



WILL POWER RESEARCH FUND

Driven by the dedication to cure brain cancer.

May 2009, VOL II

- 17. Mile 17, 6:41: I use the fact that I have to go to the bathroom as an excuse to rest for 60 seconds.
- 18. Mile 18, 5:38: Rest actually worked! I can do this!
- 19. Mile 19, 5:53: Parent drop off fluids again, now I'm really starting to flounder.

Mile 24. Eric and Evan help with fluids



- 20. Mile 20, 5:55: Desperately clinging to sub 6 minute pace.
- 21. Mile 21, 6:04: Begin to consider stopping again, but hell, I only have 5 miles left, and the last one is always doable, so I really only need to get through 4 right? If I continue at this pace that's only 24

Big Ben – around mile 25



minutes of running that I have to get through before I'm basically done!

- 22. Mile 22, 6:02: "only 4 miles left, basically only 24 minutes of running, no sweat, that's only about 6k."
- 23. Mile 23, 6:06: 5k left, and my internal monologue continues I see Eric again, and I am truly grateful for calories. Managing to keep it together.
- 24. Mile 24, 5:57: The fluids from Eric give me a bit of a boost, and I try to pick it up a bit.
- 25. Mile 25, 6:29: Oops, picked it too early, I get myself together again.
- 26. Mile 26, 5:41: A Brit swings by yelling "Come on, let's bring it in," I wave him by initially before willing myself to follow. Somehow I stay close and manage to blow by with about 200m to go, finishing in 2:30:25

Although my stupidity and lack of planning caused me to run an unsatisfactory race, I'm still glad I went. It was a valuable learning experience regarding not only race strategy, but also the importance of planning for major races well in advance.



Mile 26.2 + an apple!



WILL POWER RESEARCH FUND

Driven by the dedication to cure brain cancer.

May 2009, VOL II

I would like to thank everybody for their support and encouragement over the last few months (indeed the last few years) while I pursue this ridiculous pastime. In particular, I would like to thank Mary Wittenberg, Kirsten Rice, and Sam Grotewald at the NYRR, as well as Ed Moran for their efforts to get me into the race. I am also grateful for the advice and assistance of Alex Gibby for agreeing to coach me for the last three years. Thanks again to my family and friends Lynda, Neil, Evan, Eric, Mom, and Dad, who helped pass me fluids during the race, and finally thank you to my parents for providing the resources for the trip.



Will in Hyde Park after the race

Thanks to all of those people that donated and supported Will Power Research Fund, I hope my running efforts generate interest and raises funds for brain cancer research.

We will see how it goes.

Our first fundraiser, winner of the “guess Will’s marathon time” challenge

Congratulations to Kurt Weaver from Virginia.

Kurt guessed Will’s time at 2:30:00 so he was 25 seconds off! Not bad. Guess what....Craig College guessed 2:30:50, also 25 seconds off, but Kurt was closer on his guess for Will’s finish position. Will was 57th and Kurt guessed 48th (Craig guessed 40th).

Kurt chose a print of the “Gates of the Arctic” photo as his prize. Will took the photo last year on an extended hike with some friends in Alaska. The Gates is an uncommon picture, because not many people hike in that area. We thank Kurt for the donation and hope he enjoys the print.



“Gates of the Arctic”
Brooks Range, 2008

99 Pacific Street, Suite 555F, Monterey CA 93940 Phone: 831-277-5287

<http://www.willpowerresearchfund.com/>



RESEARCH

In the next series of newsletters we will feature some of the new brain cancer treatments currently being researched and discuss briefly the strengths and weaknesses of each. These treatments and studies are extremely complicated, and we can only give them a cursory examination, but will do our best at summarizing them for you. Also note that much is still unknown about the precise mechanisms of how gliomas form and how they manage to evade various treatments. Please feel free to respond with any questions that you may have concerning the articles we reference or the studies we review. The next three newsletters we will focus on various types of vaccines.

Several different types of vaccines are being researched. Some like *Oncophage* activate the immune system using heat shock proteins, while others use dendritic cells. Some are individually personalize to each patient while others, like *CDX-110* being developed at Duke, attack tumor types and are not patient specific. Not all vaccines work on all brain cancer tumors and, unfortunately, none of them seem to work indefinitely, as the gliomas eventually develop strategies to evade or block them. However, a few patients with grim prognoses have remained in remission for several years, a very welcome outcome.

Oncophage receives Orphan Drug Status

Oncophage, a cancer vaccine undergoing phase I and II clinical trials, has recently been given orphan drug status for the treatment of gliomas by both the FDA and the European Union. This means Antigenics, the company that is developing Oncophage, will be given seven years of patent protection, and the US and EU will give Antigenics some tax incentives to promote development and support clinical trials of the drug. The Orphan Drug Act of 1983 was passed to encourage pharmaceutical companies to develop drugs for more rare and subsequently often overlooked disorders. These types of illnesses do not get as much funding or attention from pharmaceutical companies, because of reduced profit incentives in the overall market.

Oncophage has demonstrated some positive result in small trials involving patients with recurrent malignant gliomas conducted by Dr. Andrew Parsa at University of California at San Francisco (UCSF). After brain cancer surgery, the Oncophage vaccine increased overall median survival to approximately 10.5 months. Four patients survived beyond 12 months while one patient survived almost 2.5 years. This is significant because the historical median survival of recurrent GBM's is only 6.5 months post surgery. All patients enrolled in the trial had experienced at least one recurrence of brain cancer.



Intriguingly, Dr. Parsa observed a correlation between immune response and overall survival as a result of Oncophage vaccination (n=12; $P < .001$). The study used three separate immune techniques to validate this correlation, demonstrating that Oncophage triggered a tumor-specific immune response by producing activated tumor specific CD8+ T-cells and cytokine-stimulated natural killer (NK) cells. Both of which seem to be needed to destroy tumor cells.

