Longer Life Foundation

Groundbreaking Research Enabling Longer, Healthier Lives

20TH ANNIVERSARY

RGA

Washington University in St.Louis

ANNA MANNING
Chairman, Longer Life Foundation
President and CEO, Reinsurance Group of
America, Incorporated (RGA)

DANIEL D. ZIMMERMAN, M.D.
Managing Director, Longer Life Foundation
Senior Vice President, Chief Medical Director,
Global Support Team, RGA

DAVE RENGACHARY, M.D.
Deputy Managing Director, Longer Life Foundation
Senior Vice President and Chief Medical Director,
U.S. Mortality Markets, RGA

NEW INSIGHTS
FOR BETTER, LONGER LIVES

The Longer Life Foundation (LLF) partnership between global life reinsurance company Reinsurance Group of America, Incorporated (RGA) and Washington University School of Medicine in St. Louis (WUSM) supports and funds research on improving longevity and better health and wellness.

This unique not-for-profit partnership, now celebrating its 20th anniversary, was the brainchild of A. Greig Woodring, then President and Chief Executive Officer of RGA (now retired), and Dr. William A. Peck, then Dean of Washington University School of Medicine in St. Louis, Executive Vice Chancellor for Medical Affairs, and a member of RGA's Board of Directors. The idea of a foundation that would partner an academic institution with the insurance industry appealed to both executives, as funding medical research that helps people live longer and healthier lives benefits both public health and the insurance industry.

Over the 20 years since its inception, this remarkable foundation has grown and flourished, strengthening early-stage research capabilities and giving the life insurance industry a dedicated window into some of the most innovative discoveries on medical conditions and public health issues affecting mortality and morbidity. LLF-funded research has added substantially to the body of medical knowledge on longevity, genomics, obesity, older-age cognition, heart disease, and cancer. The discoveries have also added value for insurance medical directors, actuaries, underwriters, and claims managers, who can use the publicly available information to prognosticate disease progression more effectively. Public health has benefited as well, as LLF-funded discoveries are enabling more effective assessment, diagnosis, treatment, and even prevention of many common diseases and conditions.

By a broad range of measures Longer Life Foundation has been remarkably successful. To date, 108 research projects have been funded, many of which have advanced clinical knowledge in their respective fields. Several investigators, on the strength of their LLF-funded results, have been able to secure additional grants from other sources to continue their research in amounts of at least 10 times LLF's initial outlay. Furthermore, more than 125 articles by LLF-funded researchers have been published in peer-reviewed scientific journals and LLF researchers are frequently quoted in the consumer press.
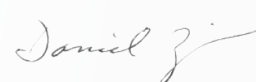
The Longer Life Foundation has also received excellent feedback from the insurance industry, including greater involvement and participation by client companies and corporate partners, and has added value by leading the industry to new products and giving insurance companies the ability to offer more insurance to more people.

Thank you for your continued interest and support of the Longer Life Foundation and its unique mission. We have a strong legacy and we pledge to continue to build on it and lead the Foundation to even greater success in the next 20 years and beyond.

Sincerely,

Anna Manning

**Daniel D. Zimmerman
M.D.**

**Dave Rengachary
M.D.**

FOUNDED
1998

GRANT FUNDING
1999-2018
$6.43 M

MISSION

To study factors that can aid in predicting mortality and morbidity of selected populations and to research modes and methods of improving health and longevity by analyzing the effects of advances in medicine and in public health practices.

GRANTS
1999-2018
108

AREAS OF INTEREST

- Mechanisms or interventions that prevent disease and promote longevity

- Prognosticators of disease progression, survival, and longevity

- The impact of common co-morbid conditions on outcomes in diseases that shorten lifespans

- Cancer screening and tumor markers

- Physical and cognitive/mental impairments in older adults and their effect on disease severity and survival

- Obesity and its impact on health

- Application of new technologies to questions related to the Longer Life Foundation mission

PEER-REVIEWED
JOURNAL ARTICLES
127

Samuel Klein, M.D.

William H. Danforth Professor of Medicine and Nutritional Science

Chief, Division of Geriatrics and Nutritional Science, Department of Medicine

Washington University School of Medicine in St. Louis (WUSM)

OBESITY

Complex Problem, Multidisciplinary Solutions

Obesity is a global chronic disease with major health implications for individuals and healthcare systems. Dr. Samuel Klein's research focuses on why adult obesity causes metabolic dysfunction (e.g., insulin resistance) and disease (e.g., diabetes and nonalcoholic fatty liver disease), ways to reduce these impacts, and how mitigation can affect outcomes.

His research includes the first randomized controlled trial to evaluate the effectiveness of the low-carb Atkins diet which found that it produces greater short-term weight loss than conventional diets, the positive metabolic effect of smaller weight loss (5%) in obese individuals, and that weight loss and exercise can benefit frail and obese older individuals.

