

Structure establishment of three-dimensional (3D) cell culture printing model for bladder cancer

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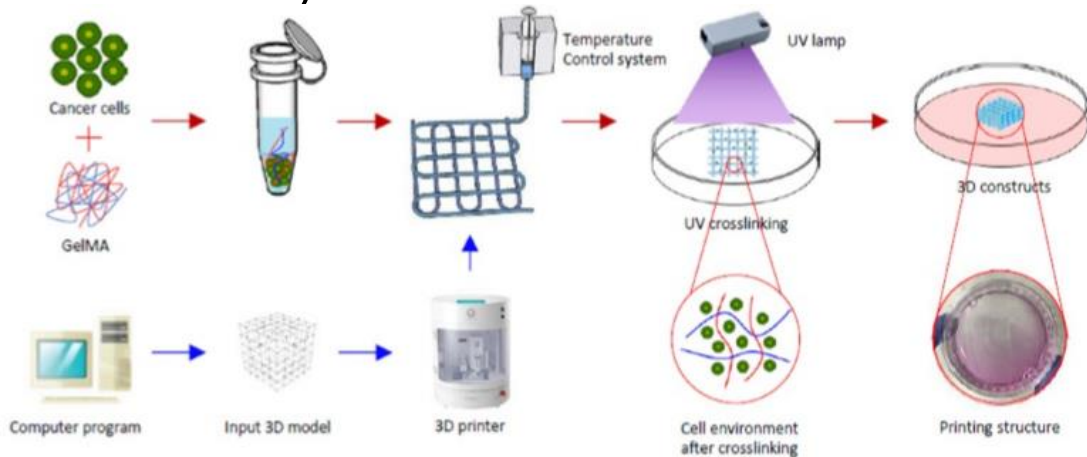
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Purpose

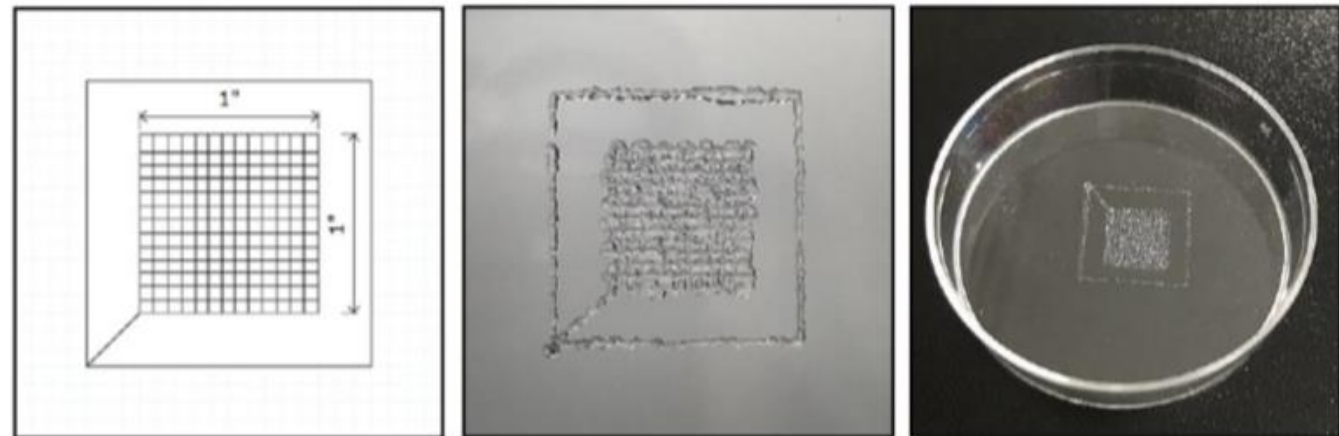
- Two-dimensional (2D) cell culture
 - > Sometimes, Unpredictable, misleading data about *in vivo* response
 - > Three-dimensional (3D) *in vitro* tumor model resembles situation *in vivo*
 - > So, to confirm, 3D cell culture is better than 2D cell culture to explain the tumor formation response to chemotherapy

Material & Methods

- 1) 3D cell culture were used for the bladder cancer cell line 5637 by 3D bio printer, 2D cell culture were used for T24 cells.
- 2) To examine their cancer inhibition effects, Rapamycin and Bacillus Calmette-Gue ´rin (BCG) were used
- 3) Measuring e-cadherin and n-cadherin secreted via the epithelial-mesenchymal transition (EMT) to identify the cell-cell interaction

