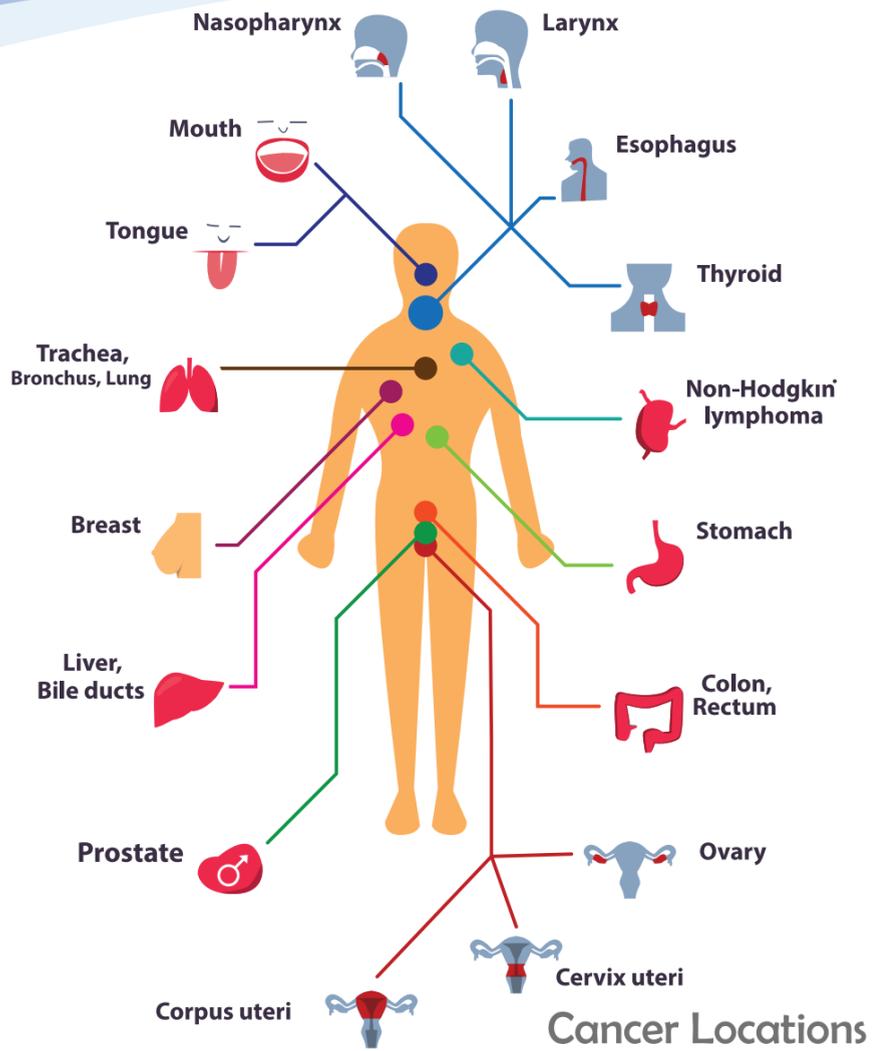


Why Cancer Panels Stand Out for Cancer Research

Cancer has become the disease with the highest incidence and mortality rate. The development of cancer is essentially an abnormal lesion formed by the abnormal growth of cells in local tissues of the body, and the process of this abnormal lesion often involves various genetic mutations. With over 20,000 genes in each human body, hundreds are directly related to cancer, and one or several mutations in these cancer-causing genes will greatly increase the probability of cancer development. As technologies in medical and life sciences continue to advance, there are now many ways to screen and diagnose cancer.

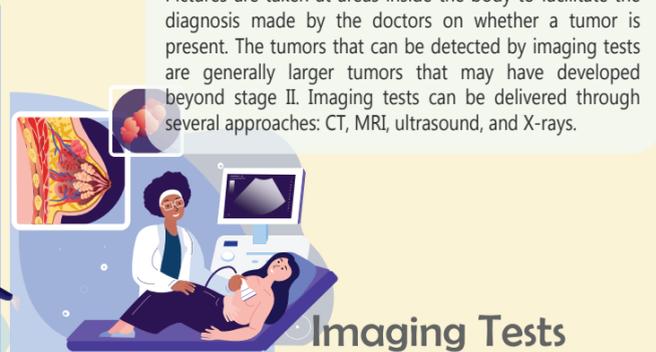


The Approaches for Cancer Screening or Diagnosis

The pathological process of cancer involves the mutation, abnormal activation, or inhibition of various genes. Genomic testing can identify germ-line or inherited DNA changes that increase a person's risk of developing cancer, as well as identify or characterize somatic or acquired changes in tumors, which can be used in cancer-related research and to guide the decision of appropriate targeted therapies.

