

Musella Foundation 2023 Highlights

Funding impact-driven research

Over the years, the Musella Foundation has awarded 180+ research grants, totaling more than \$6 million, for brain tumor research. We prioritize research that is likely to lead to breakthroughs, and we favor research on low-toxicity treatments. Below are some highlights, and information on all our grants can be found here: <https://virtualtrials.org/Grants.cfm>

- In 2004 and 2005, we helped fund promising immunotherapy research with Dr. Linda Liau at UCLA. Despite numerous challenges over the last 15+ years, the Phase 3 trial results were finally published this year in JAMA – this was the first successful Phase 3 trial for newly diagnosed GBM since Optune and the first ever for recurrent GBM. We believe this therapy will gain approval in the UK in the very near future, with US approval hopefully not far behind.
- As early as 2014, we began funding research on the drug ONC201. When early trials showed remarkable results in DIPG and glioma patients with the H3K27M mutation, we joined forces with other non-profits to fund an expanded access program for those unable to enroll in the clinical trials. This program saved lives, boosted data collection, and will undoubtedly speed up drug approval. Just this year, data was published showing Onc201 nearly doubles median survival for DMG-H3K27 patients. With this latest publication, we believe regulatory approval is not far off.
- Back in 2010, we gave \$50,000 towards research on using the immunotoxin D2C7-IT for GBM therapy. The Phase 1 clinical trial achieved several long-term partial responses, and further research in mice indicated that combining this treatment with a checkpoint inhibitor could greatly increase efficacy. This is now one of the most promising clinical trials available for recurrent malignant glioma going on at Duke.
- In 2013, we funded early research on a drug called OKN-007. There is now a Phase 2 trial underway testing the injectable form of this drug in recurrent high-grade glioma, with completion targeted for 2024. The manufacturer has also announced a Phase 1 trial for an oral formulation of the drug, and there is an expanded access program for the drug available to H3K27-mutant DMG/DIPG patients.
- In 2012 and 2015, we helped fund clinical investigation of Toca 511 and Toca FC. Early trials did well, but the large Phase 3 trial failed. Nevertheless, there was a small subset of successful responders. At first, nobody knew why only some patients benefited, but researchers have since discovered a novel genetic biomarker believed to account for the response. Based on this new discovery, the FDA approved a Phase 2 multicenter trial to confirm the treatment (renamed DB107) will help patients with the relevant biomarker.
- In 2010 and 2012, we gave grants towards the development and testing of a drug called GB-13. This drug has now advanced through successful in vitro and in vivo testing, with a recent publication in *Pharmaceutics* and an abstract at the 2022 Society for Neuro-Oncology (SNO) annual conference. Given the initial promising results, this drug will soon progress to human trials targeting recurrent high-grade glioma and DIPG.

- In 2016, we gave a grant towards a new modality of treatment - antisense oligonucleotides. The preclinical testing on DIPG murine models is ongoing, but initial results are promising. We're hopeful this new technology will not only make a difference in future human DIPG trials, but also that it can be translated to apply to a substantial number of other glioma mutation targets.
- As a foundational partner of the DIPG/DMG Collaborative and the DIPG/DMG Research Funding Alliance (DDRFA), the Musella Foundation has helped contribute funds towards research grants specifically aimed at these types of tumors. We are especially proud to have been a part of the recent DIPG/DMG Collaborative grant to fund a sonodynamic therapy trial for children with DIPG and DMG.
- We've also been a foundational partner and helped contribute funds to the Children's Brain Tumor Network (CBTN) for many years. The CBTN operates a centralized tumor tissue repository, which has been used by 289 pediatric brain tumor research projects so far. This revolutionary project will advance pediatric brain tumor research by leaps and bounds over the coming years.

As you can see from the examples above, some of today's most promising advancements have stemmed from research we helped fund anywhere from 10 to 20 years ago. We anticipate many more breakthroughs coming down the pipeline as a result of our more recent grants.

Patient-focused advocacy

In the medical industry, the best interests of patients are often overshadowed by competing regulatory and commercial interests. The Musella Foundation, for 25 years, has consistently stepped up and advocated strongly for better treatment options and access for brain tumor patients.