In 2004, Longer Life Foundation support of Dr. Klein's work enabled the development of initiatives that have established Washington University in St. Louis as a comprehensive center for the study of obesity. Under Dr. Klein's leadership, these initiatives have grown: today he serves as Director of the university's Center for Human Nutrition, Director of The Nutrition Obesity Research Center, and Director of its Weight Management Program — initiatives which have spawned many research projects and clinical trials.

5% WEIGHT LOSS

can yield substantial metabolic benefits for Type 2 diabetics and heart disease patients.

THE NUMBER OF OBESE ELDERS

is rising fast due to greater longevity and are most vulnerable to age-related frailties.

FROM 1975-2016

- Worldwide obesity tripled.

- Childhood obesity rose more than six-fold.

Luigi Fontana, M.D., Ph.D.

Professor of Medicine, Director, Longevity Research Program
Washington University School of Medicine in St. Louis (WUSM)

Professor of Medicine and Nutritional
Sciences, University of Brescia, Italy

CALORIE RESTRICTION
A Possible Path to Longer, Healthier Lives

More exercise + fewer calories = a healthier life. It's an equation that has been heard so many times, it has practically become a mantra. For Dr. Luigi Fontana, one of the foremost researchers in the world on nutrition and longevity, Calorie Restriction (CR), which minimizes calories while maximizing nutritional value, is more than a novel framework to investigate the biology of aging: it is also a regimen which has the potential to slow cellular aging and damage, to reverse obesity, and to help slow the progression of diabetes, cardiovascular disease, and certain cancers.

Since the beginning of his involvement with the LLF-supported Longevity Research Program, which he co-led until Dr. John Holloszy's 2016 retirement, Dr. Fontana, who now directs the program, has focused his research on how nutrition — specifically CR — as well as physical exercise impact biomarkers for cell health and human longevity. His investigations have thus far determined that CR can increase life expectancy in animals and has the potential to slow certain aspects of human aging processes as well.

Understanding that not everyone can maintain strict adherence to diet regimens, Dr. Fontana is also currently researching "caloric restriction mimetics" — ways to stimulate the same key metabolic anti-aging pathways as CR or fasting CR without enduring severe dietary restrictions. He is also looking at how the times at which one eats can affect metabolic pathways and biomarkers.

CALORIE RESTRICTION + EXERCISE
Potential keys to slowing age-related cellular damage.

LIVING THE CRON LIFE

Calorie Restriction with Optimal Nutrition
1,900 Calories/Day
>100% Essential Nutrients

Followers have:

- fewer biomarkers for insulin resistance, arterial stiffness and inflammation

- less growth factors and hormones promoting cancer

- better cardiac function

Shin-ichiro Imai, M.D., Ph.D.
Professor, Department of Developmental Biology and Department of Medicine (Joint)

Washington University School of Medicine in St. Louis (WUSM)

NUTRICEUTICALS
Key to Slowing Aging

Stopping or reversing aging has long captured human imagination. Dr. Shin-ichiro Imai's research reaches to the cellular and organismal levels to identify the mechanisms that control healthspan/lifespan.

In 1999, Dr. Imai and a collaborator made a critical discovery regarding the longevity protein SIR2 and its mammalian counterpart. They proposed sirtuins as a possible mechanism that connects aging/longevity and energy metabolism. This discovery opened a new field of longevity research.

Dr. Imai's LLF-funded research, "Diagnostic and Therapeutic Applications of a Novel Plasma Metabolite, Nicotinamide Mononucleotide (NMN), for Age-Associated Metabolic Complications in Humans," demonstrated that supplementing healthy mice with NMN, a naturally-occurring niacin derivative, reduced the effects of signs of aging such as gradual weight gain, loss of insulin sensitivity and decline in physical activity. This finding generated substantial interest in nutriceutical-driven anti-aging approaches using NMN and other metabolic chemicals.

Human clinical trials of NMNs are now under way at Keio University in Tokyo and at WUSM. Dr. Imai's lab is continuing to investigate biological mechanisms of aging and longevity as well as the biochemistry of NMN and NAMPT, the enzyme that produces NMN, in a quest to make later human lives as healthy and productive as possible.

UNLOCKING SECRETS OF AGING
Dr. Imai's work is uncovering more effective therapies for age-related diabetes and other functions.
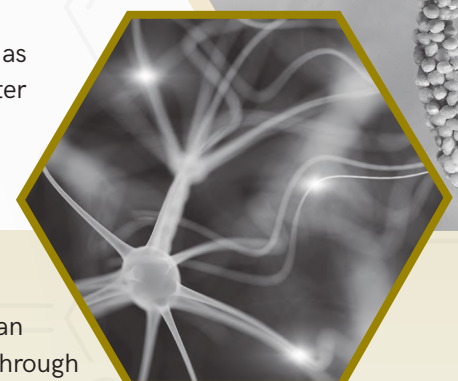
SHAPING THE FIELD

Dr. Imai's landmark sirtuins paper, "Transcriptional Silencing and Longevity Protein SIR2 is an NAD-dependent histone deacetylase," published in *Nature* in 2000, was cited 2,796 times through year-end 2017.

