**Supplementary Table S1:** Histopathology analysis of Hematoxylin–Eosin stained slides from HNC tumor and normal tissue (n=14). One slide per case prepared from the tumor and normal tissue FFPE blocks was stained with Hematoxylin-eosin (H&E), reviewed for histopathology by a consultant Pathologist affiliated with the UCCI tumor bank and the slides were reported for diagnosis, pathological stage, grade (well, moderate or poorly differentiated), percentage of tumor tissue and percentage of necrosis within the tumor slide. Similarly, the morphology of the normal tissue was also confirmed by the analysis of the normal tissue slides by the pathologist.

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|  |  | **Pathology Analysis from H&E slides** | | | | | **Surgical Pathology Report Data + Patient Demographics** | | | |
| ***#*** | ***Case ID*** | ***Grade*** | ***%Tumor Cells*** | ***Diagnosis*** | ***%Necrosis*** | ***Patient Diagnosis*** | ***Pathological Stage*** | ***Pathological Grade*** | ***Age*** | ***Gender*** |
| 1 | HDN684 | Poor / Sarcomatoid | 70% | Sarcomatoid SCC | 0% | squamous cell carcinoma with sarcomatoid features of the Parotid gland with metastasis to the neck | pT3 N2b Mx | 3 | 60 | Male |
| N/A | N/A | Normal Control | N/A |
| 2 | HDN731 | Moderate | 80% | SCC | 10% | squamous cell carcinoma of mandible | rpT4 N2b Mx | 2 | 68 | Male |
| 3 | HDN733 | Moderate | 50% | SCC | 0% | keratinizing squamous cell carcinoma of the tongue | pT3 N0 Mx | 1 | 65 | Female |
| N/A | N/A | Normal Control | N/A |
| 4 | HDN741 | Moderate | 80% | SCC | 0% | invasive squamous cell carcinoma of supraglottis | pT4a N2c Mx | 2 | 54 | Male |
| 5 | HDN753 | Moderate - Poor | 70% | SCC | 5% | basaloid squamous cell carcinoma | pT4b N2b Mx | 3 | 60 | Male |
| 6 | HDN972 | Moderate | 70% | SCC | N/A | invasive keratinizing squamous cell carcinoma of mandible | pT4a N2b Mx | 2 | 50 | Male |
| N/A | N/A | Normal Control | N/A | invasive keratinizing squamous cell carcinoma of mandible |
| 7 | HDN974 | Moderate | 80% | SCC | N/A | invasive squamous cell carcinoma of periorbital skin | pT3 N0 Mx | 1 | 58 | Male |
| N/A | N/A | Normal Control | N/A |
| 8 | HDN 1036 | N/A | 0% | Normal tissue | N/A | Invasive squamous cell carcnimoma of the retromandibular trigone | pT4aN0Mx | 1 | 77 | Male |
| 9 | HDN1056 | Moderate | 60% | SCC | 0% | invasive squamous cell carcinoma of larynx | pT3 N0 Mx | 2 | 59 | Male |
| N/A | N/A | Normal Control | N/A |
| 10 | HDN1260 | Moderate | 50% | SCC | 10% | invasive squamous cell carcinoma of mandible | pT4a N0 MX | 2 | 64 | Male |
| N/A | N/A | Normal Control | N/A |
| 11 | HDN1331 | Moderate | 30% | SCC | 0% | invasive squamous cell carcinoma of tongue | pT2 N1 MX | 2 | 74 | Male |
| N/A | N/A | Normal Control | N/A |
| 12 | HDN1351 | Moderate | 70% | SCC | 0% | invasive squamous cell carcinoma of parotid | not given | 2 | 72 | Male |
| N/A | N/A | Normal Control | N/A |
| 13 | HDN1358 | Moderate | 80% | SCC | 0% | invasive keratinizing squamous cell carcinoma of hypopharynx | pT3 N0 MX | 2 | 49 | Male |
| N/A | N/A | Normal Control / Some Dysplasia | N/A |
| 14 | HDN1459 | Moderate | 25% | SCC | 0% | predominantly nonkeratinizing squamous cell carcinoma of palatine tonsil | pT1 N0 Mx | 2 to 3 | 62 | Male |

Footnotes: N/A = Not available; SCC = squamous cell carcinoma