



# Chuck Noll Foundation

**FOR BRAIN INJURY RESEARCH**

**2020 ANNUAL REPORT**

# 2020 ANNUAL REPORT SPOTLIGHT



## SPOTLIGHT ON OUR VISION

*To diminish the impact of sports related head injuries.*

## SPOTLIGHT ON OUR MISSION

*The Chuck Noll Foundation for Brain Injury Research awards grants in order to advance research related to the diagnosis and treatment of injuries to the brain occurring primarily from sports activities.*



# FOREWORD: SPOTLIGHT

Ask any amateur athlete what they dream of, and most will tell you “playing under the lights.” It’s the culmination of dedication, practice, and teamwork that allows millions of youth to achieve that dream of playing under the lights.

In this edition of the Chuck Noll Foundation for Brain Injury Research’s Annual Report, we shine a “light” on our four new grantees at Allegheny Health Network, University of Pittsburgh, UPMC, and West Virginia University. We also shine a light on two of our previous grantees who are accelerating the speed and accuracy of diagnosing concussions through biomarkers. Throughout, we also shine a light on researchers discovering better, more effective ways of treating sports concussions through precision treatments, specifically methods that are more effective for minority athletes.

We are also proud to spotlight our National Science Advisory Committee by introducing its newest member, Dr. Donald Whiting. Our NSAC members are among the most well respected, top experts in concussion and traumatic brain injury research in the world.

Finally, there are two other critically important items we wish to spotlight.

The first is our generous donors and partners. In three short years, we have received support from hundreds of generous donors who believe in our mission and are helping every day to make it a reality. Meanwhile, we have also partnered with several leading foundations in Pittsburgh to support our grants. None of our work is possible without the generous support from our donors.

Second, and just as critically, we shine a light on the Pittsburgh region's reputation as a leader in brain injury research and treatment. More young, concussed athletes come to Pittsburgh for treatment than anywhere else. More brain injury research is conducted in Pittsburgh than almost anywhere else in the world. We have one of the largest brain banks in the country at the University of Pittsburgh. The Chuck Noll Foundation for Brain Injury Research is proud to play our own role in advancing research on sports related brain injuries right here in Pittsburgh.

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*Executive Director*

## Spotlight on RESEARCH



### ***What is a Brain Tsunami?***

Some call them depression waves. Dr. Pulkit Grover from Carnegie Mellon University calls them brain tsunamis, which are waves of neural silencing that slowly develop on the surface of the injured brain, causing further injuries.

With support from the Chuck Noll Foundation, Dr. Grover and his team developed a new technology, called goEEG, that can measure high resolution neural signals non-invasively for all individuals, including those with coarse and curly hair common in individuals of African descent. Doing so helps doctors better regulate treatment protocols.

### ***Detecting Brain Injuries Sooner***

Doctors are able to detect concussions much faster than before, which means the healing can start much sooner. The Chuck Noll Foundation has funded two research projects designed to identify concussions through biomarkers like sweat and saliva. Drs. Ava Puccio and Amelia Versace from the University of Pittsburgh are examining biomarkers in both peripheral blood and novel sweat patch technology for proteins that potentially build up and may cause neurodegeneration. Dr. Versace is currently collecting saliva for a pilot study in adolescents who have sustained a recent concussion. This will allow the researchers to examine the extent to which levels of saliva microRNAs in the early (i.e., acute, early subacute) phase of injury can predict the severity of short- and long-term symptomatology.

### ***Grantees in the News***

***And now, a spotlight on one of the first grants the Chuck Noll Foundation ever made:***

In our first year of grantmaking, the Foundation made a \$50,000 seed grant investment to the University of Pittsburgh and UPMC to support research on the effectiveness of a 4-week precision vestibular rehabilitation intervention compared with a behavioral management control intervention for adolescents with vestibular symptoms/impairment within 21 days of a concussion, conducted by Drs. Anthony Kontos and Michael “Micky” Collins. The results reported in the [Journal of Pediatrics](#) showed that the vestibular intervention group experienced greater clinical improvements in vestibular symptoms/impairment than controls across the 4-week intervention. This investment leveraged an additional \$4 million in grant money.



