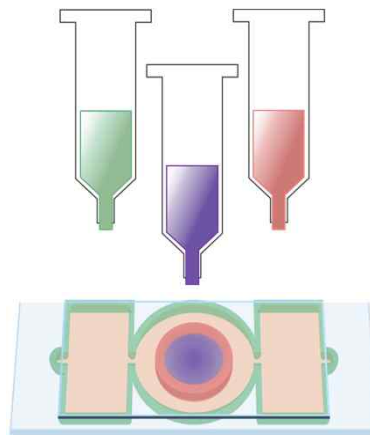
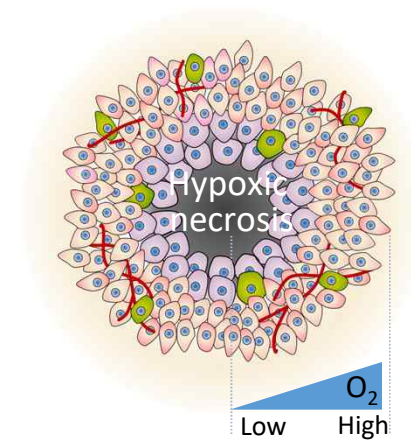


Computational simulation of oxygen gradient formation



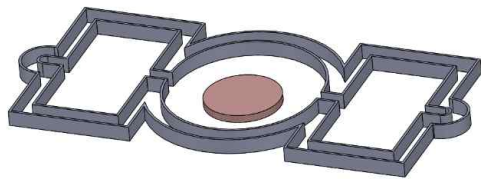
3D cell-printing of solid-cancer-on-a-chip



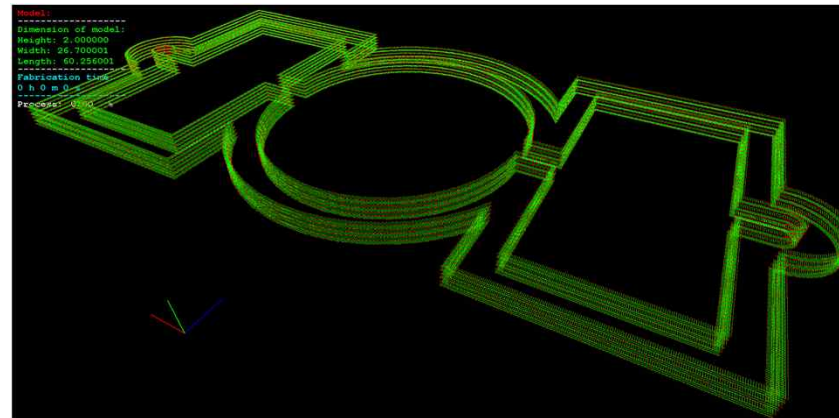
Generation of hypoxic gradient and evaluation of pathologic features



A

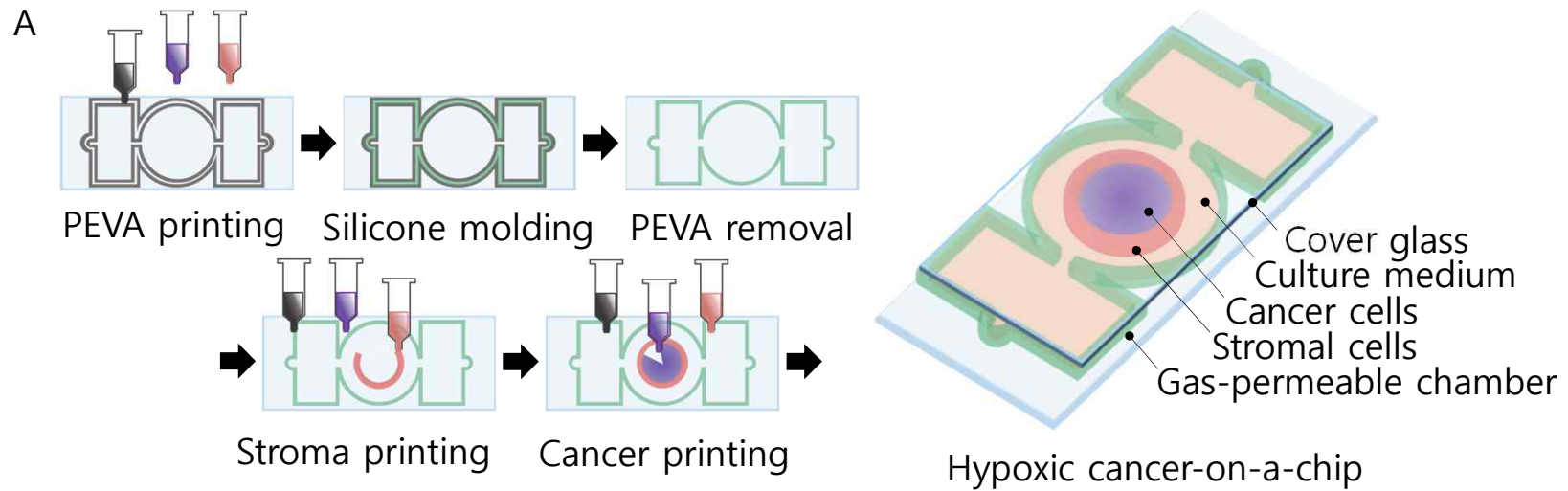


B

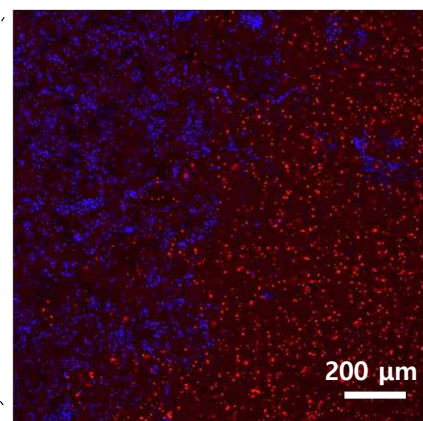
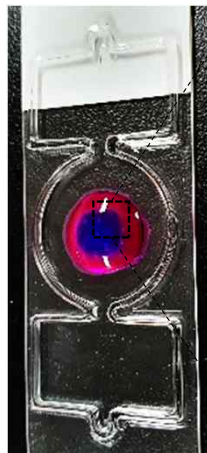