# of citations

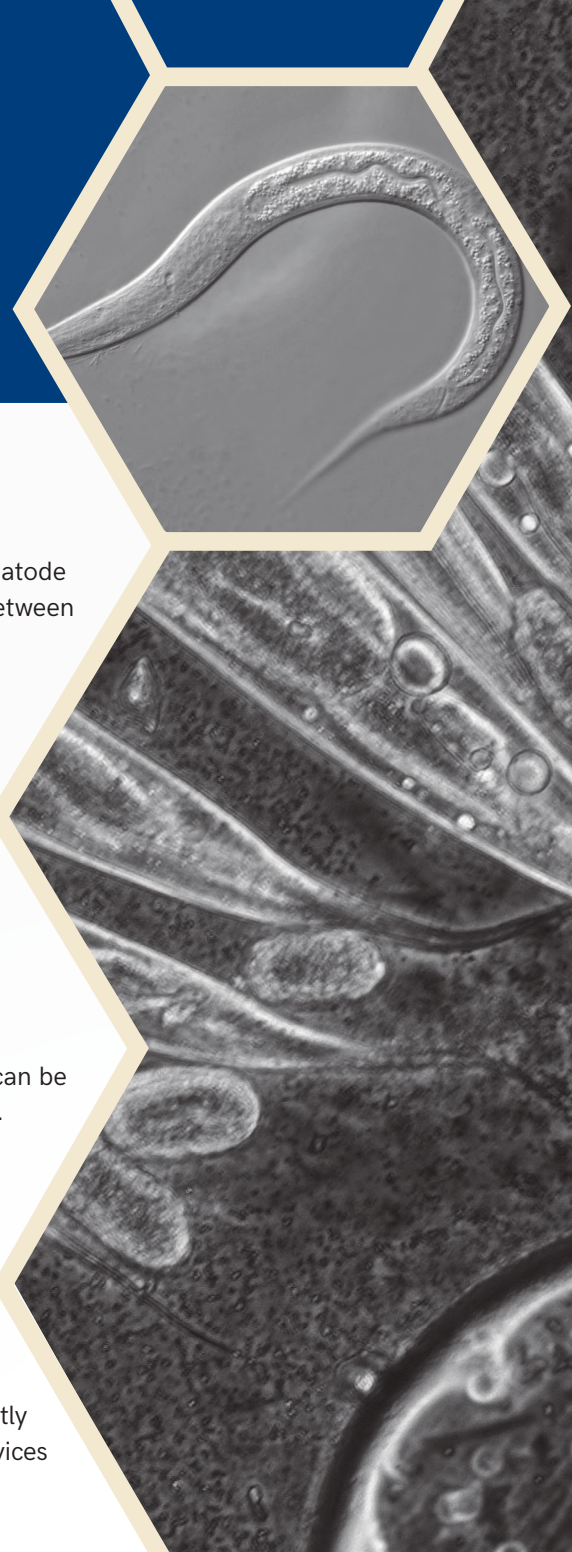| Year	Citations
2000	57
2001	98
2002	123
2003	112
2004	111
2005	116
2006	134
2007	133
2008	160
2009	160
2010	166
2011	200
2012	202
2013	216
2014	182
2015	195
2016	220
2017	180

Zachary Pincus, Ph.D.

Assistant Professor, Developmental Biology and Genetics

Washington University School of Medicine in St. Louis (WUSM)

LONG LIFE, GOOD HEALTH

The Genetic Connection

Zachary Pincus, Ph.D., has long been researching the physiology of aging in the nematode roundworm *Caenorhabditis elegans (C. elegans),* both to address the relationship between long life and good health and to identify the genes whose activity determines future lifespan and/or health.

In his LLF-funded study, "Early Adulthood Predictors of Mortality and Morbidity," Dr. Pincus and his lab sought to determine whether their research on *C. elegans* could translate to humans, providing a better understanding of aging over time. Specifically, they compared lifespan to long-term trends of clinical data on blood pressure, blood glucose, weight, and body mass index for 1,349 participants from the Framingham Heart Study.

Dr. Pincus found that approximately 10% of the variability in lifespan between individuals can be predicted while those individuals are still in their 30s, based on the results of those clinical measures at any one time. Moreover, incorporating clinical history of these data over time yields a better prediction of future lifespan or risk of death than simply using their present value. Summing over time to measure total past "exposure" to high blood glucose, high blood pressure, or obesity yields the strongest predictor of future lifespan.