# SPOTLIGHT ON GRANTS

## *Approved Grants in 2020*

In 2020, the Chuck Noll Foundation for Brain Injury Research received an impressive number of research proposals. Maintaining our regional focus on early-stage research, the Chuck Noll Foundation selected four projects at research and health care institutions in southwestern Pennsylvania and West Virginia totaling \$329,000 in new grants.

### *Saliva Biomarkers to Predict Pediatric Concussion Subtypes*

University of Pittsburgh School of Medicine, Drs. Anthony Kontos, Christina Master, Michael Collins, Sarka Southern, and Kristy Arbogast for their project. Researchers at the University of Pittsburgh and Children's Hospital of Philadelphia aim to conduct a collaborative, multisite study of saliva biomarkers for domain-specific symptoms and impairment reflecting current concussion clinical subtypes among 200 pediatric patients within 7 days of a concussion.

### *Cerebral Spinal Fluid Serotonin is a Prognostic Biomarker for Traumatic Spinal Cord Injury*

University of Pittsburgh, Dr. Daryl Fields and co-investigators Drs. Justin Davanzo and David Okonkwo for their project to study preliminary data on the prognostic use of spinal CSF serotonin in understanding clinical outcomes in patients with spinal cord injuries.

### *Non-invasive Vagal Neurostimulation to Mitigate Traumatic Brain Injury-induced Acute Respiratory Distress and Acute Lung Injury*

Allegheny Health Network Neuroscience Institute, Drs. Boyle Cheng, Nick Giannoukakis, Edward Snell, and Tariq Cheema's study aims to assess the use of non-invasive vagus neurostimulation as a drug-free "bioelectronics medicine" in patients who experience moderate-to-severe traumatic brain injury.



### *The Spectrum of Phosphorylated Tau in People with No History of Contact Sport or Traumatic Brain Injury*

West Virginia University Rockefeller Neuroscience Institute's Dr. Rudolph "Rudy" Castellani's study is using sledge microtome, immunohistochemistry to look for CTE pathology in amateur athletes. This research seeks to explore causal relationships, if any, between traumatic brain injury and/or exposure to contact sport, and neurodegenerative disease specifically. In order to assess these relationships, the research explores tauopathy in brain tissue and survey amateur athletes for changes purported to be driven by repetitive head trauma.

# SPOTLIGHT ON OUR PEOPLE & FINANCIALS

## National Science Committee Members:



### **Dr. Julian E. Bailes, MD**

Chairman of the Department of Neurosurgery and Co-Director of the NorthShore Neurological Institute.



### **Dr. Regis W. Haid, Jr., M.D.**

Founding partner of Atlanta Brain and Spine Care, a Spinal Research Foundation Regional Center of Excellence. He is Medical Director of the Piedmont Spine Center and Neuroscience Service Line, Piedmont Hospital, Atlanta, Georgia.



### **Dr. Joseph C. Maroon**

Professor and Vice Chairman, Heindl Scholar in Neuroscience Department of Neurological Surgery University of Pittsburgh Medical Center



### **Dr. Shelly D. Timmons, MD, PhD, FACS, FAANS**

Chair of the Department of Neurological Surgery at Indiana University School of Medicine.



### **Dr. Donald Whiting, MD**

Chair of the Department of Neurological Surgery at Allegheny Health Network

## FY 2020 Financials

### 2020 Grants

New Grants Awarded: 4  
Grant Dollars Awarded: \$379,100

### Total Grants

Total Grants Awarded: 14  
Average Grant Size: \$119,066  
Clinical Research: \$1,157,500  
Basic Research: \$509,436  
Total Grants Paid to Date: \$1,434,518  
Total Dollars Awarded: \$1,666,936



# Chuck Noll Foundation

FOR BRAIN INJURY RESEARCH

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