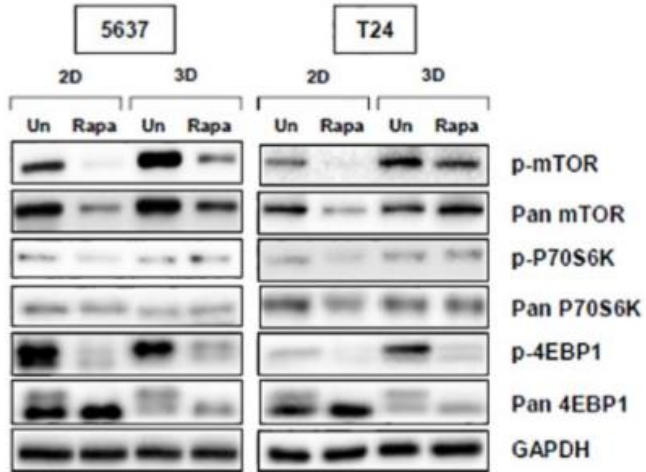


3D culture process

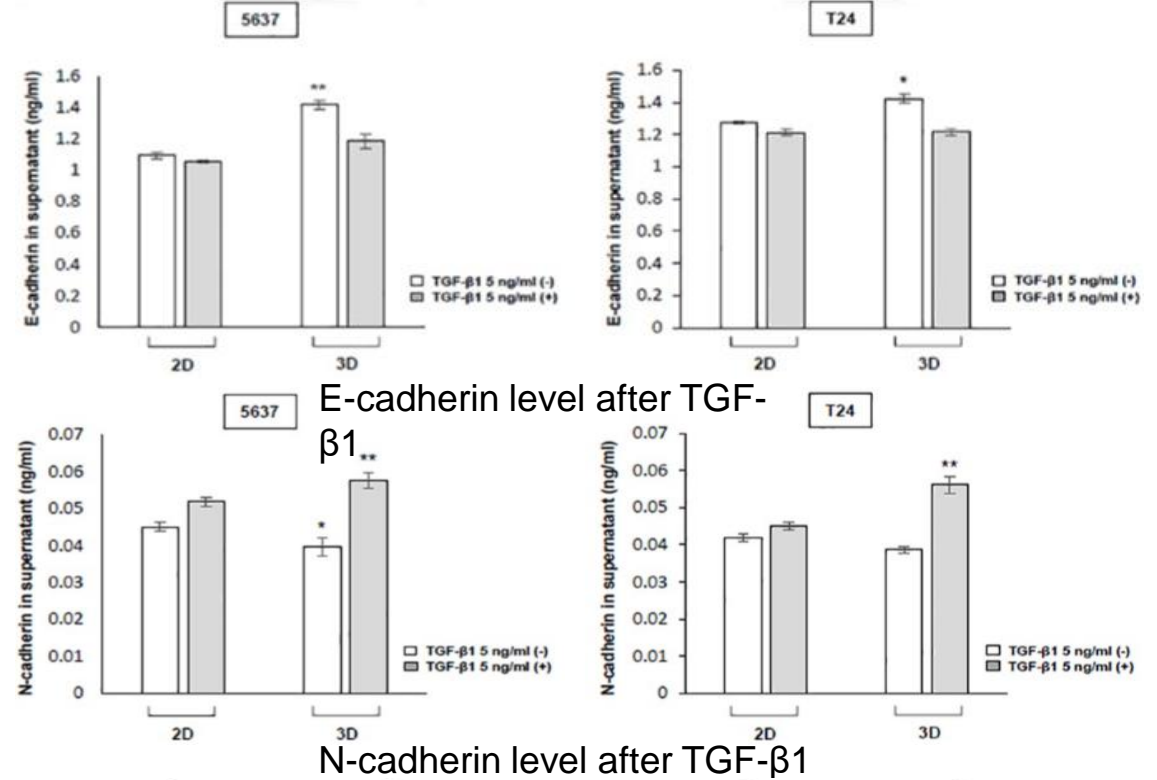


Patterning platform

Result



← Expression of protein after rapamycin treatment



Cytokine level (pg/mL, mean ± SD)	5637				T24			
	untreated	2D BCG	3D untreated	3D BCG	untreated	2D BCG	3D untreated	3D BCG
IL-6	195.29 ± 2.30	220.66 ± 2.12**	190.74 ± 2.42	198.45 ± 1.61	162.69 ± 4.81	274.31 ± 6.05**	128.94 ± 4.66	195.21 ± 11.58*
IL-12	29.62 ± 0.66	46.75 ± 0.45**	25.52 ± 0.99	37.44 ± 1.50*	45.38 ± 1.36	60.86 ± 1.77*	29.33 ± 0.44	34.65 ± 1.85
INF-γ	33.43 ± 1.00	40.69 ± 1.05**	34.50 ± 0.54	36.57 ± 1.11	46.00 ± 0.23	51.54 ± 0.19**	42.34 ± 0.97	44.92 ± 0.34

↑ The BCG effect on cytokine production in the 2D and 3D cell culture environment

Conclusion

- 3D bladder cancer cell culture is more Similar to bladder cancer tissue than 2D cell culture
- 3D cell culture will be used to cancer cell-like environment for a drug screening platform