ABOUT 10%

of human lifespan variability can be predicted before age 40.

The insurance medicine correlate of Dr. Pincus's work is that the wealth of data currently becoming available from electronic health records and being collected by wearable devices could feed into predictive models and dynamic underwriting frameworks.

EVERY WORM IS UNIQUE

By studying the lifespans of populations of individual *C. elegans,* Dr. Pincus' lab seeks to discover factors that determine:

- average lifespans and health
- markers and determinants of robustness and frailty
- the varied trajectories of aging

Jason D. Weber, Ph.D.

Professor, Department of Medicine, Department of Cell Biology and Physiology

Co-leader, Breast Cancer Research Program

Co-Leader, Molecular Cell Biology Graduate Program

Director Weber Lab, ICCE Institute

Washington University School of Medicine in St. Louis (WUSM)

BREAST CANCER

Early Diagnosis, Better Prognosis

Early-stage identification of breast cancer cells most likely to metastasize is crucial for clinicians, researchers and patients. As these cells are the principal causes of mortality in breast cancer patients, prevention and/or treatment of these cells may be key to improving survival rates.

One of the main goals of Dr. Weber's current work is understanding the genetic pathways that affect how breast cancer cells regulate their growth rates, and then relating these processes to the growing knowledge of human cancer progression. A preliminary finding, that activation of a common anti-viral signaling pathway may drive tumorigenesis and breast cancer cell metastasis, led into how tumor cells use this pathway to metastasize and how this process can be diverted or halted.

Dr. Weber's LLF-funded investigation, "Using Anti-Viral Biomarkers to Predict Breast Cancer Aggressiveness," successfully uncovered the roles the aberrant ADAR1/RIG-I/MDA-5 pathway plays in driving aggressive growth and metastasis of human breast cancer cells, both *in vitro* and *in vivo*. The pathway's utility as a biomarker was conclusively demonstrated in early-stage cancer, with expression of ADAR1/RIG-I being shown to produce aggressive triple-negative breast cancer in women. Understanding this pathway has huge potential as a point of therapeutic intervention.

RELATIVE SURVIVAL

5-year relative breast cancer survival rates depends on the stage at diagnosis:

- Nearly 100% for Stage 0 or 1
- 93% for Stage II
- 72% for Stage III
- 22% for metastatic or Stage IV

MODEL OF THE ONCOGENIC PATHWAY
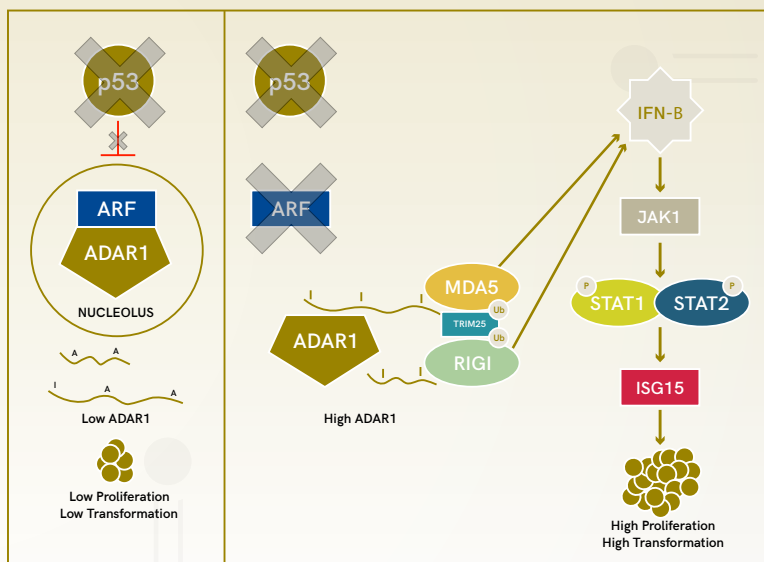
Stephen T. Oh, M.D., Ph.D.
Assistant Professor, Division of Hematology
Washington University School of Medicine in St. Louis (WUSM)

UNDERSTANDING POLYCYTHEMIA VERA

Improving Diagnostics, Treatment

Stephen T. Oh, M.D., Ph.D.'s research group is focused on the pathogenesis of myeloproliferative neoplasms (MPNs), with the goal of translating that work into improved therapies for blood cancer patients.

Myeloproliferative neoplasms (i.e., blood cancers) are a fast-expanding area of research. The discovery a decade ago of the somatic V617F mutation in the JAK2 gene, which is present in approximately 96% of people with the MPN polycythemia vera (PV), an incurable but manageable blood cancer wherein the body produces too many blood cells or platelets, opened up a vast new vista to explore, improving the understanding and treatment of this disease.

