



# Royal College of Physicians

## **Professor Frank Sacks Biography**

Dr. Sacks is Professor of Cardiovascular Disease Prevention in the Nutrition Department of Harvard Chan School of Public Health; Professor of Genetics & Complexes Diseases; and Professor of Medicine at Harvard Medical School. Dr. Sacks led the panel designing the DASH Study, which crafted a healthful eating pattern and demonstrated that it lowered blood pressure more effectively than any previous dietary treatment. Subsequently Dr. Sacks led the DASH-Sodium study, which determined the dose-response effect of dietary sodium on BP. Dr. Sacks was Co-Chair of the OmniHeart Trial that found that variations of the DASH diet that are higher in protein or unsaturated fat and lower in carbohydrate further improved blood pressure and lipid risk factors. He also led the seminal PoundsLost trial which showed the percentage of calories from fat or carbohydrate had no effect on long term weight loss. Dr. Sacks led the OmniCarb trial, which studied the effects of glycemic index and load on cardiovascular risk factors. Dr. Sacks's laboratory research is on the role of apolipoproteins affecting the metabolism of VLDL, LDL, and HDL, and their relation to cardiovascular disease and diabetes. Currently, he is co-investigator of the MIND study, a randomized trial of a diet that combines features of the Mediterranean and DASH diets to preserve cognition in older people, funded by the National Institute on Aging.

Dr. Sacks was Chair of the American Heart Association Nutrition Committee and a member of the Lifestyle Working Group of the National Heart Lung and Blood Institute, which designed the American Heart Association guidelines for diet and exercise. Dr. Sacks teaches at Harvard School of Public Health as course director for nutritional biochemistry and for scientific writing. Dr. Sacks received the 2011 Research Achievement Award of the American Heart Association for lifetime research accomplishment.

## **Presentation Summary**

**Topic:** Healthful dietary patterns to prevent and alleviate chronic disease.

I discuss the evidence from clinical trials, prospective observational studies, and mechanistic studies that link dietary fats and carbohydrates to cardiovascular disease (CVD). This discussion is in large part derived from an American Heart Association Presidential Advisory on Dietary Fats and CVD (Sacks FM et al, *Circulation* 2017;136:e1-23). In summary, randomized trials that replaced saturated fat with polyunsaturated fat, mainly linoleic acid, lowered risk of CVD. The higher the quality of the individual trial, the greater the reduction in CVD. Meta-analysis of four, high quality, core trials found reduction in CVD of about 30%. Other meta-analyses that included trials that had serious problems in design or execution also found significant reduction in CVD but about 20% rather than 30%, as would be expected. The greater the reduction in saturated fat the greater the reduction in risk of CVD. In contrast, a meta-analysis of six trials that replaced saturated fat or total fat with carbohydrate did not show significant reduction in CVD. This indicates that any evaluation of a macronutrient needs to consider the replacement.

These findings in randomized trials are supported by prospective observational studies that found that replacement of saturated fat with polyunsaturated fat at 5% of total daily energy intake was associated with a 25% lower risk of CVD; replacement with monounsaturated fat was associated with 15% lower risk; and replacement with carbohydrate was not associated with reduced risk. Thus, the results of observational studies and randomized trials are closely aligned.

Healthful dietary patterns such as the Mediterranean and DASH diets lower risk of CVD and other chronic diseases. A DASH-type diet with low sodium content can virtually prevent incidence of hypertension. Finally, observational studies suggest that these dietary patterns prevent cognitive decline with aging, an association that is currently being tested in a randomized trial, called MIND.

