**Table S1** Antibodies, details of immunohistochemical protocols and scoring cut-off for the COEUR & AOVT cohort

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Marker | Platform | Supplier | Clone | Antigen retrieval | Primary dilution | Categorized as Negative | Categorized as Positive | Staining used for COSPv2a-generating cohort |
| ARID1A | VentanaDiscovery XT | Abgent | 3H2 | CC1-std | 1:50 | Retained staining in ≥ 10% of tumor cells | Reduced staining in < 10% of tumor cells | Same  |
| HNF1B | Ventana Discovery XT | Sigma | Poly | CC1-std | 1:100 | Absence or focal in <50% of tumor cells | Diffuse staining ≥ 50% of tumor cells | Same |
| NAPSA | Leica Bond Max | Leica | IP64 | ER1-10 | 1:100 | Absence of staining | Any staining ≥ 1% of tumor cells | Same |
| CDKN2A | Leica Bond Max | CIN tec | E6H4 | ER2-20 | 1:24 | Absence or patchy in <90% of tumor cells | Block staining ≥ 90% of tumor cells | Same antibody on Ventana Discovery XT |
| TP53 | Leica Bond Max | Dako | DO-7 | ER2-20 | 1:5000 | Wild type pattern with nuclear staining between ≥ 1% and < 70% | Complete absence of stainingor diffuse staining in ≥ 70% of tumor cells | Same antibody on Ventana Discovery XT |
| PGR | DAKOPharmDX | Dako | PGR1294 | pH9 | Prediluted | Absence of staining | Any staining ≥ 1% of tumor cells | Different antibody (clone 1E2) on VentanaDiscovery XT |
| TFF3 | VentanaDiscovery XT | Abnova | 3D9 | CC2-std | 1:50 | Absence or focal in <50% of tumor cells | Diffuse staining ≥ 50% of tumor cells | Same |
| VIM | Leica Bond Max | DAKO | V9 | ER2-20 | 1:600 | Absence or focal in <50% of tumor cells | Diffuse staining ≥ 50% of tumor cells | Different antibody (clone MU074-UC) on Ventana Discovery XT |
| WT1 | Leica Bond Max | Novocastra | WT49 | ER2-30 | 1:40 | Absence of staining | Any staining ≥ 1% of tumor cells | Different antibody (clone 6F-H2) on VentanaDiscovery XT |

Std-standard