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 「トランスレーショナルリサーチの現状」

**Fabrication of interconnective nanoporous surface on titanium  
 implant by hydrofluoric immersion and anodization**

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The effects of nano- $\gamma$ -TiH phase on formation of nanoporous titanium oxide by anodization with hydrofluoric immersion have been investigated by optical microscopy, x-ray photoelectron spectroscopy, thin film x-ray diffractometry, scanning electron microscopy, transmission electron microscopy and secondary ion mass spectroscopy. Based on the investigation, nanoporous titanium oxide was formed after anodization under various current densities. The  $\gamma$ -TiH is formed by hydrofluoric immersions before anodization. The nano- $\gamma$ -TiH phase is directly dissolved after anodization. Furthermore, the nanoporous Ti formed by dissolution of nano-titanium hydrides was changed to nanoporous TiO<sub>2</sub>. The nano- $\gamma$ -TiH phase plays an important role in forming nanoporous TiO<sub>2</sub>. The anodization with HF immersion not only produces nano-titanium hydride, but also acts as a media of nanostructural formation. The bioactive nanoporous titanium oxide film presented in the present study is believed to result in enhancing cell differentiation, thereby providing stable fixation to bone and rapid osseointegration.

《プロフィール》

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