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Y James Kang

Sichuan 3D Bioprinting Institute, China

Vascular tissue regeneration from implantation of 3D bio-printed stem cell grafts in rhesus monkeys

Kang's research team has been engaged in 3D bio-printing and they invented living cell-based bio-ink called biosynsphere and developed a series of 3D bio-printers. Among these bio-printers is a vascular graft printer. Using this printer and the bio-ink, they have created a novel stem cell-based vascular graft producing technology, the product was successfully implanted as an abdominal artery interposition graft into rhesus monkeys. The bio-printed vascular grafts were composed of adipose stem cells and once implanted into monkeys, they were fully differentiated into the naturally-identical blood vessel structure and performed the expected biological function in monkeys. This DEVELOP (Destination-Engaged Vessel Evolving Lineage Organ Production) approach is ready to be applied to humans.

Biography

Y James Kang received his PhD in Toxicology and Zoology at Iowa State University in 1989 and completed Postdoctoral training in Biochemistry and Molecular Biology at Cornell University Medical Center in 1990. He was an Assistant Professor of Pharmacology and Toxicology at the University of North Dakota School of Medicine during 1991-1996, Associate Professor of Medicine of Pharmacology and Toxicology and University Scholar at the University of Louisville School of Medicine during 1996-2001, and Professor and Distinguished University Scholar from 2001. He served several NIH study sections from 1997 to 2006 and other federal agencies including USDA, US-EPA and US-Veterans Administrations from 1996 to 2005. He was elected as Fellow of the Academy of Toxicological Sciences in 2001. He is currently a China National One-Thousand-Talents Professor and Director of the Regenerative Medicine Research Center at Sichuan University, West China Medical College. He is also the President and CEO of Sichuan 3D Bio-printing Research and Technology Institute, the Director of Sichuan Regenerative Medicine Research and Technology Center, the Editor-in-Chief of the journals, *Cardiovascular Toxicology* and *Regenerative Medicine Research* and the Editor of the book series, *Methods in Pharmacology and Toxicology*.

jameskang@revotek.com.cn

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