**SUPPLEMENTARY DATA**

**Pharmacogenomics: current status and future perspectives**

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**Table S1. Gene mutations in different types of malignancy which have resulted in the development of targeted agents**

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| Genes or alterations | Type of malignancy | Examples of drugs targeting the mutations\* |
| *ABL1* | B-lymphoblastic leukaemia, Chronic myeloid leukaemia | Imatinib, dasatinib, nilotinib, bosutinib, ponatinib, asciminib |
| *ALK* | Anaplastic Large-Cell Lymphoma, Inflammatory Myofibroblastic Tumor, Non-Small Cell Lung Cancer | Crizotinib, alectinib, brigatinib, ceritinib |
| *BRAF* | Melanoma, anaplastic thyroid cancer, colorectal cancer, non-small cell lung cancer, Erdheim-Chester Disease | Vemurafenib, Dabrafenib, Trametinib, Encorafenib, Encorafenib, Binimetinib |
| *EGFR* | Non-Small Cell Lung Cancer | Afatinib, dacomitinib, erlotinib, gefitinib, osimertinib, Amivantamab, Mobocertinib |
| *ERBB2* | Breast cancer, esophagogastric cancer | Trastuzumab, Ado-Trastuzumab Emtansine, Lapatinib, Margetuximab, Trastuzumab Deruxtecan, Sacituzumab govitecan |
| *EZH2* | Follicular Lymphoma | Tazemetostat |
| *FGFR2* | Bladder cancer, cholangiocarcinoma | Erdafitinib, Infigratinib, Pemigatinib |
| *FGFR3* | Bladder cancer | Erdafitinib |
| *FLT3* | Acute Myeloid Leukemia | Gilteritinib, Midostaurin, |
| *IDH1* | Cholangiocarcinoma; Acute Myeloid Leukemia | Ivosidenib |
| *IDH2* | Acute Myeloid Leukemia | Enasidenib |
| *KIT* | Gastrointestinal tumor, mastocytosis | Imatinib, Regorafenib, Ripretinib, Sunitinib, Ripretinib, Avapritinib |
| *KRAS* | Non-Small Cell Lung Cancer, Colorectal Cancer | Sotorasib, Cetuximab, Panitumumab |
| *MET* | Non-Small Cell Lung Cancer | Capmatinib, Tepotinib |
| *NTRK1*/*NTRK2*/*NTRK3* | All Solid Tumors | Entrectinib, Larotrectinib |
| *Microsatellite instability - high* | All solid tumors, colorectal cancer | Pembrolizumab, Ipilimumab , Nivolumab |
| *Tumor mutational burden - high* | All Solid Tumors | Pembrolizumab |
| *PDGFB* | Dermatofibrosarcoma Protuberans | Imatinib |
| *PDGFRA* | Gastrointestinal Stromal Tumor, Chronic Eosinophilic Leukemia, Myelodysplastic/Myeloproliferative Neoplasms | Avapritinib, Imatinib |
| *PDGFRB* | Myelodysplastic/Myeloproliferative Neoplasms | imatinib |
| *PIK3CA* | Breast Cancer | Alpelisib, Fulvestrant |
| *RET* | Non-Small Cell Lung Cancer, Thyroid Cancer, Medullary Thyroid Cancer | Pralsetinib, Selpercatinib |
| *ROS1* | Non-Small Cell Lung Cancer | Crizotinib, Entrectinib |
| *SMARCB1* | Epithelioid Sarcoma | Tazemetostat |

\*The list of drugs is not exhaustive, and some drugs may be used in combination, including with conventional chemotherapeutic agents or immune checkpoint inhibitors.

Adapted from the Oncology Knowledge Base (https://www.oncokb.org/actionableGenes#levels=1&sections=Tx) and from Chakravarty *et al* (OncoKB: A Precision Oncology Knowledge Base. *JCO Precision Oncology*, 1-16 (2017)).

**Figure S1. Factors to be considered in the development of multifactorial algorithms to enable personalisation of drug choice and drug dose.** The response to a drug, be it efficacy or safety, is dependent on many factors, including genomic factors. The contribution of each of these factors will vary for different drugs and between patients, and needs to considered in the development of multimodal algorithms.

Diagram

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