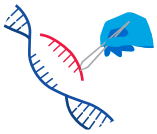
Technologies Driving Progress Against Cancer

Technology drives advances in cancer research and patient care. The following represent emerging state-of-the-art technologies that are poised to transform our basic understanding of cancer development and transform patient care in the near future:

CLUSTERED REGULATORY INTERSPERSED SHORT PALINDROMIC REPEATS (CRISPR)-CAS9 SYSTEM



Revolutionary gene editing approach to help researchers modify the genome precisely and study the impact of the modification on cellular function.

Example of use in cancer:

'Designer' CAR T cells, tailored for a patient's specific cancer, are being developed using CRISPR-Cas9 system.

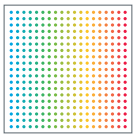
PROTEOLYSIS TARGETING CHIMERAS (PROTACS)

A class of therapeutics to help researchers precisely degrade disease-causing proteins.

Example of use in cancer:

PROTACs to degrade otherwise difficult to target cancer-causing proteins, such as p53, STAT3, RAS, MYC, are currently in different phases of preclinical and clinical development.

SPATIAL TRANSCRIPTOMICS



A technique to help researchers characterize and map gene activity at a single cell level in a sample of tissue, thus delineating the heterogeneity of tumors.

Example of use in cancer:

This technology is being used for the characterization of tumor heterogeneity; prediction of tumor progression; and identification of complex interactions between tumor and other cell types.

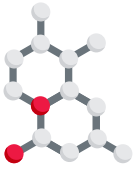
DECONVOLUTING PHENOTYPIC SCREEN HITS

A holistic method to help researchers identify and develop new cancer therapies by investigating alterations in entire biological pathway(s) instead of an individual target, such as a protein.

Example of use in cancer:

Three-dimensional 'organoids' are being grown in laboratories from stem cells or from tumors derived from patients to capture the complexity of an organ or a tumor.

SINGLE MOLECULE IMAGING



A method to help researchers diagnose diseases, such as cancer, at an early stage by detecting individual biomarker proteins in patient's bodily fluids.

Example of use in cancer:

The highly sensitive single-molecule augmented capture (SMAC) method can identify miniscule quantities of prostate-specific antigen (PSA) in samples from blood or a solution containing a single prostate cancer cell.