Damon Runyon
Cancer Research
Foundation

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Founded by Walter Winchell in 1946.

Brain Cancer

Find out more at **www.damonrunyon.org**

Brain and nervous systems cancers are the leading cause of solid tumor cancer death in children in the United States. However, they only account for one to two percent of new cancer cases among Americans each year.

- 22,000 people in the United States were diagnosed with the disease in 2009. Only 36% are likely to survive the next five years.
- That same year, brain cancer claimed the lives of an estimated 12,900 Americans.

Since 1980, the combined effort of cancer researchers has increased five-year survival rates by nearly 50%.

Our Achievements in Brain Cancer Research

Damon Runyon scientists have been on the forefront of brain cancer research for over 50 years. Our scientists:

- ✓ were the first to use radiation therapy to successfully treat cancer. Since chemotherapy agents are typically not able to cross the blood-brain barrier, radiation therapy is still an essential treatment for brain cancers.
- ✓ developed a new technology that is being used to identify genetic signatures associated with glioblastoma multiforme (GBM), the most common form of malignant brain cancer in adults. Using this technology, researchers recently identified four distinct subtypes of GBM tumors – a critical first step towards more personalized therapies for GBM.
- ✓ discovered a way that cancer stem cells are able to resist radiation therapy: through the activity of the Notch signaling pathway. A combination consisting of Notch inhibitors and radiotherapy treatment may be an effective means of controlling tumors.
- ✓ discovered that vitamin A derivatives (retinoids) may be effective for treating children with medulloblastoma. A national Phase III clinical trial is currently under way to move the treatment toward FDA approval.

Current Brain Cancer Research Projects

Damon Runyon is currently funding many scientists who are researching ways to better diagnose, treat and cure brain cancer. Many are conducting groundbreaking research to improve radiation treatments and find genetic factors associated with brain cancer. These funding are:

- developing diagnostic tests for classifying human glioblastoma multiforme to define new targets for pre-clinical drug development.
- investigating the role of a process called phagocytosis, or engulfment, in eliminating unwanted cells—including tumor cells. In glioma brain cancers, the ability of certain cell types (glial cells) to phagocytose tumor cells is turned off. Strategies that could switch these cells back to an anti-tumor status may be extremely useful in developing alternative therapies for cancer.
- deciphering the role that epigenetic alterations (chemical modifications of DNA) may play in brain cancer formation.
- uncovering novel genes that control cell growth and the creation of new neurons in the adult brain – key processes for understanding the origin of brain cancer.

**Most Statistics adapted from the SEER Cancer Statistics Review, 1975-2006*