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Singapore turns aquaculture waste into new biomaterial for tissue repair

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The research team hopes to work with clinical and industrial partners, going forward



Scientists at Nanyang Technological University, Singapore (NTU Singapore) have developed a new biomaterial made entirely from discarded bullfrog skin and fish scales that could help in bone repair.

The porous biomaterial, which contains the same compounds that are predominant in bones, acts as a scaffold for bone-forming cells to adhere to and multiply, leading to the formation of new bone.

Through laboratory experiments, the NTU Singapore team found that human boneforming cells seeded onto the biomaterial scaffold successfully attached themselves and started multiplying – a sign of growth.

They also found that the risk of the biomaterial triggering an inflammatory response is low. Such a scaffold could be used to help with the regeneration of bone tissue lost to disease or injury, such as jaw defects from trauma or cancer surgery. It could also assist bone growth around surgical implants such as dental implants.

The research team has filed patents for the biomaterial's wound healing and bone tissue engineering applications. The team is now further evaluating the long-term safety and efficacy of the biomaterial as dental products under a grant from the ChinaSingapore International Joint Research Institute and aims to bring the waste-toresource technological pipeline closer to commercialisation.