

## FUNCTIONAL MEDICINE UPDATE

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### Neuroinflammation and Non-Drug Interventions

The highlight of this month's issue is an interview with Terry Wahls, MD, a practicing physician and medical professor diagnosed with multiple sclerosis in 2000. After declining for several years both physically and cognitively and ultimately finding herself confined to a wheelchair, Dr. Wahls undertook her own study of the medical literature, as well as of her personal biochemistry and the environmental and lifestyle factors influencing her MS symptoms and her overall health. More than a decade later, Dr. Wahls has regained much of her mobility, is running a clinical trial to measure success in others, and has authored a book that will be available in March 2014, *The Wahls Protocol: How I Beat Progressive MS Using Paleo Principles and Functional Medicine*.

Dr. Bland lays the groundwork for the interview with a discussion of neuroinflammation, and specifically the roles of oxidative stress and cellular energy balance in neurodegenerative conditions. He remarks on the paradox that oxidative stress is most prevalent in the nervous system at times of oxygen deprivation, and reminds all: "A person can live for literally weeks to months without eating; they can live for days to a week without taking in water; but they can live for only minutes without oxygen. It's the most critical nutrient of any of our nutrients in terms of its temporal effect on physiology, because we are oxidative organisms." Although the brain represents only three to four percent of the total weight of the human organism, it consumes 20 to 25 percent of blood sugar and a disproportionate amount of oxygen to power the oxidative chemistry in the neuron. REF #1-4

### Clinician/Researcher of the Month

**Terry Wahls, MD, MBA, FACP**

**Clinical Professor of Medicine**

**University of Iowa, College of Medicine**

**Iowa City, IA**

[www.terrywahlsmd.com](http://www.terrywahlsmd.com)

Dr. Terry Wahls is a fifth generation Iowan who grew up on a farm in Northeast Iowa. She earned a BA in fine arts from Drake University and received her medical degree from the University of Iowa. Dr. Wahls has been a clinical professor of medicine at the University of Iowa since 2000. In addition to teaching internal medicine residents, she also does clinical research and has published over 60 peer-reviewed scientific abstracts, posters, and papers.

In addition to being a doctor, Dr. Wahls is also a patient with a chronic, progressive disease. She was diagnosed with relapsing remitting multiple sclerosis in 2000, and by 2003 had transitioned to secondary

progressive multiple sclerosis. Wanting to forestall what she felt would become a descent into becoming bedridden, Dr. Wahls undertook her own research into the medical literature on multiple sclerosis, including re-learning information about biochemistry, cellular physiology, and immunology. Dr. Wahls became aware of the Institute for Functional Medicine in 2007 and attended their Neuroprotection training course. After synthesizing her study of the medical literature, her knowledge gained through her IFM training, and her self-experimentation with supplements and dietary approaches, Dr. Wahls redesigned her diet to emphasize nutrient density. She chose to follow a Hunter-Gatherer diet, or what is more popularly known as the Paleo diet. Combined with using neuromuscular electrical stimulation, Dr. Wahls credits her dietary changes with a reversal of her MS symptoms; within one year she was able to walk through the hospital using a cane and even completed an 18-mile bicycle tour.

Following her own success, Dr. Wahls began work on her book, *The Wahls Protocol: How I Beat Progressive MS Using Paleo Principles and Functional Medicine*. She has also been leading a clinical study at the University of Iowa to test her protocols in other MS patients. In 2011, Dr. Wahls gave a presentation at a locally organized TED conference—TEDxIowa City—titled “Minding Your Mitochondria.” The video of this presentation has been viewed more than a million times and can be seen [here](#). Dr. Wahls has established an active website that includes free resources and information, [www.terrywahls.com](http://www.terrywahls.com).

Dr. Bland invites Dr. Wahls to tell her story, both personally and clinically. They discuss the details of her diet plan, as well as the use of various supplements in supporting mitochondrial health and neuronal function. Together they discuss some recent research articles, and Dr. Wahls tells Dr. Bland about the preliminary results of the clinical trial she is leading with MS patients. REF #5-10

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### **December 2013 Bonus Interview**

**Michael Nova, MD, PhD**  
**Chief Medical Officer**  
**Pathway Genomics**  
**4045 Sorrento Valley Blvd**  
**San Diego, CA 92121**  
[www.pathway.com](http://www.pathway.com)

Dr. Michael Nova is currently the chief medical officer of Pathway Genomics. His scientific career began as a research associate at the Salk Institute in the laboratory of Nobel Laureate Roger Guillemin, where he studied the genetics and proteomics of Human Growth Factors.

In October 2013, Dr. Bland and Dr. Nova shared the stage at a conference about genetic testing that was sponsored by the United Natural Products Alliance. As a principal at Pathway Genomics, Dr. Nova is an expert in discussing the field of personal genetic testing and its applications for both clinicians and consumers. Since an announcement by the FDA in November of this year that the agency was moving to shut down genetic analysis by the Silicon Valley-based 23andMe, a distributor of popular home testing kits, both media coverage and controversy has exploded around this topic. To help navigate the controversy, Dr. Bland and Dr. Nova discuss the controversy, the field as a whole, and the benefits of genetic testing for improving patient care.

Dr. Bland recently recorded a video blog about this subject on behalf of the Personalized Lifestyle Medicine Institute. You can watch this video [here](#).

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