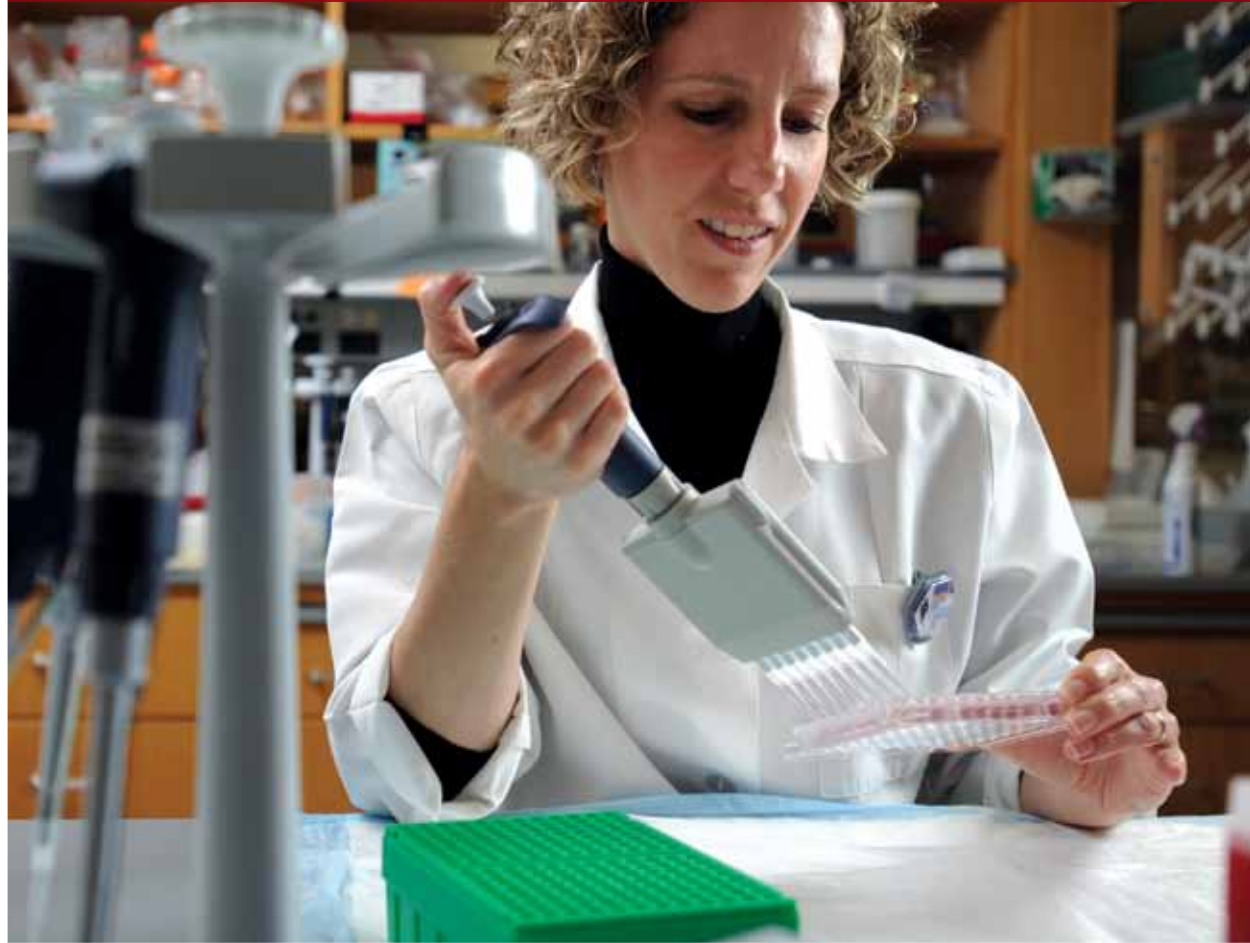




American Diabetes Association®

ResearchFoundation™
Science. Progress. Hope.

Breakthrough Highlights



INSIDE:

- Message from the Chair to support our investigators
- An exciting collection of five top research projects
- Learn how to *Leave a Legacy* to the Association

2010 Breakthrough Highlights

Dear Friends of the Research Foundation,

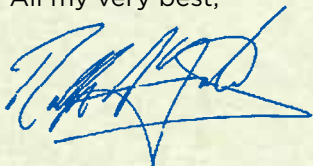
So often we are cynical when we view scientific “advances,” either because the news is too good to be true, or because the news is not good enough. As a medical professional with a personal investment—both emotional and financial—in the status of diabetes research, I appreciate this sentiment more than I care to admit.

Today, on behalf of the American Diabetes Association, I ask you to be optimistic. Not because we have cured diabetes, but because I know we will. Our Research Foundation-funded researchers understand that, as humans, our bodies are complicated, miraculous and must have millions of minute functions occurring accurately to perform at 100 percent. They are joined together to solve the problems, like diabetes, that take place within these vastly complex units.

Bit by bit, function by function, we are closer to our goal to mapping the intricacies of diabetes in the human body. As you read these innovative “Breakthrough Highlights,” I ask you to see the positive moves forward that come with making small-yet-significant steps to understand such an incalculably difficult disease.

Each breakthrough that took place in 2010 is possible because of the generosity of our donors who contributed \$33.5 million to our Research Program. This philanthropy is directed toward a cause with the trust that our researchers will solve diabetes. What could be more hopeful than that?