LLF funding for Dr. Oh's research, "Functional Dissection of Age-Related Differences in Disease Phenotype in Polycythemia Vera," broke important ground in the understanding of driver mutations in PV, particularly strengthening the understanding of the distinctly different mutational profiles of younger (<45) versus older (>65) PV patients.

Dr. Oh's work also has powerful implications for insurance medicine, as a greater understanding of the genetic mechanisms underlying MPNs will enable better treatment and greater patient longevity. In addition, as medicine's understanding matures of how gene mutations, age differences, and other factors can impact PV, tailored therapies might be enabled for specific patients and better outcomes achieved.

MORE THAN 1 MILLION
U.S. adults currently live with a blood cancer.

ABOUT EVERY 10 MINUTES

someone in the U.S. dies of a blood cancer.

Matthew A. Ciorba, M.D.
Associate Professor of Medicine

Director, Inflammatory Bowel Diseases Program

Director of Research, IBD Program

Associate Director, GI Fellowship Program
and T32 Research

Washington University School of Medicine
in St. Louis (WUSM)

PROBIOTICS

Enhancing Gastrointestinal Therapies

For patients undergoing curative chemoradiation treatments for colon and other abdominal cancers, the ability to keep food down and control their bowels during their therapies so that they will be healthy enough to recover can be a major challenge.

Dr. Matthew A. Ciorba and his research lab have been actively investigating how effectively probiotics (i.e., good bacteria) can ease or prevent chemoradiation's more serious gastrointestinal side effects. Dr. Ciorba's LLF-funded research, "A Randomized Control Trial of the Probiotic LGG for Prevention of Side Effects in Patients Undergoing Chemoradiation for Gastrointestinal Cancer," successfully showed that the probiotic strain LGG (lactobacillus rhamnosus GG) had clear potential to reduce gastrointestinal toxicity.

Work currently under way in his lab, supported by the National Institutes of Health, is aimed at optimizing the probiotic's effectiveness by determining which aspect is responsible for its efficacy.

Dr. Ciorba and his lab also engage actively with WUSM and Siteman Cancer Center clinical programs to foster bench-to-bedside collaboration and discovery, with the goal of making discoveries that will enhance quality of life for individuals affected by gastrointestinal cancers and inflammation.

50% TO 80%
of treated cancer patients experience therapy-induced diarrhea.

IN 1985

the probiotic "good bug," Lactobacillus GG (LGG), was isolated, and is today the world's best studied and most extensively documented probiotic strain.

LONGER LIFE FOUNDATION GRANTS

1999

Jay F. Piccirillo, M.D. F.A.C.S.
Cancer Patient-Specific Prognostic Information

2000

Nancy L. Morrow-Howell, Ph.D.
Productive Engagement in Older Adults: Effects on Well-Being and Mortality

Thomas E. Burroughs, Ph.D. and Radhika Desikan, Ph.D.
Health-Related Quality of Life: A Strategy for Improving Physician-Patient Communication and Patient Outcomes

Kathleen L. Tarr, M.D. Ph.D.
Enhanced Diabetes Self-Management Using Peer Health Coaches

Mario Schootman, Ph.D.
Breast Cancer Screening and Disability

2001

Brian F. Gage, M.D. M.Sc. and Amy Doggette Waterman, Ph.D.
Risk Adjustment in the Medicare Atrial Fibrillation Population

Rumi Kato Price, Ph.D. M.P.E.
Data Mining Approaches to Suicide and Suicidal Behaviors

Michael A. Province, Ph.D.
Disease Comorbidity and Survival in the NHLBI Family Heart Study

2002

James E. Galvin, M.D.
Identification of People at Risk for Dementia (mini-grant)

Tiffany I. Tibbs, Ph.D., Teresa L. Deshields, Ph.D. and Laura Bayer, Ph.D.
Long-Term Adjustment and Quality of Life Among Breast Cancer Survivors Following Treatment (mini-grant)

Dayna S. Early, M.D.
Physician-Related Barriers to Colorectal Cancer Screening in Missouri (mini-grant)

Lawrence M. Lewis, M.D.
Abdominal Pain Evaluation Tool (APET) Pilot Project

Donna B. Jeffe, Ph.D.
Psychosocial Factors Associated with Delay in Diagnosis Among Locally Advanced Breast Cancer Patients

2003

Edwin S. Fisher, Ph.D.
International Collaborative Study of Social Support (1st Year)

James E. Galvin, M.D.
The Key Features Inventory: Early Diagnosis of Dementia to Improve Quality of Life

S. Kerry Kornfeld, M.D. Ph.D.
Pharmacologic Compounds that Extend *C. elegans* Life Span

Susan S. Deusinger, Ph.D. and Susan B. Racette, Ph.D.
Influence of Exercise and Dietary Patterns on Weight Gain Throughout College (mini-grant)

