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Progresses and challenges of food oral processing: looking back and forward

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The oral consumption of food is a complicated process involving a series of oral actions and coordination, starting from the first bite till after the final swallowing. During this process, food is structurally transformed and a bolus is formed as a mixture of food and saliva. Sensory pleasure is perceived both instantly and in an integrated manner throughout the process. After decades of research efforts, a great understanding has been achieved on the physics and oral physiology of eating and sensory perception. While food rheology has been studied for over a half century as a core physics of food texture, oral tribology emerged in past few years as a new frontier for texture and mouthfeel research. Recently, saliva secretion and food-saliva interactions, on the other hand, are accepted as important oral physiological factors which influence an eating process, both to the dynamics of food structure transformation and to the sensory perception (aroma, taste, as well as texture). This talk will review recent progresses on the physical and oral physiological aspects of food oral consumption. Latest experimental results, both reported in literature and obtained from author's lab, will be discussed. Attempt will also be made in trying to identify new emerging areas of food oral processing research.