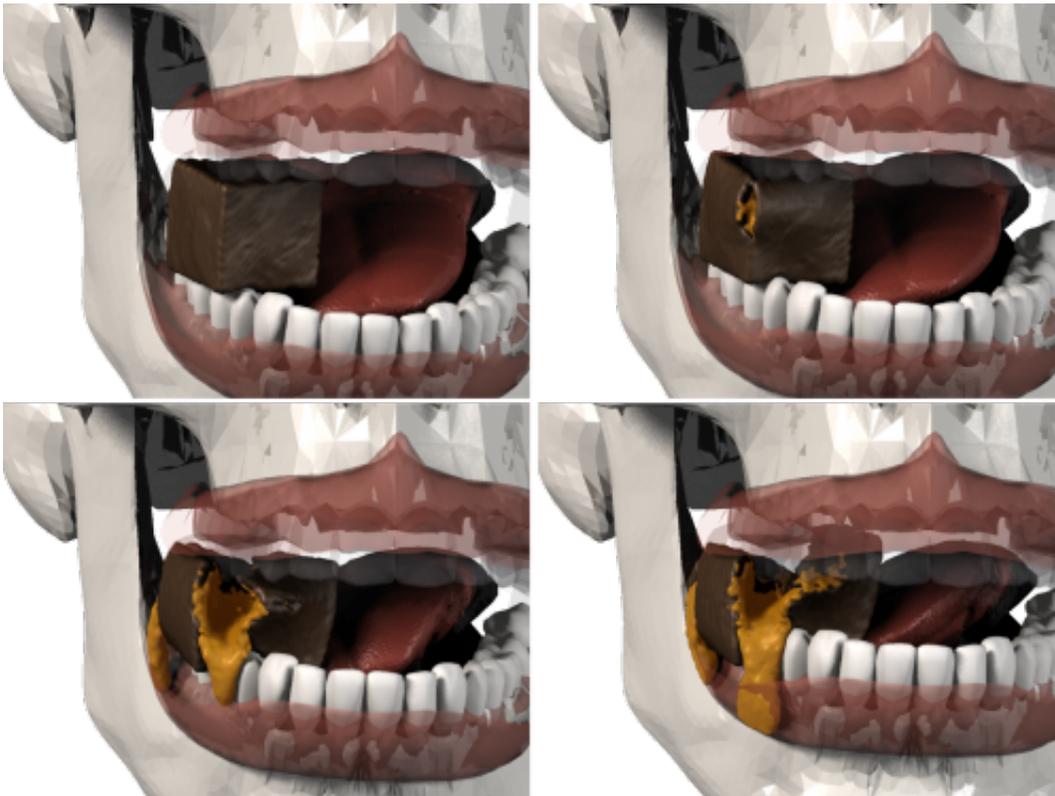


# New technology that is revealing the science of chewing

April 15 2014, by James Davidson

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CSIRO's cutting-edge 3D computer modelling reveals a healthier future for our favourite foods.

CSIRO's 3D mastication modelling, demonstrated for the first time in Melbourne today, is starting to provide researchers with new understanding of how to reduce salt, sugar and fat in food products, as well as how to incorporate more fibre and nutrients, and even how to

create new food sensations.

CSIRO biomechanical engineer and computer modeller, Dr Simon Harrison, said the world's first 3D dynamic virtual mouth can provide detailed insight for developing healthier foods.

Just in time for Easter, Dr Harrison has modelled a caramel filled Easter Egg to see what happens when the virtual mouth takes a bite.

"In polite company, we can't see inside someone's mouth while they're eating and, until now, it has not been possible to view how the chewing process alters food," Dr Harrison said.

"Using a cutting-edge technique called smooth particle hydrodynamics, we've developed a virtual mouth built on real data about the physics of chewing. It predicts how a particular food breaks down and how flavour is released in the mouth. It also shows the distribution and interaction of components such as salt, sugar and fat.

"Through this technology, we can view and analyse how food at the microscopic level works in the mouth, and how it influences our taste perception."

This new data and understanding is helping to develop foods lower in salt, sugar and fat without changing the taste.

CSIRO food materials scientist, Dr Leif Lundin, believes the benefits for the food industry could be enormous.

"This technology will give [food](#) and ingredient manufacturers the ability not only to model the breakdown of a complex [food product](#), but also the individual components," Dr Lundin said.

"It can also model the costs of making changes to a product, and then calculate the cost benefit. This will save time and money, compared to using the traditional 'cook and look' approach.

"Our research should also help create new taste sensations that could find their way into new products on our supermarket shelves."

Provided by CSIRO

Citation: New technology that is revealing the science of chewing (2014, April 15) retrieved 23 April 2024 from <https://medicalxpress.com/news/2014-04-technology-revealing-science.html>

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