

Biomimicry in Blood-Contacting Medical Devices

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A large number of medical devices directly contact the blood, from temporary catheters and dialysis machines, to permanent stents and artificial hearts. Devices like this have been in use for decades, and with advances in materials and engineering, are becoming increasingly sophisticated. However, these devices are still limited by the body's recognition of the foreign materials they are made from, resulting in side effects such as thrombosis or inflammatory based reactions causing the function of the device to fail and fatalities for patients. Biomimetic approaches are showing increasing potential and hold promise to improve blood-contacting medical devices. Recent approaches include mimicking the local host environment to integrate implants, mimicking biological processes or structures to create new devices and mimicking nature to impart specific functions to devices.