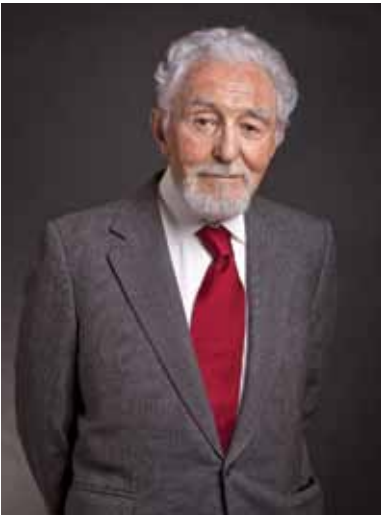


MAKE IT POSSIBLE



Life's blood flows through the hourglass;
the stopcock represents the alteration of aging
and disease as biomedical research progresses.



Norman Orentreich, MD, FACP
Founder & Co-Director



David S Orentreich, MD
Co-Director

MAKE IT POSSIBLE

Living a long life need not mean living with a diminished quality of life. The vision of our later years as plagued by cancer, diabetes, obesity, and other 'diseases of old age' isn't a certainty. Where once the medical and research communities sought primarily to prevent premature death from disease, they are now shifting focus to the increase of healthspan: making all of the years of your life healthy, productive, and enjoyable.

In over 50 years as part of the scientific community, OFAS has examined a variety of ways to reach this goal. Our recent research in rodents has shown the great promise of dietary methionine restriction (MR). By reducing, but not eliminating, the amount of one essential amino acid—methionine—in an individual's diet, that individual can experience not only longer life but also a lower risk of those diseases that we typically associate with advanced age. Having established these facts, we now seek to understand the molecular and cellular mechanisms underlying this dietary intervention so that we may tailor an MR diet to meet personal needs.

Over two millennia ago, Hippocrates said, 'Let food be thy medicine and medicine be thy food'. These words have never been more relevant than today. Proper food choices play a critical role in lowering the risk for diseases such as diabetes, obesity, and cardiovascular diseases. OFAS is combining this ancient wisdom with the latest research techniques to discover the precise means by which our dietary choices influence our health.

By investing in OFAS you support the research needed to **make it possible** for you and your family to extend your years of good health. 100% of your donation goes directly to the research.



Research staff meet twice each month to discuss current projects

DIABETES & OBESITY

We have shown in rodents that **MR reduces fat accumulation and can reduce overall body weight by up to 43%**. Coupled with concurrent improvements to insulin and glucose levels, there are significant improvements related to diabetes and obesity. We are now studying whether these benefits are due to changes related to methionine in DNA and, more importantly, if they are sustainable with advanced aging. In collaboration with Cornell University's Division of Nutritional Sciences in Ithaca, we are investigating if MR-induced changes in cellular histones also contribute to these benefits.

CANCER

MR may be an important strategy for inhibiting cancer growth, particularly in cancers that exhibit dependence on methionine for survival and proliferation. Several of our **current projects examine how MR alters gene expression controlling cell migration in breast cancer** and development. Future work will extend this research to examine changes in noncoding RNAs, further elucidating the mechanism of MR-induced longevity in the rodent model. We will continue to expand our research to examine MR's effect on other cancers.

METABOLISM

MR affects whole-body physiology, producing molecular changes in various organs. Collaborating with National Cheng Kung University in Taiwan, we found that MR increased bone elasticity in mice. We also found that MR does not affect heart function, despite its paradoxical increase of levels of homocysteine, a marker for greater cardiovascular disease risk. By determining adaptive responses to MR, we reveal cell types, pathways, and molecules that help to explain its lifespan-extending effects. Together, our studies suggest that **MR in humans will lead to improved healthspan and lowered risk for developing metabolic diseases.**

HUMAN STUDY

Unlike animal protein, vegetable protein tends to be low in methionine, and several observational studies of humans suggest that vegan diets confer benefits against obesity, hypertension, type-2 diabetes, and cardiovascular disease. There are no interventional studies confirming whether such benefits are due to vegetable protein in general or, more specifically, to low methionine. We are currently conducting a study with Penn State College of Medicine in Hershey investigating **whether MR provides beneficial effects in humans similar to those observed in laboratory animals.**



Dr Gene Ables works with a research technician in the Biology Lab



3D representation of tumor in breast



Food Prep facility for Human MR Study at Penn State

The Orentreich Foundation for the Advancement of Science, Inc., is dedicated to biomedical research to prevent, halt, or reverse those disorders that decrease the quality or length of life.

OFAS



Biomedical Research Station in Cold Spring-on-Hudson, NY: Staff enjoy state-of-the-art facilities housed in a 100-year-old building designed by noted architect Louis Colt Albro

Information for Donors

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