

## 要 旨 (和文)

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主 題	Hierarchical Nanoporous Layer (HNL) glass characteristics and an overview of cell behavior (階層的ナノポーラス層(HNL)ガラスの表面の特性と細胞挙動)		

## 要 旨

Adhesion at the interface between the artificial material and the living tissue is important when replacing tissues with artificial objects due to accidents, diseases, or other reasons. To get a beneficial tissue response, it is essential to study the interactions between living tissues and non-living materials to ensure it does not harm the patient. In recent years, Hierarchical Nanoporous layer (HNL) glass has been developed. The main characteristics of HNL are, it has nanoscale pores and exhibits a long-life super-hydrophilicity, antifogging, antifouling, and low reflectivity. The unique characteristics of HNL glass may help find new cell viability control perspectives. This study provides a general view of HNL glass characteristics and an overview of adhering cells' behavior on its surface. The surface's microstructure, surface's roughness, atomic concentration of the surface, hydrophilicity, and Zeta potential were measured to determine the characterization of the surface. To evaluate cell behavior, cells were cultured, and viability, adhesion, and proliferation were observed. The results showed Hierarchical Nanoporous Layer (HNL) glass is formed with different pore sizes at the surface. The nanoscale detail causes roughness. It is a Superhydrophilic surface with a 4.5-degree contact angle. The atomic concentration is almost the same as Borosilicate glass (untreated glass). HNL glass has a more negative charge compared to Borosilicate glass (untreated glass). The cells adhere to the surface of Hierarchical Nanoporous Layer (HNL) glass but spread slowly. Cell behavior such as adhesion is not affected by just wettability. The surface's physicochemical properties are deeply involved in the control of cell adhesion.