Roger D. Yusen, M.D. M.P.H.
Predictors of Survival in Patients with Primary Pulmonary Hypertension Wait-Listed for Lung Transplantation (mini-grant)

2004

Jane Garbutt, M.B. Ch.B.
Food for Thought: An Internet-Based Treatment Program for Childhood Obesity

Kenneth S. Polonsky, M.D.
Ginseng in Prevention and Treatment of Diabetes

Samuel Klein, M.D.
Development of Multidisciplinary Approach to Obesity

Yan Yan, M.D. M.H.S. Ph.D., and Jay Piccirillo, M.D. F.A.C.S
Projecting Individualized Cancer-Specific Death Risks and Other Competing Cause Death Risks Among Elderly Men Diagnosed with Prostate Cancer

Dennis T. Villareal, M.D.
Inflammatory Cytokines and Physical Frailty in Obese Elderly Subjects (mini-grant)

Denise E. Wilfley, Ph.D.
Early Intervention of Eating- and Weight-Related Problems Via the Internet in Overweight Adolescents: A Randomized Controlled Trial (mini-grant)

2005

Mark S. Walker, Ph.D.
Mental Health History and Survival Among Breast Cancer Patients

S. Kerry Kornfeld, M.D. Ph.D.
Regulation of Longevity by Anticonvulsant Medicines

Nancy I. Morrow-Howell, Ph.D.
Activity Portfolios: Engagement and Health in Later Life

Reina C. Villareal, M.D.
The Effect of the C4887A Polymorphism of the CYP1A1 Gene on Cognitive Function

Dorothy Edwards, Ph.D.
Collection of Preliminary Data on the Interaction of Social Engagement and Stress in Older Adults (mini-grant)

Denise E. Wilfley, Ph.D.
Effects of Allocation of Attention on Habituation to Olfactory and Visual Food Stimuli in Obese Children (mini-grant)

Susan L. Stark, Ph.D.
Environmental Features that Influence Social Engagement of Older Adults Residing in Congregate Living Facilities (mini-grant)

2006
Luigi Fontana, M.D. Ph.D.
Effects of Calorie Restriction on Markers of Aging and Longevity (1st Year)

Julie A. Margenthaler, M.D.
Minimally Invasive Staging of the Axilla in Breast Cancer

Anthony J. Muslin, M.D.
Dependence of Longevity and Health on TRB3 Genotype (1st Year)

Edwin B. Fisher, Ph.D.
International Collaborative Study of Social Support (2nd Year)

2007
David B. Carr, M.D.
Fitness-to-Drive in Neurologically Impaired Older Adults

Luigi Fontana, M.D., Ph.D.
Effects of Calorie Restriction on Markers of Aging and Longevity (2nd Year)

Tusar K. Giri, M.D. Ph.D. and Brian F. Gage, M.D. M.Sc.
Undercarboxylated Matrix Gla Protein (ucMGP): A Novel Biomarker to Predict Coronary Artery Calcification

Anthony J. Muslin, M.D.
Dependence of Longevity and Health on TRB3 Genotype (2nd Year)

Jay F. Piccirillo, M.D. F.A.C.S.
Comprehensive Assessment of Senior Adult Cancer Patients

2008
Longevity Research Program: John O. Holloszy, M.D. and Luigi Fontana, M.D. Ph.D.
Effect of Calorie Restriction on Age-Related Arterial Dysfunction

David B. Carr, M.D.
Fitness-to-Drive in Older Adults with Stroke (2nd Year)

Shin-ichiro Imai, M.D. Ph.D.
Diagnostic and Therapeutic Applications of a Novel Plasma Metabolite, Nicotinamide Mononucleotide (NMN), for Age-Associated Metabolic Complications in Humans (1st Year)

John J. Lehman, M.D.
Modulation of Aging and Calorie Restriction Benefits by PGC-1α

Bettina Mittendorfer, Ph.D.
Omega-3 Fatty Acids for the Treatment of the Anabolic Resistance of Skeletal Muscle in Older Adults

Ravi Rasalingam, M.D.
Identification of Significant Coronary Artery Disease at Rest with Integrated Backscatter Imaging and Myocardial Strain (1st Year)

2009
Longevity Research Program: John O. Holloszy, M.D., and Luigi Fontana, M.D. Ph.D.
Effect of Calorie Restriction on Age-Related Arterial Dysfunction (2nd Year)

Marco Colonna, M.D.
Does Caloric Restriction Slow Aging of the Human Immune System? (1st Year)

