**Table S1: List of antibodies used in the study**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Antibody | Company | Catalog# | Type | Use and Dilution |
| IF | IHC | Western |
| Phospho Akt (ser473) | Cell Signaling | 4060 | Rabbit |  |  | (1:2000) |
| Phospho Akt (thr308) | Cell Signaling | 9275 | Rabbit |  |  | (1:2000) |
| Total Akt | Cell Signaling | 9272 | Rabbit |  |  | (1:2000) |
| Phospho p44/42 MAPK (Erk1/2) (thr202/tyr204) | Cell Signaling | 4376 | Rabbit |  |  | (1:2000) |
| Total p44/42 MAPK (Erk1/2) | Cell Signaling | 9102 | Rabbit |  |  | (1:2000) |
| Phospho S6 Ribosomal Protein (ser235/236) | Cell Signaling | 2211 | Rabbit |  | (1:200) | (1:2000) |
| Cytokeratin-14 | Covance | PRB-155P | Rabbit | (1:100) | (1:100) |  |
| Pan-Cytokeratin | Covance | MMS-151S | Mouse |  | (1:200) |  |
| p16 (M-156) | Santa Cruz | sc-1207 | Rabbit |  |  | (1:1000) |
| GFP | Invitrogen | A10262 | Chicken | (1:500) |  |  |
| GFP | Invitrogen | A11122 | Rabbit |  | (1:1000) |  |
| P53 | Leica Biosystems | P53-CM5P | Rabbit |  |  |  |
| E-cadherin (4A2C7) | Invitrogen | 334000 | Mouse |  | (1:500) |  |

**Table S2. Sample size and clonality of RNA-Seq samples**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Condition** | **Tissue** | **Clone #** | **N** | **Samples** |
| WT | Esophagus | 1 | 3 | WT.1-3 |
| p53 | Tongue | 1 | 3 | p53.1-3 |
| E20 | Tongue | 1 | 3 | E20.1-3 |
| E20 | Tongue | 2 | 3 | E20.4-6 |
| p53/E20 | Tongue | 1 | 3 | p53/E20.1-3 |
| p53/E20 | Tongue | 2 | 3 | p53/E20.4-6 |

**Table S3. Numbers of Significant Genes**

|  |  |
| --- | --- |
| **Comparisons** | **Number genes fdr <0.05** |
| p53vsWT | 9429 |
| E20vsWT | 7356 |
| p53/E20vsWT | 5142 |
| p53/E20vsp53 | 4728 |
| p53/E20vsE20 | 3777 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Cell line** | **Mouse Genotype** | **PIK3CA recomb.** | **p53 recomb.** | **p53 genotype of the cell line** | **p53****(western blot)** | **Additional****p53 mutations** | **p16 status** |
| S24-902 Tongue | *PIK3CA +/H1047R/p53 +/R172H/k14cre* + | Yes | Yes (LOH) | *P53 -/R172H**(LOH)* | Yes/low | R172H | negative |
| S24-658 Tongue | *PIK3CA +/H1047R/p53 +/R172H/k14cre* + | Yes | Yes | p53 *+/R172H**(mt>wt)*  | Yes | R172H | positive |
| S26-113 Tongue | *PIK3CA +/H1047R/p53 +/R172H/k14cre* + | Yes | Yes | *p53 +/R172H* | Low | R172H*V153F**GTC🡪TTC* | Low |
| S26-000 Cheek | *PIK3CAH1047R/k14cre* + | Yes | No | p53 *+/+* | Yes | M243I Missense(Iow function)ATG🡪ATT | Low |
| S22-335 Tongue | *P53 +/R172H /k14cre* – | No | No | p53 *+/R172H* | No(inactivated)P53null? | C138W(loss of function?)TGC🡪TGG | positive |
| S26-117Tongue | *PIK3CAH1047R/k14cre* + | Yes | No | p53 *+/+* | No | None | negative |
| S26-234Tongue | *PIK3CAH1047R/k14cre* + | Yes | No | p53 *+/+* | No | None | Low |
| S26-330Tongue | *PIK3CA +/H1047R/p53 +/R172H/k14cre* + | Yes | Yes | p53 *+/R172H* | Yes | E168STOPGAG🡪TAG | positive |
| S26-571Tongue | *PIK3CA +/H1047R/p53 +/R172H/k14cre* + | Yes | Yes | p53 *+/R172H* | Yes | None | positive |

 **Table S4: Genetic and molecular analysis of the mouse primary SCC cell lines**