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# ACQUISITION AND AUGMENTATION OF CANCER STEM CELL-LIKE PROPERTIES IN POLYMER THIN FILM-INDUCED TUMOUR SPHEROIDS

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Although cancer stem cells (CSCs) are thought to be responsible for tumour recurrence and resistance to chemotherapy, CSC-related research and drug development have been hampered by the limited supply of diverse, patient-derived CSCs. Here, author's developed a functional polymer thin film (PTF) platform that promotes conversion of cancer cells to highly tumorigenic three-dimensional (3D) spheroids without the use of biochemical or genetic manipulations. Culturing various human cancer cells on the specific PTF, poly (2, 4, 6, 8-tetravinyl-2, 4, 6, 8-tetramethyl cyclotetrasiloxane) (pV4D4), gave rise to numerous multicellular tumour spheroids within 24 hours, with high efficiency and reproducibility. Cancer cells in the resulting spheroids showed an enormous increase in the expression of CSC-associated genes and acquired dramatically increased drug resistance compared with 2D monolayer-cultured controls. These spheroids also showed greatly enhanced xenograft tumour forming ability and metastasis capacity in nude mice. By enabling the generation of tumorigenic spheroids from diverse cancer cells, the surface platform described here will likely contribute to CSC-related basic research and drug development.

## BIOGRAPHY

Sangyong Jon received his BS in 1993, MS in 1995 and PhD in 1999 from the Department of Chemistry of KAIST, Korea. Then he moved to the US for his Post Doctorate career in the Department of Chemical Engineering at MIT. After returning to Korea, he joined Gwangju Institute of Science and Technology (GIST) as an Assistant Professor of Life Sciences in 2004. He was promoted to Associate Professor in 2007 and Professor in 2010. He is a Fellow of Korean Biochip Society and Korean Molecular Imaging Society. He has published over 60 papers, numerous chapters, and 30 patents. He sits on the Editorial Board for two peer-reviewed journals and is a regular reviewer for over 30 journals. His research interest lies at the interface of medicinal chemistry, biotechnology, and biomaterials science.

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