Shin-Ichiro Imai, M.D. Ph.D.
Diagnostic and Therapeutic Applications of a Novel Plasma Metabolite, Nicotinamide Mononucleotide (NMN), for Age-Associated Metabolic Complications in Humans (2nd Year)

Jeremiah Morrissey, Ph.D. and Evan D. Kharasch, M.D. Ph.D.
Novel Proteins as Urinary Biomarkers of Renal Cell Carcinoma

Ravi Rasalingam, M.D.
Novel Methods for Detection of Coronary Artery Disease in Diabetic Patients (2nd Year)

Xiaowei Wang, Ph.D.
MicroRNA Expression Signatures to Predict Cervical Cancer Outcome

2010
Longevity Research Program: John O. Holloszy, M.D. and Luigi Fontana, M.D. Ph.D.
Does a Low-Protein Diet Slow Aging, Protect Against Cancer and Inhibit Prostate Cancer Growth? (1st Year)

LONGER LIFE FOUNDATION GRANTS

D. Craig Allred, M.D.
Predicting Prognosis in Invasive Breast Cancer by Genetic Instability

Marco Colonna, M.D.
Does Caloric Restriction Slow Aging of the Human Immune System? (2nd Year)

Sharon Cresci, M.D.
Determination of the Genetic Contribution to Glycemic Control and CAD Outcomes in Patients with DM2 and CAD (1st Year)

Elisa Fabbrini, M.D. Ph.D.
Assessment of Potential Novel Immune Biomarkers to Identify Obese Persons at Increased Risk for Cardiometabolic Disease (1st Year)

Bettina Mittendorfer, Ph.D.
Calorie Restriction and Metabolic Health in Older Adults

2011

Longevity Research Program: John O. Holloszy, M.D. and Luigi Fontana, M.D. Ph.D.
Does a Low-Protein Diet Slow Aging, Protect Against Cancer and Inhibit Prostate Cancer Growth? (2nd Year)

Sharon Cresci, M.D.
Determination of the Genetic Contribution to Glycemic Control and CAD Outcomes in Patients with DM2 and CAD (2nd Year)

Elisa Fabbrini, M.D., Ph.D.
Assessment of Potential Novel Immune Biomarkers to Identify Obese Persons at Risk for Cardiometabolic Disease (2nd Year)

Latisha Love-Gregory, Ph.D.
CD36 Variants and Stroke Risk Factors (1st Year)

Catherine Roe, Ph.D.
Improving Presymptomatic Detection of Impending Alzheimer's Disease

2012

Longevity Research Program: John O. Holloszy, M.D. and Luigi Fontana, M.D., Ph.D.
Long-Term Health Benefits of Calorie Restriction; Does a Low-Protein Diet Slow Aging, Protect Against Cancer and Inhibit Prostate Cancer Growth? (3rd Year)

Matthew A. Ciorba, M.D.
A Randomized Control Trial of the Probiotic LGG for the Prevention of Side Effects in Patients Undergoing Chemoradiation for Gastrointestinal Cancer (1st Year)

Latisha Love-Gregory, Ph.D.
CD36 Variants and Stroke Risk Factors (2nd Year)

Laura Piccio, M.D. Ph.D.
A Pilot Study of Adipokines and Caloric Restriction in Patients with Multiple Sclerosis

Catherine Roe, Ph.D.
Use of Alzheimer's Disease Biomarkers to Predict Longevity and Disability

Xiong Su, Ph.D.
Monomethyl Branched Chain Fatty Acids (mmBCFAs) as Potential Biomarkers for Risk of Obesity-Associated Metabolic Disease

Shelby Sullivan, M.D.
Effects of Increased Dietary High-Fructose Corn Syrup on Intrahepatic Triglyceride Content and Lipoprotein Kinetics in People with a Non-Alcoholic Fatty Liver Disease

Conrad Weihl, M.D. Ph.D.
Is Aging and its Associated Comorbidities Due to Diminished Autophagy?

Mary Kaye Wojczynski, Ph.D.
Survival, Disease Co-morbidity, and Assessment of Novel and Genetic Variants for Risk Prediction in the NHLBI Family Heart Study (FamHS)

2013

Longevity Research Program: John O. Holloszy, M.D. and Luigi Fontana, M.D., Ph.D.
Long-Term Health Benefits of Calorie Restriction: Does a Low-Protein Diet Slow Aging, Protect Against Cancer and Inhibit Prostate Cancer Growth? (4th Year)

Amy E. Cyr, M.D.
A Prospective, Randomized Trial of Sentinel Lymph Node Biopsy Versus No Additional Staging in Patients with Clinical T1-2 N0 M0 Invasive Breast Cancer and Negative Axillary Ultrasound (1st Year)

Jeffrey Henderson, M.D. Ph.D.
Discovery of Urinary Tract Infection Biomarkers to Predict Longevity in the Elderly (1st Year)

Peter Nagele, M.D. M.Sc.
Long-Term Prognostic Values of Novel Cardiac Biomarkers After Cardiac Stress Echocardiography (Testing)

Dominic Reeds, M.D.
Effects of Dietary Macronutrient Composition on Glycemic Control and Cardiovascular Risk Factors (1st Year)

2014

Longevity Research Program: John O. Holloszy, M.D. and Luigi Fontana, M.D., Ph.D.
Long-Term Benefits of Caloric Restriction: Does Intermittent Fasting Mimic the Anti-Aging Benefits of Calorie Restriction in Humans? (1st Year)

Amy E. Cyr, M.D.

