ABSTRACT SUBMISSION

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Biomat – Materials for Health Congress – June 3-7 2019 – La Grande Motte, France

Breast implant texturing effects on asymptomatic capsules:

Basis for a more newsworthy topic than ever

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ABSTRACT

The association between higher-surface-area textured implants and breast implant-associated anaplastic large cell lymphoma (ALCL) has been recently verified, driving European health authorities (including ANSM in France), to remove one the most implanted model- namely Allergan's textured implants - from the market place.

Understanding what are the biophysical parameters that influence breast implant integration is therefore of fundamental importance.

Until now, Baker I (asymptomatic) capsules have been considered similarly established and organized irrespective of the type of breast implant surface they face. We investigate for the first time the impact of implant surface topography towards organization and gene signaling in healthy capsules strictly. We raise a new classification based on topographical measurements collected from 17 different breast implant devices as a representative sample of the market place. Our classification comprises 3 categories of textured implant, defined as "peak and valleys", "open cavities" and "semi-open cavities" from their cross-section profiles. Then, we clustered 31 Baker I capsules accordingly to this classification and established the expression profile of a subset of genes related to capsule formation. Altogether, our results demonstrate that surface implant texturation modulates the expression of genes related to extracellular matrix formation and inflammation. We also highlighted slight dissimilar organization of the capsular tissues depending on the which implant surface topography they face. In light of our results, we proved that the selected surface topography features are bioactive cues *per se* and confirmed the biological relevance of the classification. Our work strongly suggests that variations in gene expression and tissue

organization modifications induced by surface topography might participate to subsequent breast-implant associated etiopathologies.

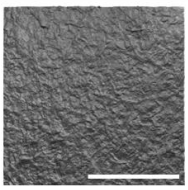
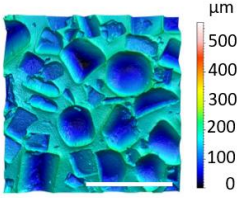
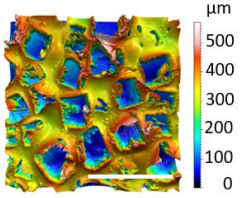
classes	prostheses sampling	topographies	cross-sections
peak and valley-patterned surfaces (PV)	▪ SilkSurface™ (Motiva) ▪ Round microtextured implant (Arion) ▪ Perthese® (Perouse) ▪ Cereform® (Cereplas) ▪ Round microtextured implants (Sebbin)		
open cavities-patterned surfaces (OC)	▪ Round textured implant (Sebbin) ▪ TRUETexture® (Silimed) ▪ MESMO® sensitive (Polytech) ▪ Nagotex® (Nagor) ▪ Microcell™ (Allergan) ▪ Cristalline Micro-textured (Eurosilicone) ▪ POLYtxt® (Polytech) ▪ Siltex® (Mentor)		
semi-opened cavity-patterned surfaces (SOC)	▪ Cristalline Textured (Eurosilicone) ▪ Shaped textured implant (Sebbin) ▪ Shaped textured implant (Arion) ▪ Biocell™ (Allergan)		

Figure 1: New classification; main features of surface topographies (top-view and cross-sections) shared by implants gathered in one of the 3 classes (PV, OC and SOC)

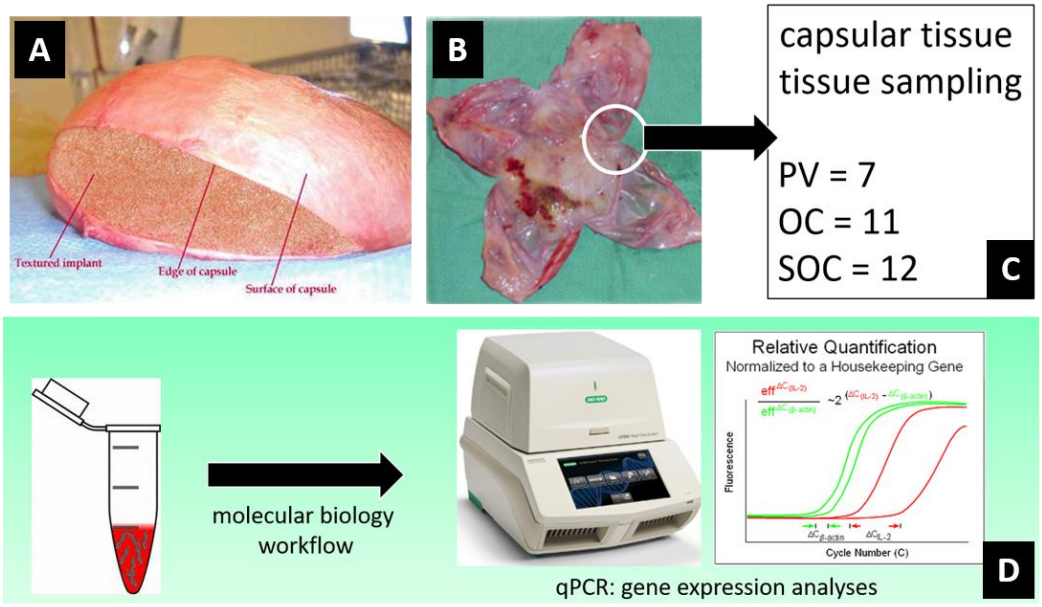


Figure 2: Molecular biology workflow overview: implant capsule adhering to the breast implant (A) is took apart (B), classified (C) and used for both molecular sampling and qPCR analyses (D) and histological analyses (not shown here)

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