

Characterization of the osteochondral junction for the development of bio-inks dedicated to the reproduction of this anchoring zone in the treatment of focal osteochondral lesions by tissue engineering

Ghita Sekkat, Christel Henrionnet, Astrid Pinzano, Magali Detz, Pierre Gillet, Christophe Marquette, Laurent Galois, Laurent Grossin

▶ To cite this version:

Ghita Sekkat, Christel Henrionnet, Astrid Pinzano, Magali Detz, Pierre Gillet, et al.. Characterization of the osteochondral junction for the development of bio-inks dedicated to the reproduction of this anchoring zone in the treatment of focal osteochondral lesions by tissue engineering. Journée scientifique de l'école doctorale BioSE, Apr 2024, Nancy, France. hal-04681919

HAL Id: hal-04681919 https://hal.univ-lorraine.fr/hal-04681919v1

Submitted on 30 Aug 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers. L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.





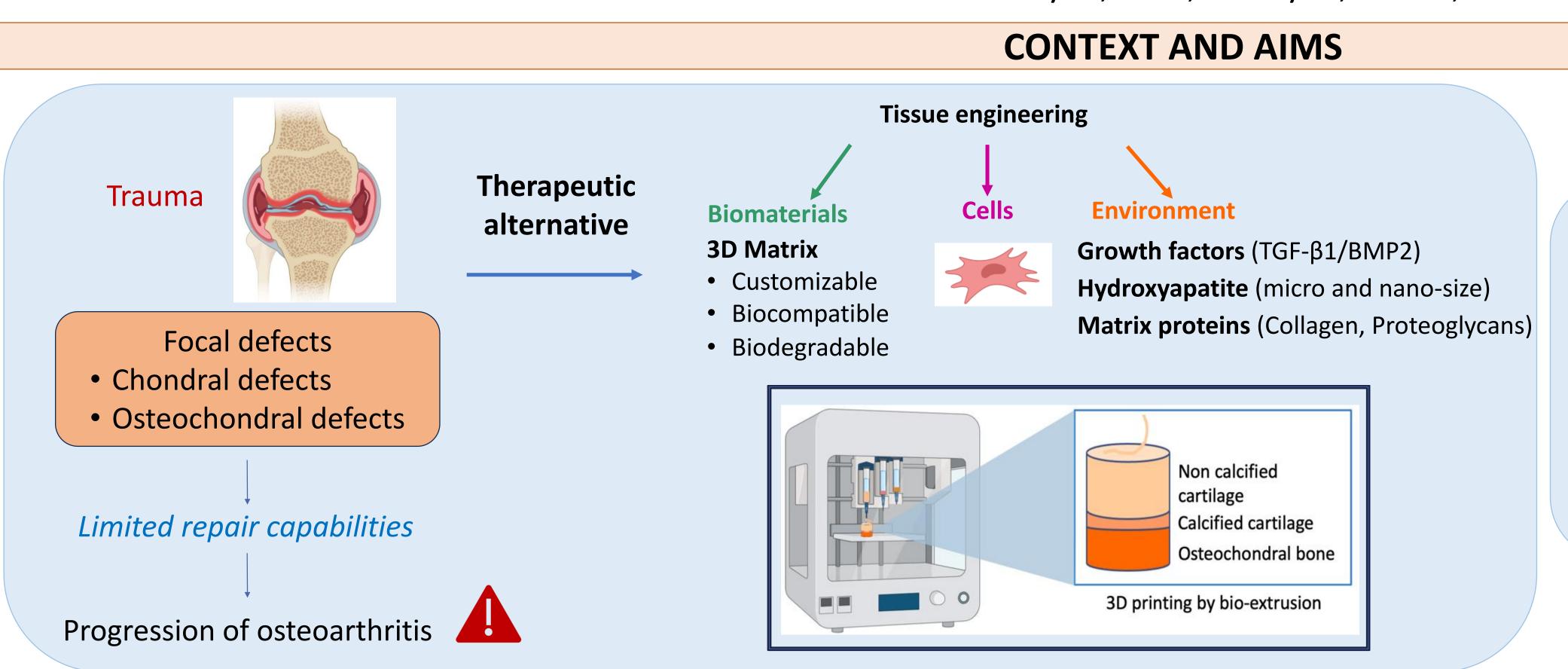


Characterization of the osteochondral junction for the development of bio-inks dedicated to the reproduction of this anchoring zone in the treatment of focal osteochondral lesions by tissue engineering

