

Table of contents

Abstract	i
Publications	iii
List of abbreviations	vii
List of figures	x
1 Introduction	1
1.1 Relevance of hospital-acquired infections	1
1.2 Pathogenicity of methicillin-resistant <i>Staphylococcus aureus</i>	2
1.3 Relevance of textiles as pathways of pathogenic germ transmission in hospital settings	3
1.4 Commonly used materials in textile industry	4
1.5 Importance of textile finishing	6
1.6 Surface treatment methods for the introduction of new properties	7
1.7 Antibacterial strategies for textile functionalization	11
1.8 Influence of the human skin microbiome on wound healing	12
1.9 Endolysins as new therapeutic agents for the targeted lysis of bacteria	14
1.10 Multifunctional Kill&Repel coatings	17
1.11 Objectives	18
2 Experimental section	20
2.1 Materials	20
2.2 Molecular biology methods	20
2.3 Biotechnological methods	20
2.4 Biochemical methods	22
2.5 Textile assays	25
2.6 Antibacterial assays	26
2.7 Surface analysis methods	32
2.8 Cell culture methods	33
3 Results and discussion	36

Chapter 1: Establishment of a high-throughput screening assay for the identification of textile-binding peptides with improved binding strength.....	36
Chapter 2: Enzyme-based functionalization of medical textiles for targeted elimination of MRSA.....	48
Chapter 3: Development of a multifunctional coating by combination of antibacterial and antifouling properties	64
4 Lessons learned from multifunctional peptide-based textile coatings	77
5 Summary and conclusions	81
References	86
Appendix	104
Acknowledgements	106
General acknowledgements.....	106
Financial contributions	107
Author contributions	107
Declaration of authorship (eidesstattliche Erklärung).....	109
Curriculum vitae.....	111