One Voice Against Cancer

20 Cancer Breakthrough Opportunities

To mark OVAC's 20 years as the voice of the nation's cancer community, we're highlighting 20 breakthrough research and prevention opportunities that can be pursued today with steady, predictable increases in federal funding.

OVAC calls on Congress to increase funding to help create tomorrow's cures and protect more Americans from cancer.

NEW TREATMENTS

Translate innovations in cancer science into powerful treatments for patients as quickly as possible

1. **Create new categories of cancer immunotherapy** by activating the "innate", or nonspecific, immune system—as opposed to the "adaptive" immune system harnessed by today's immunotherapies.

2. **Apply precision medicine to pediatric and other rare cancers** by identifying new genomic targets and testing therapies that are already used to treat adult cancers.

3. **Develop "bugs as drugs"** by translating discoveries about the body's gut microbiome into genetically engineered bacteria and viruses that can be used to treat tumors.

4. **Create biomarker-based tests** to define personalized combinations of chemotherapies, immunotherapies, targeted drugs, radiation, or other treatments for every patient.

BETTER TREATMENT

Make cancer treatment more effective, more tolerable, and more convenient for patients of all ages

5. **Manipulate the gut microbiome** to allow for more effective chemotherapy or immunotherapy, and identify other microbes that enhance response to therapy.

6. **Create tests that predict response and resistance to powerful immunotherapies,** so we can determine which patients will benefit most.

7. **Optimize care for older Americans**—for example, by creating standardized ways to characterize the aging process so doctors can better predict the risk of side effects.

8. **Make clinical trial results meaningful to all patients** by increasing participation among racial and ethnic minorities.

9. **Identify genomic predictors of side effects of targeted therapies,** so that patients at greatest risk can receive necessary supportive care or choose alternatives.

10. **Pioneer new ways for patients to directly report symptoms and outcomes,** to drive better care and improve their quality of life.

PREVENTION

Protect more Americans from the physical, financial, and psychological burdens of cancer

11

Identify which "pre-cancers" are likely to progress to cancer, so people with the highest-risk pre-cancers receive appropriate surgery or other preventive care.

12

Reduce barriers to screening and treatment of pre-malignant tumors, to prevent development of invasive cancer.

13

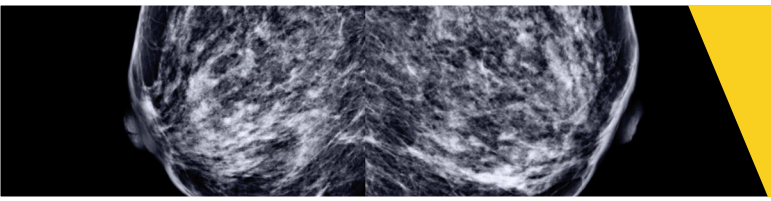
Define which "elevated risk" patients (e.g., with BRCA mutations) are most likely to develop cancer through large-scale genomics studies.

14

Create a new range of cancer prevention vaccines to protect otherwise healthy people with conditions that predispose them to cancer (e.g., Lynch syndrome).

15

Deliver proven prevention strategies (e.g., HPV vaccination, annual lung screening) to everyone who can benefit, by developing new interventions to increase their use in the communities with greatest needs.



EARLY DETECTION

Make screening and diagnosis simpler, less invasive, and more accessible

16

Create portable, low-cost screening technologies that can be used in doctor's offices, community clinics, and other local settings.

17

Eliminate disparities in late diagnosis for common cancers by expanding CDC's breast and cervical, colorectal, and other screening and education programs, and by incorporating new screening advances quickly.

18

Harness artificial intelligence (AI) for faster, more accurate reading of imaging scans—for example, to detect pre-cancerous lesions.

BASIC RESEARCH

Generate new scientific knowledge that will lead to a range of advances tomorrow

19

Understand how excess weight contributes to cancer at the molecular level, to help reduce obesity-related cancer deaths.

20

Develop new single cell technologies to understand how many different types of cells within a tumor interact to drive its growth and spread.