With a deep scientific understanding of Immuno-Oncology, we have expanded our research to focus on leveraging immune checkpoint pathways in hopes of potentially improving outcomes for patients with earlier stages of cancer.[40-49]

Active research spans multiple tumors, including some tumors that may have risk of recurrence following complete surgical resection[40-48]

BMS is committed to exploring the potential of Immuno-Oncology in Earlier Stages of Cancer

GEJC=gastroesophageal junction cancer; HCC=hepatocellular carcinoma; I-O=Immuno-Oncology; MDT=multidisciplinary team; NSCLC=non-small cell lung cancer; RCC=renal cell carcinoma; UC=urothelial cancer.

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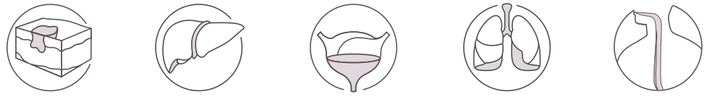
Immuno-Oncology

Investigating the Potential of Immuno-Oncology in the Earlier Stages of Cancer

Immuno-Oncology research aims to harness the body's natural immune response to detect and eliminate tumor cells

- In earlier stages* of many cancer types, the **risk of recurrence** following complete surgical resection may be high[1-5]



71%–85% for melanoma (stage IIIB and IIIC)[1†]

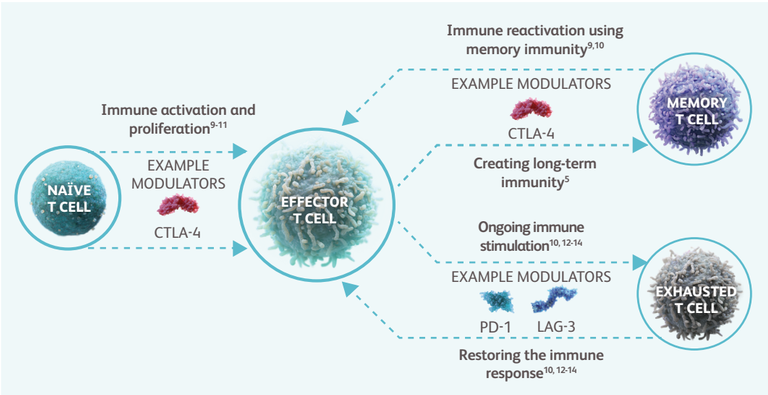
50%–70% for HCC[2‡]

≤50% for bladder cancer (muscle invasive)[4]

29%–47% for lung cancer[3§]

38% for esophageal cancer[5‖]

- Ongoing research to further understand immune pathways includes exploring how their modulation may improve antitumor immune response[6-8]

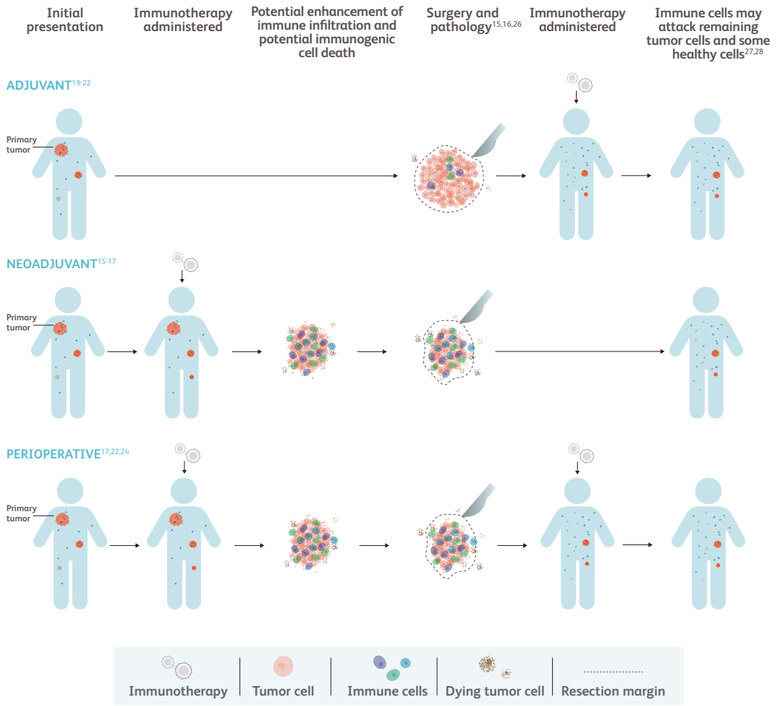


The generation of memory T cells may provide a prolonged immune response

*Earlier stages of cancer refers to tumors that are non-metastatic or resectable metastatic. †Data from a single center spanning 1998–2002. ‡Based on worldwide data, according to the ESMO Faculty for Clinical Practice Guidelines development. §Data from a single center spanning 1999–2008. ‖Data from a single center spanning 1996–2010.
CTLA-4=cytotoxic T-lymphocyte antigen 4; HCC=hepatocellular carcinoma; I-O=Immune-Oncology; LAG-3=lymphocyte-activation gene 3; MDT=multidisciplinary team; PD-1=programmed death receptor-1.

Adjuvant, neoadjuvant, and perioperative immunotherapy research seeks to activate the body's natural immune response[15-24]

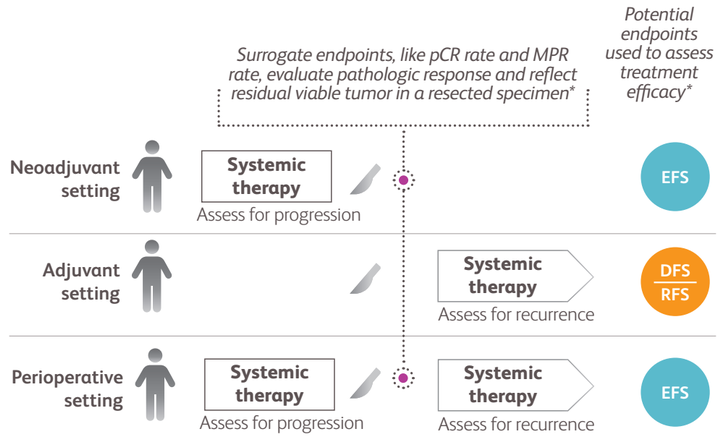
- Research is ongoing as to whether combining immunotherapy with surgery may lead to lower rates of tumor recurrence in earlier stages of cancer[19,20,24,25]



In earlier stages of cancer, the immune system may be more intact and responsive[25]; therefore, BMS is currently researching the potential utility of immunotherapy in this space.

Surrogate endpoints for survival may help to assess the efficacy of treatment in the neoadjuvant, adjuvant, and perioperative settings[29-38]

- While OS is a common endpoint in oncology, it requires a longer follow-up period. Surrogate endpoints may potentially correlate with OS.



According to research in the neoadjuvant setting, **pCR rate** and **MPR rate** may be emerging surrogate endpoints that evaluate residual tumor in a specimen[2,4,5]

EFS Represents the time from when a patient is randomized (before systemic treatment and surgery) until any event, including progression of disease that precludes surgery, recurrence, or death irrespective of cause.[29,32]

DFS / RFS Represents the length of time after primary treatment ends that the patient survives without any signs or symptoms of the cancer for which they were treated.[39]

DFS=disease-free survival; EFS=event-free survival; I-O=Immuno-Oncology; MDT=multidisciplinary team; MPR=major pathologic response; OS=overall survival; pCR=pathologic complete response; RFS=recurrence-free survival.