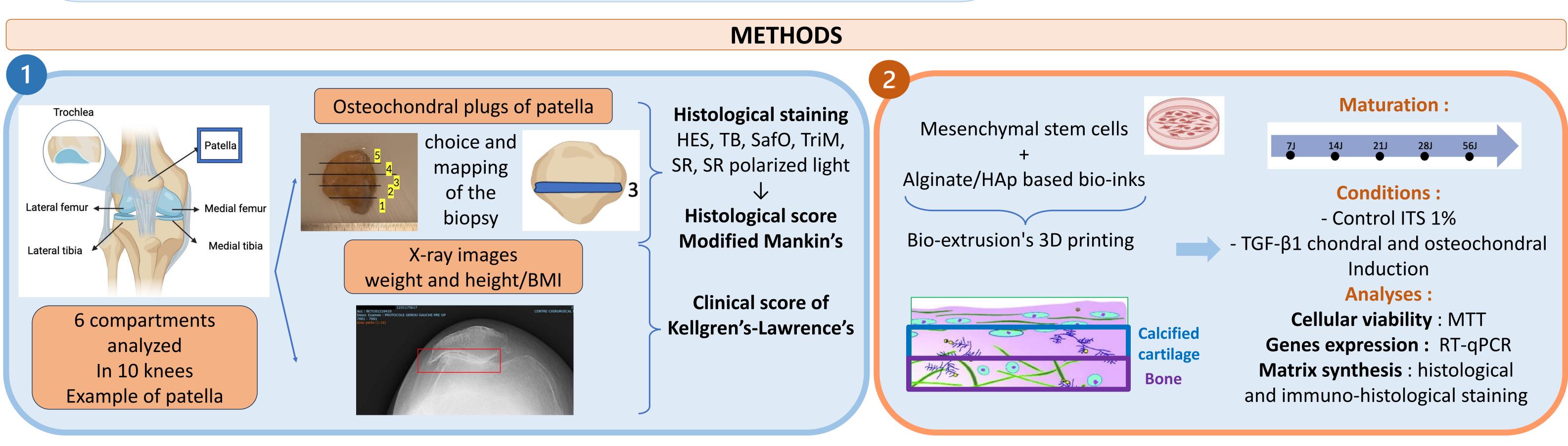
<u>Ghita Sekkat¹</u>, Christel Henrionnet¹, Astrid Pinzano¹, Magali Detz¹, Pierre Gillet¹, Christophe Marquette³, Laurent Galois^{1,2} and Laurent Grossin¹