A Prospective, Randomized Trial of Sentinel Lymph Node Biopsy Versus No Additional Staging in Patients with Clinical T1-2 N0 M0 Invasive Breast Cancer and Negative Axillary Ultrasound (2nd Year)

Jeffrey Henderson, M.D. Ph.D.

Discovery of Urinary Tract Infection Biomarkers to Predict Longevity in the Elderly (2nd Year)

Dominic Reeds, M.D.

Effects of Dietary Macronutrient Composition on Glycemic Control and Cardiovascular Risk Factors (2nd Year)

Yiing Lin, M.D., Ph.D.

Plasma DNA Mutations as Biomarkers of Hepatocellular Carcinoma (1st Year)

Jean E. Schaffer, M.D.

snoRNAs and Long-Term Risk of Diabetic Complications (1st Year)

2015

Longevity Research Program: John O. Holloszy, M.D. and Luigi Fontana, M.D. Ph.D.

Long-Term Health Benefits of Calorie Restriction: Does Intermittent Fasting Mimic the Anti-Aging Benefits of Calorie Restriction in Humans? (2nd Year)

Stephen T. Oh, M.D. Ph.D.

Functional Dissection of Age-Related Differences in Disease Phenotype in Polycythemia Vera

Jason D. Weber, Ph.D.

Using Anti-Viral Biomarkers to Predict Breast Cancer Aggressiveness (1st Year)

Jun Yoshino, M.D. Ph.D.

Identification of Novel Blood Biomarkers and Mediators of Obesity-Induced Insulin Resistance (1st Year)

Zachary Pincus, Ph.D.

Early-Adulthood Predictors of Mortality and Morbidity

Jean E. Schaffer, M.D.

snoRNAs and Long-Term Risk of Diabetic Complications (2nd Year)

Matthew A. Ciorba, M.D.

A Randomized Control Trial of the Probiotic LGG for the Prevention of Side Effects in Patients Undergoing Chemoradiation for Gastrointestinal Cancer (2nd Year)

Adrianus Boon, Ph.D.

Identification of Human Genetic Variants for High Risk of Severe Influenza Disease (1st Year)

2016

Longevity Research Program:
Luigi Fontana, M.D. Ph.D.

Metabolic and Molecular Effects of Intermittent Fasting and Mediterranean Diet

Jason D. Weber, Ph.D.

Using Anti-Viral Biomarkers to Predict Breast Cancer Aggressiveness (2nd Year)

Jun Yoshino, M.D. Ph.D.

Identification of Novel Blood Biomarkers and Mediators of Obesity-Induced Insulin Resistance (2nd Year)

Yiing Lin, M.D., Ph.D.

Plasma DNA Mutations as Biomarkers of Hepatocellular Carcinoma (2nd Year)

Adrianus Boon, Ph.D.

Identification of Human Genetic Variants for High Risk of Severe Influenza Disease (2nd Year)

Thomas J. Baranski, M.D. Ph.D.

Citrullline as Potential Insulin Sensitizer and Longevity Factor

Luis Batista, Ph.D.

The Impact of Progressive Telomere Shortening on Mitochondria Function and Energy Metabolism (1st Year)

Kory Lavine, M.D. Ph.D.

Age-Specific Mechanisms Drive the Pathogenesis of Human Heart Failure (1st Year)

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Metabolic and Molecular Effects of Prolonged Fasting

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Age-Specific Mechanisms Drive the Pathogenesis of Human Heart Failure (2nd Year)

A. Joseph Bloom, Ph.D.

Nicotine N-Oxidation, a Novel Target for Smoking Cessation

Brian Gordon, Ph.D.

Examining the Contribution of Diabetes and Obesity to Alzheimer's Disease

Jennie Kwon, D.O.dale

The Trajectory of the Fecal Microbiome in Patients with Multidrug-Resistant Urinary Tract Infections (UTIs)

Dmitri Samovski, Ph.D.

Role of CD36 in the Obesity-Associated Fatty Liver Disease and Hepatic Insulin Resistance

Faye Womer, M.D.

The Structural and Functional Brain Network in Early- and Later-Onset Depressive Disorder

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