

SMA research is at a critical and exciting stage as remarkable advances have been made in recent years. With clinical trials now under way for new therapies there is real hope that SMA might become one of the first inherited neurological diseases to be successfully treated. SMA Angels Charity is very proud to have contributed to this research and will continue to support this critical work until a cure or treatment is found. With the help of so many caring supporters we have been able to contribute \$335,000 to Ohio State University, \$215,000 to FSMA/Cure SMA, \$50,000 to University of Utah and an additional \$75,000 targeted for SMA research projects. Below are some of the projects we have funded.

Published May 6, 2015 Human Molecular Genetics. 2015 Apr 9.

SMN Deficiency Disrupts Gastrointestinal and Enteric Nervous System Function in Mice.

Gombash SE¹, Cowley CJ¹, Fitzgerald JA¹, Iyer CC², Fried D³, McGovern VL², Williams KC⁴, Burghes AH², Christofi FL⁵, Gulbransen BD³, Foust KD⁶

Abstract: The 2007 Consensus Statement for Standard of Care in Spinal Muscular Atrophy (SMA) notes that patients suffer from gastroesophageal reflux, constipation and delayed gastric emptying. We used two mouse models of SMA to determine whether functional GI complications are a direct consequence of or are secondary to survival motor neuron (Smn) deficiency. *For more information* <http://www.ncbi.nlm.nih.gov/pubmed/25859009>

2013: The Burghes Laboratory at The Ohio State University in their quest to find an effective treatment for SMA have previously partnered with the SMA Angels Charity based in Savannah Georgia. We are excited to announce the progress that has been made in the development of new therapies for SMA. SMA is caused by the loss, or disruption, of the SMN1 gene and the retention of the SMN2 gene. This leads to low levels of functional SMN protein. It has been shown that antisense oligonucleotides, or ASOs, can be used to make the SMN2 gene behave like the SMN1 gene. The morpholino ASO and the delivery method were developed by Dr. Burghes's team at OSU. The goal of the study is to determine if re-administration of the ASO can increase its effectiveness in the treatment of SMA. The second aim of their study is to identify the effects of administering treatment later in the disease course of SMA. This project will further the development novel therapeutic approaches for SMA.

Published in Journal of Child Neurology 2014 Nov. 29, Epub 2013 Oct 4.

Nutritional practices at a glance: spinal muscular atrophy type I nutrition survey findings.

Davis RH, Godshall BJ, Seffrood E, Marcus M, LaSalle BA, Wong B, Schroth MK, Swoboda KJ.

Acknowledgment: The authors wish to acknowledge Anne Meguiar of SMA Angels Charity Inc for bringing researchers together through her strong commitment to nutrition research in spinal muscular atrophy. We also wish to acknowledge Benjamin Chisum for his contributions to the survey framework and technological support.

Abstract: Proactive nutritional management for children with spinal muscular atrophy type I can provide insight into improved spinal muscular atrophy care. This observational study consisted of a nutritional and medical history survey of children with spinal muscular atrophy type I collected in 2009-2011.

For more information <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4334580/>

Published in Journal Child Neurology 2014 Mar.29 Epub 2013 Jan 17.

Vitamin D intake is inadequate in spinal muscular atrophy type I cohort: correlations with bone health.

Aton J¹, Davis RH, Jordan KC, Scott CB, Swoboda KJ.

Abstract: Children with type I spinal muscular atrophy commonly demonstrate reduced bone mineral density. Our objectives were to evaluate and assess adequacy of vitamin D intake, serum levels, and association with bone mineral density.

For more information <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4259287/>

Published in Neuromuscular Disorders 2012 Nov. 22

Observational study of caloric and nutrient intake, bone density, and body composition in infants and children with Spinal Muscular Atrophy type I.

Katherine E Poruk , Rebecca Hurst Davis, Abby L Smart, Benjamin S Chisum, Bernie A LaSalle, Gary M Chan, Gurmail Gill, Sandra P Reyna, and Kathryn J Swoboda

Abstract: Clinical experience supports a critical role for nutrition in patients with spinal muscular atrophy (SMA). Three-day dietary intake records were analyzed for 156 visits in 47 SMA type I patients, Children with SMA type I may have lower caloric requirements than healthy age-matched peers, increasing risk for over and undernourished states and deficiencies of critical nutrients. Standardized growth charts may overestimate FTT status in SMA type I.

For more information <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3484247/>

2011 ~ SMA And Nutrition Project: The SMA Angels Charity collaborates with the Pediatric Motor Disorders Research Program at the University of Utah, Cincinnati Children's Hospital Medical Center, and the University of Wisconsin American Family Children's Hospital. The group consists of a cohort of dietitians, doctors, and data collection specialists and is hosted by Anne Meguiar and SMA Angels Charity. They are working to increase awareness and research into SMA and nutrition. These centers have created a nutritional survey for patients with SMA Type I – the SMA Nutrition Survey. The goal of this survey is to gather natural history data from patients with SMA Type 1. The survey will show nutritional issues specific to people with SMA and promote further investigation into these critical issues.

American Family Children's Hospital, Madison, Wisconsin, Mary Schroth, MD, Pediatric Pulmonologist; Erin Seffrood, Pediatric Clinical Nutritionist; Mary Marcus, Clinical Nutritionist

Cincinnati Children's Hospital Medical Center, Cincinnati Ohio, Brenda Wong, Child Neurologist, Associate Professor of Pediatrics and Neurology; Barbara J Godshall,

University of Utah School of Medicine, Salt Lake City, Utah, Kathryn J. Swoboda, MD, Associate Professor, Neurology and Pediatrics. Rebecca Hurst Davis,

SMA Angels Charity, Inc., Richmond Hill, Ga., Anne Meguiar, President

2007 ~ The Burghes Laboratory at The Ohio State University. SMA Angels funds were used to purchase reagents that will answer what SMN function is critical to motor neurons in SMA and whether a novel OSU drug that increases SMN levels is suitable for clinical trials in SMA.

Project 1) Critical function of SMN in SMA: What effect do small SMA mutations (single amino acid changes) have? **Project 2)** Testing of a drug developed at OSU for activation of SMN and rescue of SMA mice