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## Australian Scientists Grow Lab-Made Human Skin

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SYDNEY, Australian researchers have developed the world's first fully functioning human skin in the laboratory, complete with its blood supply, a breakthrough that could transform treatments for skin diseases, burns, and grafts.

The team at the University of Queensland (UQ) announced the achievement on Thursday (Aug 21), highlighting that the engineered skin includes essential components found in natural human tissue. These include blood vessels, capillaries, hair follicles, nerves, multiple tissue layers, and immune cells.

“This is the most life-like skin model that’s been developed anywhere in the world,” said Abbas Shafiee, lead researcher and a scientist specializing in tissue engineering and regenerative medicine at UQ’s Frazer Institute. “It allows us to study diseases and test treatments more accurately than previously possible.”

The breakthrough relied on recent advancements in stem cell research. Researchers reprogrammed human skin cells into stem cells, which can develop into any type of cell in

the body. Using these stem cells, the team first created three-dimensional “skin organoids” before engineering tiny blood vessels to mimic natural human skin development.

According to the published research in *Wiley Advanced Healthcare Materials*, the project took six years to complete, reflecting both the complexity of the tissue and the challenges of replicating human skin in the lab.

Co-author Professor Kiarash Khosrotehrani of UQ’s Frazer Institute emphasized the potential clinical applications of the engineered skin. “This model could improve grafting procedures and provide new treatment options for patients suffering from inflammatory and genetic skin disorders, such as psoriasis, atopic dermatitis, and scleroderma,” he said.

Beyond medical treatments, the development is expected to enhance scientific understanding of skin biology. By offering a laboratory model that accurately replicates human skin, researchers can study disease mechanisms, test drugs, and explore regenerative therapies without relying solely on animal models.

The innovation is also likely to have implications for the cosmetic and pharmaceutical industries, where testing on human-like tissue could accelerate product development and improve safety standards.

While the achievement represents a significant milestone in regenerative medicine, the researchers note that further testing and refinement are required before lab-grown skin can be widely used in clinical settings. They continue to study the long-term viability and integration of the engineered tissue in human treatments.

This pioneering work positions Australia at the forefront of tissue engineering research and reflects ongoing global efforts to harness stem cell technology for medical breakthroughs.