Dental associations predict 76,000 new jobs

The job training rate in dental professions is traditionally high. Additionally, demographic developments will probably lead to a further employment stimulus.

Both dental organisations pointed out that the positive forecast for the German dental sector depends on health policy representatives being willing to set stable conditions.

References: KZBV/DTI
Using a combination of guillotine-based experiments and cutting-edge computer modelling, researchers at the University of Bristol have explored the most efficient ways for teeth to cut food. Their results demonstrate how precisely the shape of an animal’s teeth is optimised to suit the type of food it eats. There is massive variety in tooth shapes in the natural world, from long, serrated teeth in Tyrannosaurus rex to triangular teeth in sharks and our own complex molars. Teeth can enable animals to crush, chop, grind or even cut food into pieces small enough to swallow. Such cutting instruments, however, are not restricted to toothed animals. Bird beaks, insect mouth parts and even the roughened tongue of snails can also be used to break down food. Nevertheless, how teeth are able to cut and break down food has not been extensively examined. Now, two researchers at the University of Bristol’s School of Earth Sciences have investigated this problem. In their study, research fellow Dr Philip Anderson and lecturer Dr Emily Rayfield used a unique double-bladed guillotine and measured the force needed by different tooth shapes to compress food materials. Finite-element analysis, a computational engineering technique, was then used to mimic these experiments and measure different variables, such as the total energy required. The researchers found that different shaped bladed teeth are optimised for different types of food.

“The actual hardness or toughness of the food item has a strong effect on what type of tooth shape is most efficient for cutting it,” Anderson said. “We looked specifically at V-shaped bladed edges, which are similar to tooth shapes found in some sharks and the cheek teeth of many carnivorous mammals, and found that the angle of the V could be optimised for different foods.” According to Anderson, this sort of analysis is only possible with a computer model, which the researchers created to mimic the physical experiments. With the validated model, they were able to alter aspects of the tooth shape until they found a specific shape that used the least energy. “These results might seem rather obvious,” said Rayfield, “because we know tooth shape is adapted to diet. But we were surprised at the preciseness and predictability of the fit of tooth shape to dietary item.”

The researchers hope this new integrated methodology will create a new framework for exploring the evolutionary history of dental shape and how it relates to diet. Their study, “Virtual experiments, physical validation: Dental morphology at the intersection of experiment and theory”, was published ahead of print on 7 March in the Journal of the Royal Society Interface.

Reference: DTI