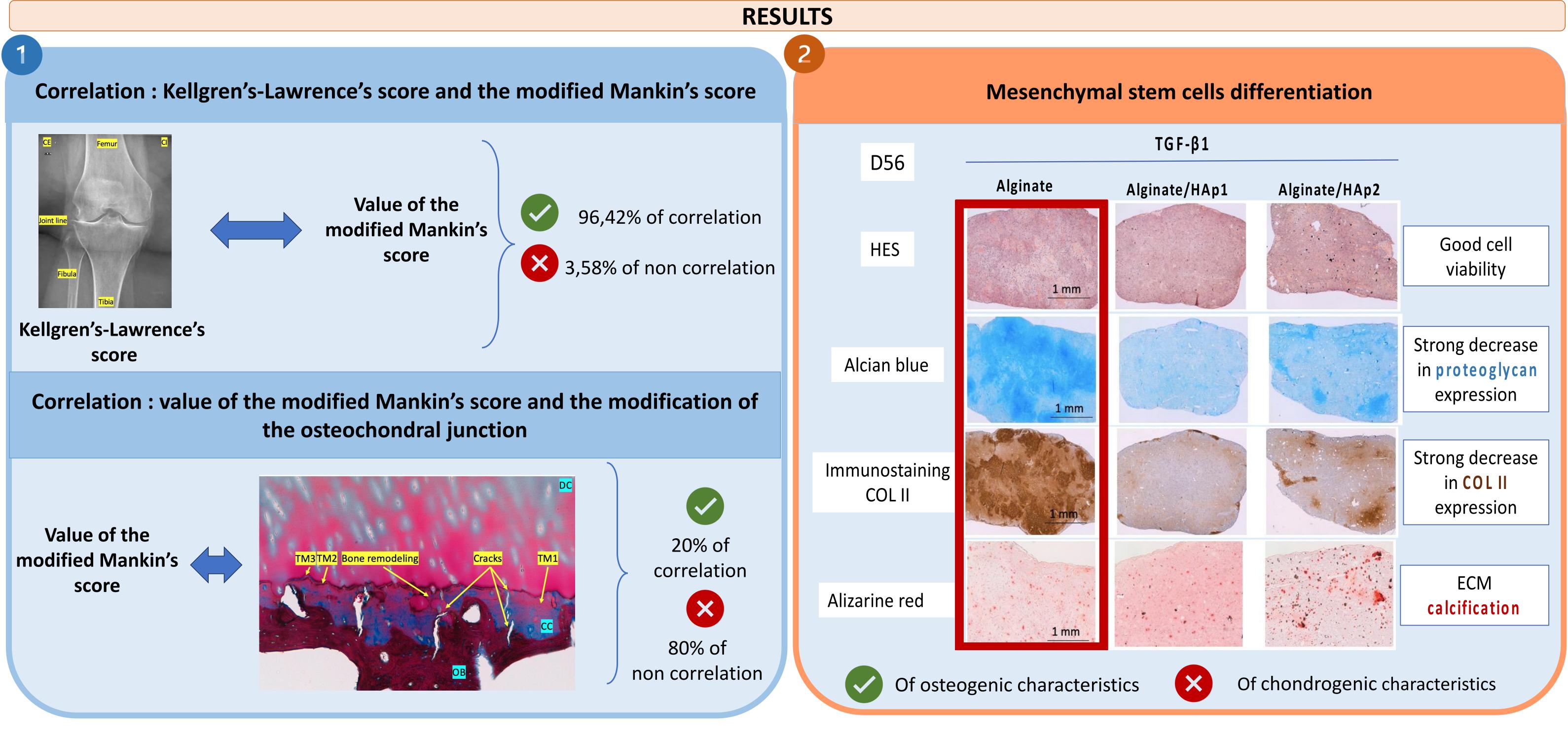
¹UMR 7365 CNRS-Université de Lorraine IMoPA, Vandœuvre-lès-Nancy, France; ²Centre Chirurgical Emile Gallé CHRU Nancy, Nancy, France; ³Plateforme 3D Fab,

UMR 5246 CNRS Université de Lyon, INSA, CPE-Lyon, ICBMS, Villeurbanne, France



One of the pitfalls encountered remains the difficulty of reproducing a full implant considering this tissue's composition and architecture, comprising non-calcified cartilage, calcified cartilage, and subchondral bone plate. Newly developed implants must integrate the complexity of the native tissue and the pivot zone with the subchondral bone to promote successful grafting in the treatment of focal osteochondral lesions





CONCLUSIONS

The modified Mankin's score provides some evidence that the organization of the cartilage and subchondral bone does not correlate with the pathological evolution of OJ. However, a correlation is evident between the Kellgren-Lawrence score and the modified Mankin's score In the context of reproducing the subchondral bone plate-calcified cartilage junction zone, the results indicate that a detailed analysis of OJ is required to design bio-inks to produce a suitable anchoring zone for treating focal osteochondral defects

The bio-inks that we developed induced a significant reduction in cartilage markers and a matrix calcification, which means that the biological behavior of the resident cells differs depending on the customization of our matrix, this will allow us to produce the multilayer scaffold and allow its maturation under the same induction unique