling data – focus on normalization	20
3.2 MiRNA expression in murine skeletal myoblasts	22
3.3 Gene expression in murine skeletal myoblasts	29
3.4 Integrative analysis - Correlation of mRNA and miRNA expression data	38
3.5 Functional studies of miRNAs in human and murine skeletal muscle cells	50
3.6 IGF-1 and TNF- α affect miRNA biogenesis	52
4 Conclusions and Perspectives	55
5 References	57
6 Acknowledgements	65
7 Scientific Communications	67
8 Appendix	69