**Supplemental Materials**

Table S1. The composition of the plate. Anti-lung tumor drug AMG510 are used in the experiment and groups are set according to drug gradients. Two plate are required, one plate is for viability assay kit test while the other is for imaging and deep learning analysis.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Left1 | Left2 | Left3 | Left4 | Right1 | Right2 | Right3 | Right4 |
| A | Control |  |
| B | AMG510 0.001 µM | AMG510 0.1 µM |
| C | AMG510 0.005 µM | AMG 510 0.5 µM |
| D | AMG510 0.01 µM | AMG 510 1 µM |
| E | AMG510 0.05 µM | AMG510 5 µM |
| F |  |  |

Table S2. Cell lines which have been used in 3D tumor construction and drug testing.

|  |  |  |  |
| --- | --- | --- | --- |
| Types | Cell culture Medium | Spheroid GrowthMedium | Spheroid diameter (µm) |
| NCI-H23 | RPMI 1640+10%FBS+1%P/S | RPMI 1640+10%FBS+1%P/S | ≥600 |
| NCI-H358 | RPMI 1640+10%FBS+1%P/S | RPMI 1640+10%FBS+1%P/S | ≥600 |
| NCI-H441 | RPMI 1640+10%FBS+1%P/S | RPMI 1640+10%FBS+1%P/S | ≥600 |
| CT-26 | RPMI 1640+10%FBS+1%P/S | RPMI 1640+10%FBS+1%P/S | ≥600 |
| A549 | RPMI 1640+10%FBS+1%P/S | RPMI 1640+10%FBS+1%P/S | ≥600 |
| C2C12 | DMEM+10%FBS+1%P/S | DMEM+10%FBS+1%P/S | ≥400 |
| MCF-7 | DMEM+10%FBS+1%P/S+0.01mg/ml insulin | DMEM+10%FBS+1%P/S+0.01mg/ml insulin | ≥900 |
| HT-29 | McCoy'5A+10%FBS+1%P/S | McCoy'5A+10%FBS+1%P/S | ≥800 |
| HCT-116 | McCoy'5A+10%FBS+1%P/S | McCoy'5A+10%FBS+1%P/S | ≥800 |
| MDA-MB-231 | L15+10%FBS+1%P/S | RPMI 1640+10%FBS+1%P/S | ≥600 |
| MDA-MB-468 | L15+10%FBS+1%P/S | RPMI 1640+10%FBS+1%P/S | ≥600 |
| MDA-MB-453 | L15+10%FBS+1%P/S | RPMI 1640+10%FBS+1%P/S | ≥600 |