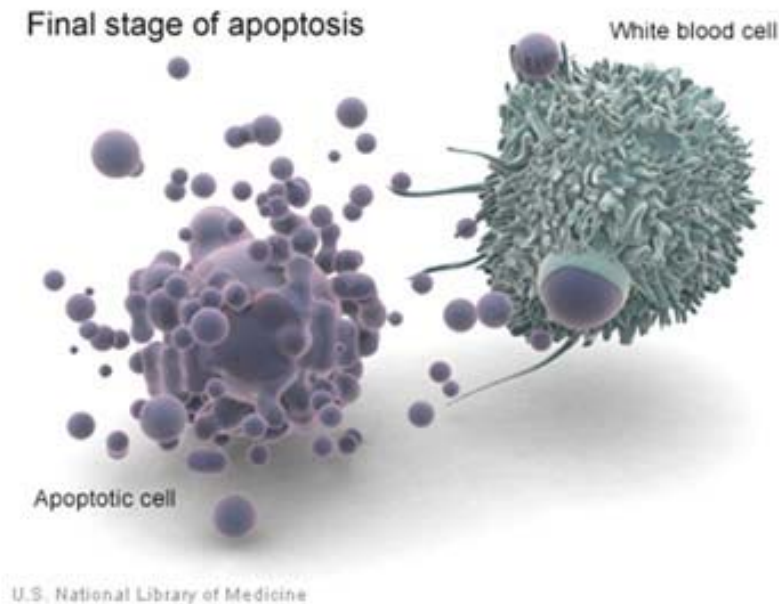


Figure: T-cell destroying a brain tumor cell

“Gliomas develop built-in immunoresistant pathways which play an important role in tumor progression,” said Dr. Parsa. “This study demonstrated significant tumor-specific immune responses leading to a proliferation of T-cells which did not exist in these patients before vaccination with Oncophage. Furthermore, no adverse effects of the vaccine were detected in any of the patients and all 12 patients demonstrate at least some tumor specific response.

Oncophage is manufactured using each individual patient’s own tumor cells, which are removed during surgery. Each vaccine contains the “antigenic fingerprint” of the patient’s particular cancer and is designed to reprogram the body’s immune system to target *only* cancer cells bearing this fingerprint, so, ideally, healthy tissue remains unaffected, limiting the debilitating side effects associated with chemotherapy and radiation therapy. More specifically, Oncophage is based on a natural substance called heat shock protein or HSP. Heat shock protein is a naturally occurring substance that binds peptides. HSP is a fundamental molecule that enhances immune response by activating antigen presenting cells and chaperoning peptides during antigen presentation.



WILL POWER RESEARCH FUND

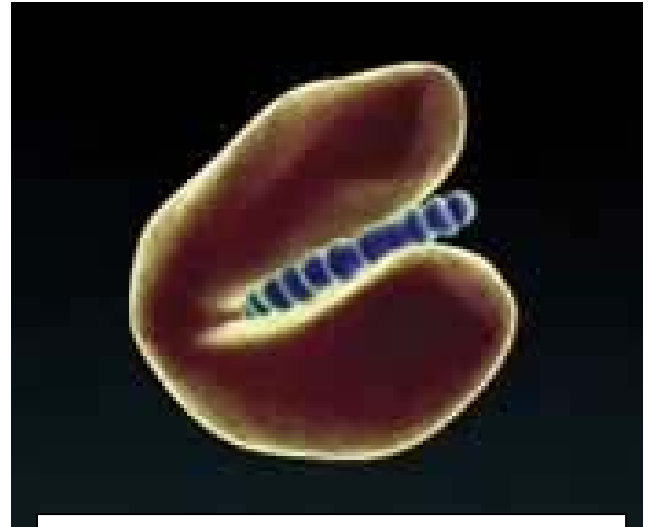
Driven by the dedication to cure brain cancer.

May 2009, VOL II

Researchers at Antigenetics have developed a procedure that mixes individual tumors with HSP. This process produces individual peptides that serve as tumor specific or tumor associated antigens. When re-injected into the cancer patient specific immune responses are observed. Here is a link to a short video that explains more thoroughly how the vaccine works:

<http://www.youtube.com/watch?v=f8GOCjgGU2Y>

While this research sounds promising, it is still in the nascent stages of investigation and its efficacy has not been established in a large, randomized study, yet. Unfortunately, the effectiveness of immunotherapy is reduced because proteins expressed by the tumor's cells can destroy both T-cells and NK cells. A greater understanding of how gliomas manage to defend themselves against immune system attacks may lead to increased success for these vaccines.



Heat shock protein carrying a peptide

Patient Information Resources

<p>American Brain Tumor Association (ABTA) 2720 River Rd., Ste. 146 Des Plaines, IL 60018 Toll Free: 800-886-2282 Tel: 847-827-9910 www.abta.org</p>	<p>National Brain Tumor Foundation 22 Battery St., Ste. 612 San Francisco, CA 94111 Toll Free: 800-934-CURE (2873) Tel: 415-834-9970 www.braintumor.org</p>
<p>National Brain Tumor Society 22 Battery St., Ste. 612 San Francisco, CA 94111 Toll Free: 800-934-2873 www.braintumor.org</p>	

Disclaimer: The information, services, products, messages, and other materials contained in this newsletter or on the Will Power Research Fund's (WPRF) website are provided for educational and informational purposes only and are not a substitute for medical advice and treatment. While we believe the information presented to be accurate at the time of writing, we do not guarantee that its contents are correct, complete, or applicable to any particular individual situation. We strongly encourage individuals to seek out appropriate medical advice and treatment from their physicians.