Abstract Submission Form

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Paper:

Title of Abstracts: Cartilage Stiffness and Thickness Distributions Revealed by an Automated Indentation Technique in the Temporomandibular Joint

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Submission deadline: April 1, 2016

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TMJ Conference Abstract Instruction

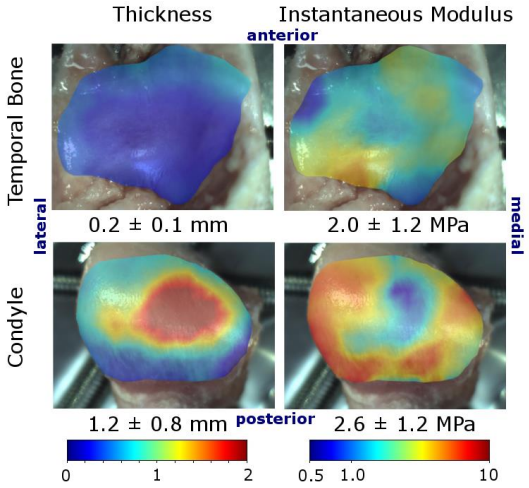
The short abstract should provide information for readers to understand the research question and the main results. Please do not add more than 1 figure or table, but neither is required. No references are needed. Do provide at the end funding information and declare any conflicts. The body of the abstract is limited to 200 words or less.

Insert Body of Abstract here (200 words or less):

The purpose of this study was to evaluate the capability of an automated indentation technique to reveal the topographical variation of mechanical properties over the entire articular surface of the temporomandibular joint (TMJ), especially the thickness and instantaneous modulus (IM).

Mechanical properties of visually normal temporal bones and condyles of a porcine TMJ were mapped *ex vivo* using a multiaxial mechanical tester (Mach-1 v500css, Biomomentum Inc.). Perpendicular spherical indentations (D=6.35mm) and thickness measurements (needle technique) were performed at ~100 positions over each surface. Data were fit to an elastic model in indentation to extract the IM at each position.

High-resolution mappings of the thickness and IM for all surfaces were generated (Fig.1). The cartilage is thicker on the central portion of the condyle while the thickness of the temporal bone is mostly homogenous. The IM is much higher in the lateral side of both surfaces and its topographic variation is more important in the condyle. A reproducibility analysis (5 attempts) revealed an Intraclass Correlation Coefficient of 0.97 for IM.



Similar regional differences in mechanical properties have already been reported but never at such high spatial resolution. These findings support the use of this non-destructive technique in TMJ articular surface characterization.

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Conflict Declaration: E. Quenneville and M. Garon are co-owner of Biomomentum Inc.