- We played a small role in getting Temodar approved by the FDA in 2008, and we played a large role in getting Medicare to pay for it. Temodar (generic temozolomide) has since become standard of care for GBM and recently gained approval as an adjuvant treatment for newly diagnosed anaplastic astrocytoma.
- Next, we fought to get Medicare and other insurances to pay for Gliadel. We ran a letter-writing campaign and met with Medicare and elected officials multiple times. We ultimately secured coverage with a special billing code so that hospitals would not lose money on surgeries when Gliadel was used.
- In 2009, Dr. Musella testified as a patient advocate at the FDA meeting which led to approval of Avastin. With your help, he presented over 1,000 letters in support of approval from the brain tumor community. He also shared preliminary data from our Foundation's brain tumor virtual trial data showing clinical benefit for patients.

- In 2011, Dr. Musella testified as a patient advocate at the FDA meeting which led to approval of Novocure’s NovoTTF-100A device (now known as Optune) for the treatment of recurrent GBM. Only one other brain tumor organization participated in the event.
- In 2017, Dr. Musella testified as a patient advocate at the FDA meeting which led to approval of Gleolan (aka 5-ALA). In addition to helping surgeons achieve better brain tumor resections, this substance is now also being leveraged for sonodynamic therapy.
- For many years, we led efforts to get Medicare coverage for Optune. Dr. Musella testified multiple times before Medicare and orchestrated another letter writing campaign. With your help, he was able to present Medicare with a petition from over 7,000 brain tumor patients and family members. Coverage was finally obtained in 2019.
- Currently, we are doing everything we can to get the “Promising Pathway Act” passed. This bipartisan bill will drastically speed up the search for a cure for not only brain tumors, but most serious incurable diseases. This act creates a new conditional approval pathway for drugs and creates a learning system so that we learn from every patient’s experience. This is one of the most important bills ever for brain tumor patients. We urgently need your support for this bill. Please use the QR code below or go to <https://virtualtrials.org/activism.cfm> to contact your Senators and Representatives!



In addition to our own efforts, the Musella Foundation has helped many other brain tumor organizations achieve their advocacy goals by publicizing their activities on virtualtrials.org and in our Brain Tumor News Blasts. We firmly believe in collaboration, and we know that our brain tumor community is stronger when we join together to fight for the best interests of patients.

Patient and family empowerment through education

Website: Our website, virtualtrials.org, continues to be one of the most preeminent brain tumor resources on the internet, providing an outstanding array of articles, guides, online support, and our virtual trial research project. More than 1 million people visit our site each year.

Guides: Since 2011, we have published and regularly update our “Brain Tumor Guide for the Newly Diagnosed.” It is now in its 12th edition and has grown to 370 pages. It’s a must read for anyone battling brain tumors, and we distribute between 5,000-8,000 copies every year. This year, we started developing a new Guide with a wealth of information customized specifically towards low grade brain tumors – stay tuned!

Email Blasts: Our Brain Tumor News Blast emails go out to 12,000+ subscribers, many of whom are brain tumor families relying on the Blast emails to provide critical context for the scientific updates and advancements reported daily in the news and on social media.

Webinars: We continue to host free educational webinars that allow patients, caregivers, medical professionals, investors and others to learn about the latest and most exciting brain tumor advancements, with the opportunity to have questions answered straight from the source.

Patient Navigation Program: We've continued collaboration with Cancer Commons and xCures to provide and streamline an extremely valuable service for patients. This service assesses patients on a case-by-case basis, provides individualized treatment option reports, helps patients understand the options, and helps patients get access to treatments. Over the past 25+ years, we've helped over 100,000 brain tumor patients navigate treatment options.

Real-world registry: In connection with our patient navigation program, we have been working tirelessly to take our Brain Tumor Virtual Trial to the next level. Our registry system allows us to use real-world data to identify actionable insights that will improve outcomes for brain tumor patients. With increased data volume over time, this system will be able to execute truly revolutionary AI-powered precision oncology.

Copayment Assistance

In 2011, we advocated for and received special permission from the Department of Health & Human Services' Office of Inspector General to run a patient copayment assistance program. As far as we know, we are the only brain tumor organization to ever get such permission.

This copayment assistance program has been one of our most rewarding activities. It has allowed us the great privilege of providing over \$11 million in assistance to more than 2,200 brain tumor patients and families. Patients have told us, repeatedly, that this program is a life saver.

The Ask

Again, thank you for being a part of this incredible journey and for your ongoing support.

To continue our activities on behalf of brain tumor patients and families, we rely on your donations. We only send out one request letter a year – so please consider making your donation now. I promise all donations will be put to good use, quickly. To donate, go to: <https://virtualtrials.org/Donate.cfm> or send a check to Musella Foundation, 1100 Peninsula Blvd, Hewlett, NY 11557

