

Supplementary Table S2: Immunohistochemistry results for TTF1, p63, p16 and NUT

|                               | TTF1     |        |          |        | p63      |       |          |        | p16      |        |          |        | p53                 |        |                  |       | NUT      |      |          |        |
|-------------------------------|----------|--------|----------|--------|----------|-------|----------|--------|----------|--------|----------|--------|---------------------|--------|------------------|-------|----------|------|----------|--------|
|                               | Positive |        | Negative |        | Positive |       | Negative |        | Positive |        | Negative |        | Null/overexpression |        | Wildtype pattern |       | Positive |      | Negative |        |
| <b>Total</b>                  | 31       | 16.7%  | 155      | 83.3%  | 15       | 8.0%  | 172      | 92.0%  | 113      | 59.5%  | 77       | 40.5%  | 111                 | 61.3%  | 70               | 38.7% | 0        | 0.0% | 188      | 100.0% |
| <b>Primary organ</b>          |          |        |          |        |          |       |          |        |          |        |          |        |                     |        |                  |       |          |      |          |        |
| GU                            | 8        | 25.8%  | 23       | 74.2%  | 3        | 9.7%  | 28       | 90.3%  | 22       | 64.7%  | 12       | 35.3%  | 28                  | 82.4%  | 6                | 17.6% | 0        | 0.0% | 32       | 100.0% |
| HN                            | 1        | 4.8%   | 20       | 95.2%  | 4        | 19.0% | 17       | 81.0%  | 7        | 33.3%  | 14       | 66.7%  | 10                  | 47.6%  | 11               | 52.4% | 0        | 0.0% | 21       | 100.0% |
| GYN                           | 9        | 14.3%  | 54       | 85.7%  | 3        | 4.8%  | 60       | 95.2%  | 45       | 71.4%  | 18       | 28.6%  | 28                  | 46.7%  | 32               | 53.3% | 0        | 0.0% | 63       | 100.0% |
| HBP                           | 9        | 17.6%  | 42       | 82.4%  | 3        | 5.8%  | 49       | 94.2%  | 26       | 50.0%  | 26       | 50.0%  | 33                  | 71.7%  | 13               | 28.3% | 0        | 0.0% | 52       | 100.0% |
| Skin                          | 0        | 0.0%   | 10       | 100.0% | 0        | 0.0%  | 10       | 100.0% | 7        | 70.0%  | 3        | 30.0%  | 5                   | 50.0%  | 5                | 50.0% | 0        | 0.0% | 10       | 100.0% |
| Breast                        | 2        | 100.0% | 0        | 0.0%   | 0        | 0.0%  | 2        | 100.0% | 2        | 100.0% | 0        | 0.0%   | 2                   | 100.0% | 0                | 0.0%  | 0        | 0.0% | 2        | 100.0% |
| Thymus                        | 1        | 20.0%  | 4        | 80.0%  | 2        | 40.0% | 3        | 60.0%  | 2        | 40.0%  | 3        | 60.0%  | 2                   | 40.0%  | 3                | 60.0% | 0        | 0.0% | 5        | 100.0% |
| Adrenal                       | 1        | 50.0%  | 1        | 50.0%  | 0        | 0.0%  | 2        | 100.0% | 1        | 50.0%  | 1        | 50.0%  | 2                   | 100.0% | 0                | 0.0%  | 0        | 0.0% | 2        | 100.0% |
| MUO                           | 0        | 0.0%   | 1        | 100.0% | 0        | 0.0%  | 1        | 100.0% | 1        | 100.0% | 0        | 0.0%   | 1                   | 100.0% | 0                | 0.0%  | 0        | 0.0% | 1        | 100.0% |
| <b>Pathological diagnosis</b> |          |        |          |        |          |       |          |        |          |        |          |        |                     |        |                  |       |          |      |          |        |
