

Contents

Preface	7
Authors	9
Occlusion and Wear	
1 A new wear facet terminology for mammalian dentitions Julia A. Schultz, Ulrike Anders, Caroline Braune, Janka J. Brinkkötter, Ivan Calandra, Sandra Engels, Eva Findeisen, Juan Pablo Gailer, Jürgen Hummel, Kai R. K. Jäger, Thomas M. Kaiser, Daniela C. Kalthoff, Wighart v. Koenigswald, Ottmar Kullmer, Christina Landwehr, Markus Mau, Ulrike Menz, Irina Ruf, Anne M. Schubert, Ellen Schulz-Kornas, Achim H. Schwermann, Leonie C. Schwermann, Mirella Skiba, Patrick Steuer, Karl-Heinz Südekum, Daniela E. Winkler, and Thomas Martin	11
2 Occlusal Fingerprint Analysis (OFA) reveals dental occlusal behavior in primate molars Ottmar Kullmer, Ulrike Menz, and Luca Fiorenza	25
3 A brief history of quantitative wear analyses with an appeal for a holistic view on dental wear processes Ellen Schulz-Kornas, Thomas M. Kaiser, Ivan Calandra, and Daniela E. Winkler	44
Mastication and Jaw Mechanics	
4 Mandibular biomechanics as a key factor to understand diet in mammals Jordi Marcé-Nogué	54
5 Interaction between food, saliva, and tooth surface Marcus Mau, Achim Johann, Thomas M. Kaiser, and Karl-Heinz Südekum	81
6 Aspects of food comminution in ungulates and their consequences for energy budget Jürgen Hummel, Marcus Clauss, and Karl-Heinz Südekum	87
Ontogeny and Heterochrony	
7 Case studies on functional aspects and constraints in early and late tooth ontogeny Irina Ruf, Anne M. Schubert, and Wighart v. Koenigswald	102
8 Enamel ridge alignments in ungulates: a cut above Daniela E. Winkler, Jordi Marcé-Nogué, and Thomas M. Kaiser	125
9 Construction and wear of mammalian teeth in terms of heterochrony Wighart v. Koenigswald	171
Evolutionary Changes	
10 Molar diversity and functional adaptations in Mesozoic mammals Thomas Martin, Kai R. K. Jäger, Thorsten Plogschties, Achim H. Schwermann, Janka J. Brinkkötter, and Julia A. Schultz	187
11 Evolutionary trends in the mastication patterns in some perissodactyls, cetartiodactyls, and proboscideans Julia A. Schultz, Sandra Engels, Leonie C. Schwermann, and Wighart v. Koenigswald	215
12 Short review of dental microstructure and dental microwear in xenarthran teeth Daniela Kalthoff	231
Index	243