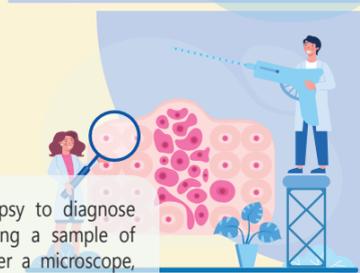


Genetic Testing



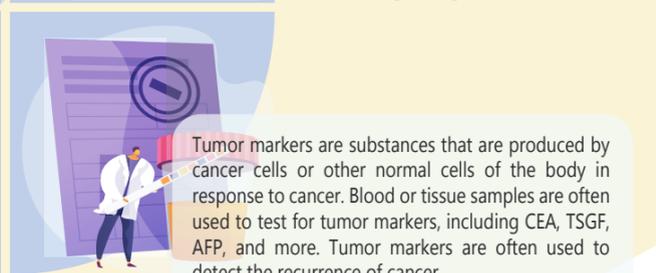
Imaging Tests

Pictures are taken at areas inside the body to facilitate the diagnosis made by the doctors on whether a tumor is present. The tumors that can be detected by imaging tests are generally larger tumors that may have developed beyond stage II. Imaging tests can be delivered through several approaches: CT, MRI, ultrasound, and X-rays.



Biopsy

Doctors often need to do a biopsy to diagnose cancer. A biopsy involves removing a sample of tissue, scrutinizing the tissue under a microscope, and performing tests to determine if the tissue is cancerous. The results of the tests play an important role in cancer diagnostics and helping to determine treatment plans.



Tumor Markers

Tumor markers are substances that are produced by cancer cells or other normal cells of the body in response to cancer. Blood or tissue samples are often used to test for tumor markers, including CEA, TSGF, AFP, and more. Tumor markers are often used to detect the recurrence of cancer.

Cancer Panels – The Powerful Tool for Cancer Research

Most abovementioned approaches are non-sequencing methods, which have relatively low sensitivity and specificity. But to defeat cancer, prediction and early detection are important. Abnormalities found at the middle to late stages of the cancer development are associated with comparatively low cure rate. Through genetic testing technology to detect tumor-related genes in the human body, cancer panels can systematically find and explore the genetic variation of many susceptibility genes involved in the pathogenesis of tumor, which is of great significance to clarify the mechanism of the early occurrence of tumor and find an early warning, early diagnosis and early treatment of tumor.

Next-Generation Sequencing

Next-generation sequencing (NGS), also known as high-throughput sequencing, is a DNA sequencing technology based on PCR and gene microarrays. NGS is a powerful tool to discover new and infrequent genetic alterations, identify hereditary cancer mutation carriers, and provide a reliable molecular portrait of a wide range of cancers in a fast and cost-effective manner.

HRM

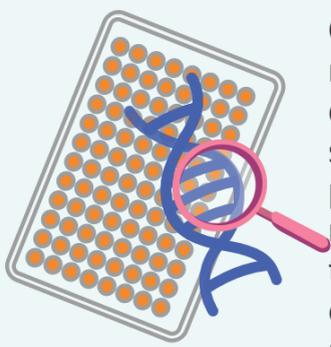
High-resolution melt (HRM) curve analysis is a PCR-based technique that identifies sequence alterations with regard to mutations, polymorphisms, and epigenetic differences in double-stranded DNA (dsDNA) samples. HRM detects DNA alterations by subtle variations in the melting curves of mutated versus wild-type DNA sequences. The technique involves PCR amplification of the target sequence in the presence of a fluorescent dsDNA binding dye, melting of the fluorescent amplicon, and subsequent interpretation of the melting profile.

ARMS-PCR and MASS-PCR

Amplification refractory mutation system PCR (ARMS-PCR) and mutation-selected amplification specific system PCR (MASS-PCR) are novel gene detection techniques with high specificity and sensitivity, in which normal and mutant sequences are amplified by allele-specific primers. The mutation type of the detection site is then distinguished according to the different solubility curves. In an ARMS-PCR assay, the determination of mutation status could be subjective when the peak shapes produced by mutant- and wild-type genes are different. MASS-PCR is developed based on ARMS-PCR, but the mutant gene emits a fluorescence peak in the cyclic amplification. And the amplification of wild-type templates is suppressed, reducing the subjectivity on the final determination of detection results.

Molecular Biotechnologies for Cancer Panels

Why NGS Cancer Panels Are Powerful



Cancer panels are pre-designed panels for targeted sequencing of genes and mutations associated with multiple cancer diseases. Cancer panels can be used to detect more than 700 cancer-related genes, which cover both exons and coding sequences and ensure large-scale screening and identification efficiently and comprehensively. The panels include the broad-spectrum pan-cancer panel that covers more than 500 genes in a single panel and cancer-specific panels including hereditary cancer, cancer hotspot panel, lung cancer panel, breast cancer panel, ovarian cancer panel, thyroid carcinoma panel, esophageal cancer panel, glioma gene panel, and colorectal cancer panel.

CD Genomics is an innovative sequencing and genotyping company. Our cancer panels are designed to address the practical needs of cancer-related studies. These panels are featured an innovative background cleaning technique that allows plenty of amplicons to be multiplexed in a single reaction pool, allowing a large number of cancer-related genes to be detected in a single assay. They can be designed as ready-to-use panels or as customized assays. We are dedicated to providing the highest level of sequencing services. With various solution options and experienced scientists, we offer the most suitable strategies according to your sample and research purpose. To learn more about Cancer Panels, please feel free to contact us.