C

	0	10	20	30	40
1	T4 M06				
2	M84				
3	G91				
4	G01 Z20.0 F401				
5	G01 Y34.0 F401				
6	G01 X-10.00 F401				
7	G01 Z-19.00 F401				
8					
9	M16				
10	G04 X0.5				
11					
12	;*****				
13	G01 X-2.750 Y0.000 F401				
14	G01 X0 Y9.250 F401				
15	G01 X-11 Y0.000 F401				
16	G01 X0 Y-9.250 F401				
17	G01 X-3.028 Y0.000 F401				
18	G03 X-20.04 Y0.0 R10.08 F401				
19	;G03 X-20.04 Y0.0 R10.08 F401				
20	G01 X-3.028 Y0.000 F401				
21	G01 X0 Y9.250 F401				
22	G01 X-11 Y0.000 F401				
23	G01 X0 Y-9.250 F401				
24	G01 X-2.750 Y0.000 F401				
25	G03 X0.000 Y-1.500 R0.750 F201				
26	G01 X2.750 Y0.000 F401				
27	G01 X0 Y-9.250 F401				
28	G01 X11.000 Y0.000 F401				
29	G01 X0.000 Y9.250 F401				
30	G01 X3.028 Y0.000 F401				
31	G03 X20.04 Y0.0 R10.08 F401				
32	G01 X3.028 Y0.000 F401				
33	G01 X0 Y-9.250 F401				
34	G01 X11.000 Y0.000 F401				
35	G01 X0.000 Y9.250 F401				
36	G01 X2.750 Y0.000 F401				
37	G03 X0.000 Y1.500 R0.750 F201				

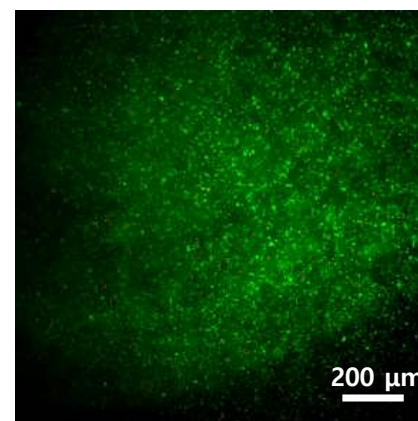


**B**



Red Beads/Blue Beads

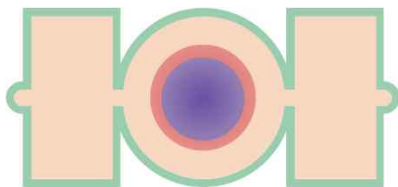
**C**



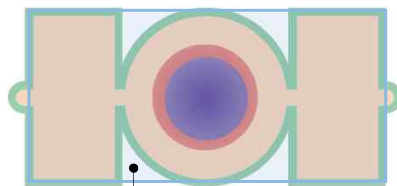
Calcein-AM/EthD-1

A

O<sub>2</sub>-non-gradient (GR<sup>-</sup>)



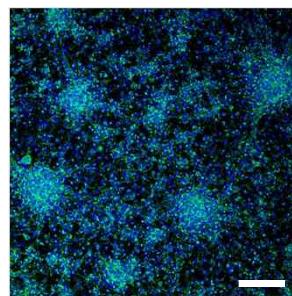
O<sub>2</sub>-gradient (GR<sup>+</sup>)



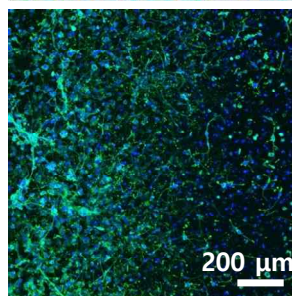
Cover glass

B

GR<sup>-</sup>



GR<sup>+</sup>



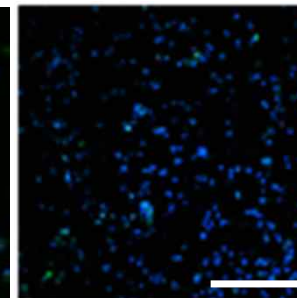
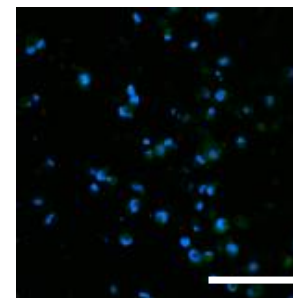
HIF1α/DAPI

C

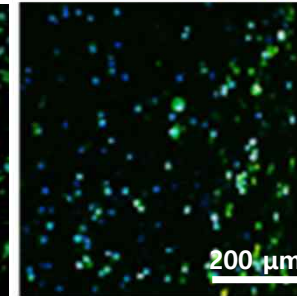
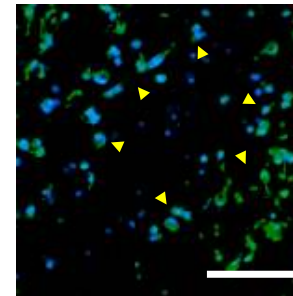
Core

Peripheral

GR<sup>-</sup>



GR<sup>+</sup>



SHMT2/DAPI

SOX2/CD31/DAPI