

Interfacing cells with typical semiconductor materials

Abstract

The biocompatibility of semiconductor materials is critical in the development of implantable devices like pacemakers and neuroprosthetics, as well as in the fabrication of biosensors and biochips. Biocompatibility refers to the ability of these materials to interact with living tissues without causing an adverse response. Therefore, it is essential to evaluate the biocompatibility of semiconductor materials to ensure their safe use in medical applications. These materials are evaluated based on their chemical composition, surface properties, and potential to generate toxic byproducts. Some of the commonly used semiconductor materials, such as silicon, gold, titanium, stainless steel, magnesium, and ceramics have been found to be biocompatible to varying degrees. Here, we evaluated some common and potential metals used for biodevices and potential materials such as Au, TiN, Al, TaN, Ti, Pt, and Ni.