

CLAIMS

1. A method comprising:
 - (1) providing (a) living tumor cells and (b) a microfluidic device comprising an at least partially porous membrane positioned, the membrane comprising a first surface and a second surface, the first surface comprising living epithelial cells;
 - (2) introducing the living tumor cells into the microfluidic device under conditions such that at least a portion of the living tumor cells contact with the epithelial cells;
 - (3) incubating the living tumor cells in the microfluidic device, and
 - (4) determining that the tumor cells continue to express one or more tumor markers.
2. A method according to Claim 1, in which the determining comprises detecting one or more tumor markers 11 days after the introducing of step (2).
3. A method according to Claim 1, in which the tumor cells are from a biopsy.
4. A method according to Claim 1, in which the tumor cells are mammalian tumor cells.
5. A method according to Claim 1, in which the tumor cells are human tumor cells.
6. A method comprising:
 - (a) providing a microfluidic device comprising an at least partially porous membrane, the membrane comprising a first surface and a second surface, the first surface comprising living epithelial cells and living tumor cells; and
 - (b) introducing immune cells in the microfluidic device.
7. A method according to Claim 6, further comprising introducing a checkpoint inhibitor in the microfluidic device, and determining whether the checkpoint inhibitor causes tumor cell death.
8. A method according to Claim 7, in which the checkpoint inhibitor is an antibody.
9. A method according to Claim 8, in which the antibody binds the PD-1 receptor on the immune cells.
10. A method according to Claim 8, in which the antibody binds the PD-L1 ligand on the tumor cells.

11. A method according to Claim 6, in which the immune cells comprise fibroblasts.
12. A method according to Claim 1, in which the tumor cells comprise melanoma cells.
13. A method according to Claim 12, in which the one or more tumor markers comprises microphthalmia-associated transcription factor.