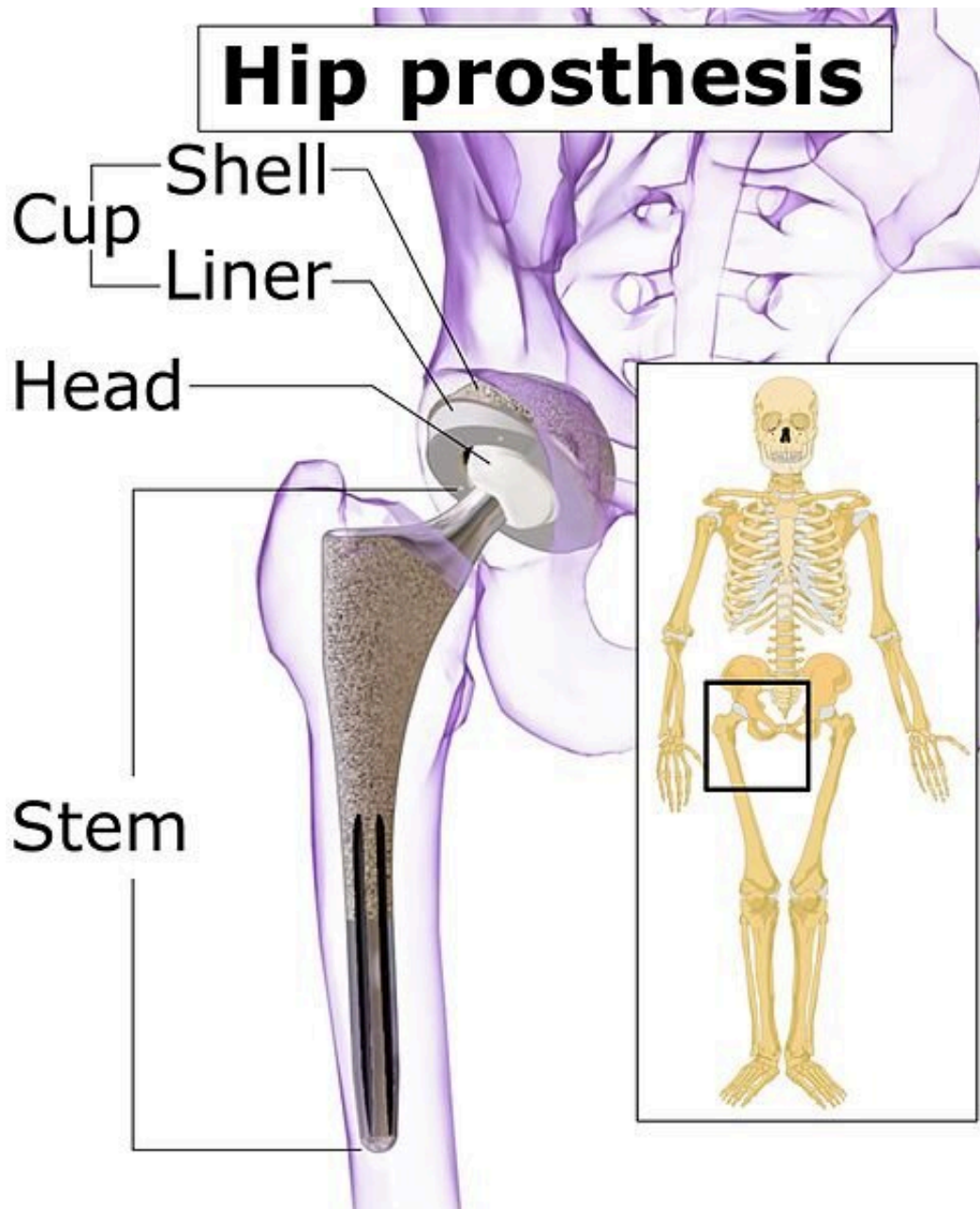


Creation of a prosthetic joint with a coating that ensures faster bone integration

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Components of a hip prosthesis. Credit: [Mikael Häggström](#), using source image by [BruceBlais](#)/Wikimedia Commons, CC BY-SA 4.0

Russian scientists have developed a hip prosthesis with a coating that provides faster bone-to-implant integration while reducing the risk of post-surgery infections.

The new prosthesis was developed by a joint [team](#) of the Skolkovo Institute of Science and Technology (Skoltech), the Samara State Medical University (SSMU) and the Tios bioengineering company, all of them members of the SSMU-based NTI Center for Bionic Engineering in Medicine.

"The team has designed an artificial hip joint with a polymer film [coating](#) that degrades in the body as soon as it releases the [drug](#), while ensuring manifold increase in antimicrobial efficiency and better osseointegration," the NTI Platform spokesperson explained.

The polymer coating shaped like a medication blister pack is made of [polylactic acid](#) and other biodegradable materials that facilitate drug release. The coating can be "tuned" for slow drug release or fast ejection by ultrasound, where necessary. The tests showed that the coating also helps prevent scarring around the implant, the researchers noted.

The team performed the first-ever surgery on a patient with bone chondrosarcoma and installed a new type of hip prosthesis with an antibiotic-releasing film coating. The operation took place at the Applied Research Center for Bone, Soft Tissue and Skin Tumors at the Moscow Oncology Hospital No 62.

The authors note that their high-density coating is easily filled with the

drug and, therefore, is perfectly suitable for personalized medicine.

Provided by Skolkovo Institute of Science and Technology

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