All my very best,



Ralph Yates, DO
Chair, Research Foundation

On the cover: Association-funded researchers Alyssa Hasty, PhD, and Samuel Dagogo-Jack, MD.

Paresh Dandona, MD, PhD

KaleidaHealth, Inc.,
Buffalo, New York

*Clinical/Translational
Research Award*



Plant Compound Shows Inflammation and Free Radical Suppression in Humans

A plant extract containing resveratrol, which is known for its anti-inflammatory and antioxidant properties in yeast and rodents, has now also been shown to suppress inflammation in humans, according to Dr. Dandona's results from his study.

In this first prospective human trial of the extract, Dr. Dandona and fellow endocrinologists noted in the July issue of the *Journal of Clinical Endocrinology & Metabolism* that resveratrol, which is commonly sold as a nutritional supplement, suppressed free radicals and reactive oxygen species, which are unstable molecules that can cause oxidative stress, promote inflammation and damage blood vessel lining.

In study participants who had taken resveratrol, blood samples showed an increase in factors that serve as markers of increased inflammation. Increased inflammation may contribute to the development of the vascular complications associated with diabetes. Higher dosages of resveratrol are now being tested to establish the efficacy of this compound on reducing inflammation.

Sandeep Dhindsa, MD

University at Buffalo of the
State University of New York,
Buffalo, New York

Junior Faculty Award



Obesity in Males is Linked to Low Testosterone Levels

As written in May's issue of *Diabetes Care*, endocrinologists, including researcher Dr. Dhindsa, demonstrated that obesity, which is commonly associated with diabetes, is also associated with low testosterone levels in men. 40 percent of the obese men tested in the Hypogonadism in Males (HIM) trial, which was supported by the National Institutes of Health, had lower testosterone levels. The statistic rose to 50 percent among obese men with diabetes.

This investigation is the largest clinical study examining the relationship between obesity and low testosterone, and the prevalence of low testosterone with obesity and

diabetes—both separately and together. Dr. Dhindsa believes that, due to the increasing prevalence of diabetes in younger populations, an additional study should be focused on a concentrated population of males during their prime reproductive years.

Erica Gunderson, PhD

Kaiser Permanente Division
of Research, Oakland, California

*Clinical/Translational
Research Award*

Pregnancy Weight Gain May Lead to a Risk of Gestational Diabetes

Previous research has shown that weight gain prior to pregnancy and being overweight or obese at the start of pregnancy are risk factors for gestational diabetes. Dr. Gunderson explained in the February issue of *Obstetrics and Gynecology*, that her study is among the first to support a direct link between pregnancy weight gain and gestational diabetes risk.

The three-year study focused on 1,145 pregnant women from an ethnically diverse population, 345 of whom had gestational diabetes. The study found that women with the highest rate of weight gain during their pregnancy were at an increased risk of developing gestational diabetes. The association between rate of pregnancy weight gain and gestational diabetes risk was more pronounced among overweight and non-white women, and most strongly associated with weight gain in the first three months of pregnancy.

It is likely that rapid weight gain in pre- and early-pregnancy results in an increase of insulin resistance, causing beta cells, which control the level of glucose in the body, to become less effective in maintaining glucose control.

Kevan Herold, MD

Yale University,
New Haven, Connecticut

*ADA-Merck Clinical/Translational
Postdoctoral Fellowship Award*

New Details of PhysioLab Platform Released

The June journal of *Clinical and Experimental Immunology* announced the details of the type 1 diabetes PhysioLab® platform, a physiologically-based mathematical model of pathogenesis in the non-obese diabetic mouse. In order to more successfully advance



drug candidates to human clinical trials in type 1 diabetes, Entelos, a life sciences technology company, has created and verified a model of type 1 diabetes to quickly streamline preclinical research. The model is based on a number of published population studies.

Dr. Herold and his fellow researchers claim that this form of research via the PhysioLab platform rapidly provides investigators with testable predictions and recommendations.

Christopher Newgard, PhD

Duke University,
Durham, North Carolina

*ADA-Takeda Pharmaceuticals
Beta Cell Postdoctoral
Fellowship Award*

Taste and Smell: Alterations in our Response to a Meal May Be a Risk Factor

Dr. Newgard and his colleagues have found that changes in the body's response to the taste or smell of food may be a contributing factor for type 2 diabetes. As noted in the March issue of *Science Signaling*, investigators have identified the specific mechanism in humans and in mice that triggers salivation and insulin production in response to expectation.

In anticipation of a meal, the parasympathetic nervous system activates these normal responses. The study demonstrated that people who have an alteration in insulin secretion mechanism through the parasympathetic nervous system as a result of a novel mutation in the gene encoding ankyrin-B, also have an increased risk of type 2 diabetes.

This particular mutation may play a role in a segment of adults with diabetes and may lead to personalized treatment strategies to help this specific group. Results from the study imply that there are many genes yet to be identified that are type 2 diabetes risk factors.

If you would like more information on one of the above projects, or would like to support another Association-funded project, please call 1-888-700-7029 or email giving@diabetes.org.



For years, donors have included the American Diabetes Association and its Research Foundation in their estate plans, allowing the organization to fund research aimed at preventing, treating and curing diabetes. Their legacies have helped people with diabetes live longer and healthier lives. We encourage you to also leave a legacy.

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For more information, please call **1-888-700-7029** or email us at **Giving@diabetes.org**.

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