

Script-Print-Father of Tissue Engineering Says Medical Advancements Give Hope

With more than 113,000 people waiting for organ transplants in the U.S., the man known as “The Father of Tissue Engineering” is working feverishly to find a way to produce organs outside of the body for life-saving transplants.

Dr. Vacanti was at [Jump Trading Simulation and Education Center](#) in Peoria Friday as the inaugural speaker for the [Dr. Richard Pearl Lectureship series](#). His biggest message for University of Illinois College of Medicine Peoria (UNICOMP) students, faculty, along with OSF HealthCare medical and Jump Innovation leaders –“There is hope” for being able to solve some of the problems in reconstructive surgery and the shortage of viable organs for transplantation.

Vacanti says medical science has come a long way since his widely-publicized “earmouse” experiment proved tissue can be created outside the human body for transplant. The photo of a mutant mouse with what looks like an implanted ear under the skin was widely circulated on the internet in 1997. Vacanti says it was today’s version of “going viral.”

Dr. Vacanti and his colleagues at the [Tissue Engineering and Organ Fabrication Lab at Massachusetts General](#) have been working since 1997 to create tissue on biodegradable plastics. In addition, researchers are developing vascular networks which are key to improving reconstructive surgery and to eventually creating organs on demand. It hasn’t been easy and Vacanti says he reminds new researchers they will fail nine times out of 10.

"So you have to persist and do enough work that statistically you can be successful by only being successful 10 percent of the time so that’s sort of the expectation. But it is exciting when you succeed."

Using a person's own cells in regenerative medicine also overcomes the moral and ethical barriers associated with this innovation according to Vacanti. Ultimately, he says the best solution for creating hips, knees and organs grown outside of the body will come from combining biology with technology.

"The advent of tissue engineering and regenerative medicine offers the hope of being able to make living parts that could be manufactured based on design solutions so you have a better functional and cosmetic solution," according to Dr. Vacanti. He points out there would be almost no chance of rejection or infection which is a big risk today with transplanting donor tissue or organs or implanting metal replacements.

Vacanti estimates his research team is 18 months to two years away from testing a manufactured liver. As for a prediction of how long it will be until human implantation, Vacanti says he says it’s a matter of money, not ingenuity.

"Even for the long-term goal of organ replacement, it’s now resource limited. It is not limited based on the science or the engineering. It’s more resource limited and the more resources that are thrown at it, the sooner it’s going to happen.

While in Peoria, Dr. Vacanti also toured the Riverfront Museum’s [“10 Medical Inventions That Changed the World”](#) exhibit featuring OSF HealthCare innovations and along with Dr. Richard Pearl hosted a panel discussion for 100 + high school students. The panel also included: Dr. Kesavadas from the University of Illinois Health Care Engineering Systems Center, Seshadri Guha CEO and Founder of CGN & Associates and Joseph Piccione, J.D. and Senior Vice President of Ethics at OSF HealthCare