| SCNEC                         | 11       | 34.4%  | 21       | 65.6%  | 1        | 3.1%  | 31       | 96.9%  | 30       | 88.2%  | 4        | 11.8%  | 30                  | 88.2%  | 4                | 11.8% | 0        | 0.0% | 32       | 100.0% |
| LCNEC                         | 2        | 14.3%  | 12       | 85.7%  | 0        | 0.0%  | 14       | 100.0% | 12       | 85.7%  | 2        | 14.3%  | 9                   | 69.2%  | 4                | 30.8% | 0        | 0.0% | 14       | 100.0% |
| NEC, type unspecified         | 2        | 16.7%  | 10       | 83.3%  | 0        | 0.0%  | 12       | 100.0% | 4        | 33.3%  | 8        | 66.7%  | 9                   | 81.8%  | 2                | 18.2% | 0        | 0.0% | 12       | 100.0% |
| MANEC                         | 14       | 32.6%  | 29       | 67.4%  | 2        | 4.5%  | 42       | 95.5%  | 29       | 64.4%  | 16       | 35.6%  | 22                  | 53.7%  | 19               | 46.3% | 0        | 0.0% | 45       | 100.0% |
| ADC                           | 0        | 0.0%   | 8        | 100.0% | 0        | 0.0%  | 8        | 100.0% | 1        | 12.5%  | 7        | 87.5%  | 4                   | 50.0%  | 4                | 50.0% | 0        | 0.0% | 8        | 100.0% |
| PDC with NE features          | 1        | 16.7%  | 5        | 83.3%  | 1        | 16.7% | 5        | 83.3%  | 3        | 50.0%  | 3        | 50.0%  | 3                   | 50.0%  | 3                | 50.0% | 0        | 0.0% | 6        | 100.0% |
| UCC with NE features          | 0        | 0.0%   | 7        | 100.0% | 2        | 28.6% | 5        | 71.4%  | 3        | 42.9%  | 4        | 57.1%  | 6                   | 85.7%  | 1                | 14.3% | 0        | 0.0% | 7        | 100.0% |
| SQCC with NE features         | 1        | 11.1%  | 8        | 88.9%  | 4        | 44.4% | 5        | 55.6%  | 7        | 77.8%  | 2        | 22.2%  | 3                   | 33.3%  | 6                | 66.7% | 0        | 0.0% | 9        | 100.0% |
| Basaloid/PD SQCC              | 0        | 0.0%   | 3        | 100.0% | 2        | 66.7% | 1        | 33.3%  | 0        | 0.0%   | 3        | 100.0% | 2                   | 66.7%  | 1                | 33.3% | 0        | 0.0% | 3        | 100.0% |
| PDC                           | 0        | 0.0%   | 13       | 100.0% | 0        | 0.0%  | 13       | 100.0% | 6        | 46.2%  | 7        | 53.8%  | 8                   | 61.5%  | 5                | 38.5% | 0        | 0.0% | 13       | 100.0% |
| UDC                           | 0        | 0.0%   | 24       | 100.0% | 3        | 12.5% | 21       | 87.5%  | 8        | 33.3%  | 16       | 66.7%  | 8                   | 36.4%  | 14               | 63.6% | 0        | 0.0% | 24       | 100.0% |
| Carcinosarcoma                | 0        | 0.0%   | 6        | 100.0% | 0        | 0.0%  | 6        | 100.0% | 3        | 50.0%  | 3        | 50.0%  | 3                   | 60.0%  | 2                | 40.0% | 0        | 0.0% | 6        | 100.0% |
| Merkel                        | 0        | 0.0%   | 8        | 100.0% | 0        | 0.0%  | 8        | 100.0% | 7        | 87.5%  | 1        | 12.5%  | 3                   | 37.5%  | 5                | 62.5% | 0        | 0.0% | 8        | 100.0% |
| Mesonephric                   | 0        | 0.0%   | 1        | 100.0% | 0        | 0.0%  | 1        | 100.0% | 0        | 0.0%   | 1        | 100.0% | 1                   | 100.0% | 0                | 0.0%  | 0        | 0.0% | 1        | 100.0% |

Abbreviations GU, genitourinary; HN, head and neck; GYN, gynecologic tract; HBP, hepatobiliary-pancreas; MUO, metastasis of unknown origin; SCNEC, small cell neuroendocrine carcinoma; LCNEC, large cell neuroendocrine carcinoma; NEC, neuroendocrine carcinoma; MANEC, mixed adenocarcinoma and neuroendocrine carcinoma; ADC, adenocarcinoma; PDC, poorly differentiated carcinoma; NE, neuroendocrine; UCC, urothelial carcinoma; SQCC, squamous cell carcinoma PD, poorly differentiated; UDC, undifferentiated carcinoma