

Rules of Cellular Engineering

Pak Wong is researching how cells organize into structures bigger than themselves.

Pak Kin Wong, professor of aerospace and mechanical engineering and BIO5 member is the recipient of a \$1.5 million NIH Director's New Innovator Award. Wong's research aims to discover the rules that govern how biological tissues are formed from individual cells. In particular, Wong is investigating how to grow new tissue to replace that destroyed by disease.

"The research holds great promise in treating degenerative diseases by stimulating damaged tissues to repair themselves, or replacing them with engineered tissues when the body cannot heal itself," Wong said. "We will be able to explore extremely challenging research problems that may produce important medical advances."



Professor Pak Kin Wong is director of UA's Systematic Bioengineering Laboratory

Wong is working with Professor Carol Gregorio, director of the Molecular Cardiovascular Research Program in the UA College of Medicine. "We are studying biological processes related to muscular dystrophy and cardiomyopathy," Wong said. "We are also exploring neurodegeneration."

Wong's research project is seeking the answer to a crucial question in tissue regeneration: How do the cells of a tissue know how to organize into structures that are much bigger than themselves?

"This project will investigate the fundamental rules of cells that collectively drive complex tissue architectures," Wong said.

His research will look at how individual cells know what they are supposed to do without a central coordinator or a blueprint. "We aim to study, understand, and control how nature builds complex tissue," he said