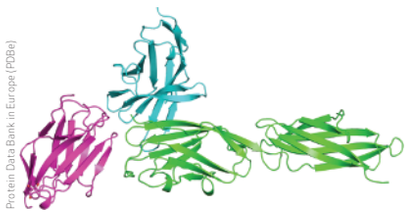

Crystal structure of the PD-1/PD-L1 complex.

"When we analyzed 10 patient biopsies," says Armand, "all of the tumors had this genetic amplification and increased expression of ligands PD-L1 and PD-L2, which seems to be the basis for vulnerability to PD-1 blockade in these patients."

Pembrolizumab has been approved for metastatic melanoma and has shown promise for treating other cancers.

Overall, the results suggest that PD-1 inhibitors should be tested in patients with other types of lymphoma, such as large cell lymphoma, says Moskowitz.

"The safety profile of these drugs is quite good, with very little grade 3 or 4 toxicity," he says. "Our results should encourage continued research with PD-1 inhibitors for a variety of patients with HL." ■

Blinatumomab Knocks Out Residual Disease

A novel immunotherapeutic given to adults with acute lymphoblastic leukemia (ALL) before relapse showed promising results in a phase II trial presented in December at the American Society of Hematology Annual Meeting in San Francisco, CA.

The trial assessed Amgen's blinatumomab (Blincyto), a bispecific T-cell engager that directs T cells to kill malignant B cells. The agent was approved in December to treat relapsed or refractory Philadelphia chromosome–negative precursor B-cell ALL.

Researchers wanted to see if the drug would also be effective in treating patients who are in remission but have trace amounts of disease in their bone marrow, putting them at high risk for disease recurrence.

The 113 trial participants were deemed to be at high risk for recurrence based on a PCR test that detected a small amount of residual disease. (Conventional cytology is typically used to examine bone marrow smears.)

The participants received continual infusion of blinatumomab for 4 weeks, followed by a 2-week break. Responders could receive up to four cycles of treatment or have a stem cell transplant after the first cycle. At the end of the trial, no minimal residual disease was detected in 78% of participants.

"If positive long-term results are confirmed, [blinatumomab] may really change the standard of care of ALL in the future," says first author Nicola Gökbuget, MD, coordinator of the German ALL study group and an investigator at the University Hospital Frankfurt, Germany.

Most side effects—mild to moderate flu-like symptoms—related to the activation of the immune system, although some patients had neurologic symptoms. Two patients died during the trial.

It appears that the drug "tips the balance in favor of the immune system over the tumor cell," says Catherine Bollard, MD, a professor of pediatrics at George Washington University, who moderated the press conference at which the trial results were presented.

Bollard says she was surprised by the drug's effectiveness as a single agent, but that it makes sense in the context of what scientists are learning about the relationship between cancer and the immune system. Cancer needs many different strategies to override the immune system, she says, but blocking any one of them may be enough to give the immune system the advantage.

Gökbuget says the first part of the trial was very promising, but she's restraining her enthusiasm until after follow up. "We want to see whether the achievement of a molecular response will result in a better long-term outcome," she explains.

Researchers will also need to confirm the effectiveness of PCR detection before applying for federal approval to prescribe the drug this way, Gökbuget says. ■

For more news on cancer research, visit *Cancer Discovery* online at http://CDnews.aacrjournals.org.

NOTED

- The U.S. Congress reached a deal on a $1.013 trillion budget package to fund the federal government through September 2015. **The budget includes an increase of just $150 million (0.5%) for NIH over fiscal year 2014,** to $30.084 billion, and an increase of just $27 million (0.54%) for NCI, to $4.950 billion, amounts that do not keep pace with inflation.
- **The FDA approved Gardasil 9** (Merck), a vaccine for the prevention of certain diseases caused by nine types of human papillomavirus (HPV), five more than Gardasil. Approved for use in females ages 9 through 26 and males ages 9 through 15, Gardasil 9 has the potential to prevent approximately 90% of cervical, vulvar, vaginal, and anal cancers.
- **The FDA also approved ramucirumab (Cyramza; Eli Lilly) to treat patients with metastatic non–small cell lung cancer** whose tumor has progressed during or after treatment with platinum-based chemotherapy. The drug was first approved in 2014 to treat patients with advanced stomach cancer or gastroesophageal junction adenocarcinoma.
- The American Cancer Society's annual cancer statistics report finds that **a 22% drop in cancer mortality over two decades led to the avoidance of more than 1.5 million cancer deaths** that would have occurred if peak rates persisted (CA Cancer J Clin 2015 January 5 [Epub ahead of print]). While cancer death rates have declined in every state, the report finds substantial variation in the magnitude of these declines from state to state.
- **An FDA advisory panel unanimously recommended approval of the investigational biosimilar filgrastim** (Sandoz) for all of the same indications as its reference product, Neupogen (Amgen), a granulocyte colony-stimulating factor analog used in cancer treatment. This is the first time that a generic biologic drug has been recommended for approval.
- In an updated policy statement, **the American Society of Clinical Oncology called for greater access to and education about phase I clinical trials** (J Clin Oncol 2014 December 15 [Epub ahead of print]). Barriers to clinical trial participation, such as the lack of insurance coverage for routine care in clinical trials, should be addressed, according to the statement.