**Supplementary table 1: Primary Antibodies and Fluorophore information**

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| **Antibody** | **Clone** | **Dilution** | **Company**  | **OPAL Fluorophore** |
| CK | AE1/AE3 | 1:50 | Dako | Opal 620 |
| CD3 | A045201-2 | 1:100 | Dako | Opal 690 |
| CD8 | C8/144B | 1:25 | ThermoFisher Scientific | Opal 540 |
| CD45RO | UCHL | Ready to use | Leica Biosystems | Opal 520 |
| Granzyme B | 11F1 | Ready to use | Leica Biosystems | Opal 570 |
| FOXP3 | D2W8E | 1:50 | Cell Signaling | Opal 650 |
| TIM3 | D5D5R | 1:100 | Cell Signaling | Opal 540 |
| LAG3 | D2G4O | 1:200 | Cell Signaling | Opal 650 |
| VISTA | D1L2G | 1:400 | Cell Signaling | Opal 620 |
| ICOS | D1K2T | 1:200 | Cell Signaling | Opal 520 |
| OX40 | ACT-3 | 1:10 | Affymetrix (eBioscience) | Opal 570 |

**Supplementary table 2: Phenotypic markers for each cell subtype**

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| **Cell type** | **Immunophenotype** |
| EAC or BE epithelial cells  | AE1/AE3+ |
| T lymphocytes | CD3+ |
| Cytotoxic T lymphocytes | CD3+CD8+ |
| Activated cytotoxic T lymphocytes | CD3+CD8+Granzyme B+ |
| Memory T lymphocytes | CD3+CD45RO+ |
| Effector/memory cytotoxic T lymphocytes | CD3+CD8+CD45RO+ |
| Regulatory T cells | CD3+FOXP3+CD8- |
| Memory/regulatory T lymphocytes | CD3+FOXP3+CD45RO+CD8- |
| TIM3+ T cells | CD3+TIM3+ |
| LAG3+ T cells | CD3+LAG3+ |
| VISTA+ T cells | CD3+VISTA+ |
| ICOS+ T cells | CD3+ICOS+ |
| OX40+ T cells | CD3+OX40+ |
| OX40+ epithelial cells | CK+OX40+ |