Studies examine genetic role in obesity, hypertension and early onset of puberty

Genes play a role in determining who is obese, has hypertension or goes through puberty earlier than peers, according to three studies published recently by researchers in the School's epidemiology department.

Nora Franceschini, MD, MPH, research assistant professor of epidemiology, and Kari E. North, PhD, associate professor of epidemiology, were lead authors of a report published in the journal *Circulation: Cardiovascular Genetics* that shows how cigarette smoking, alcohol consumption and exercise level can modify the effects of genes on risk of hypertension.

The study examined the average effect of multiple genes tied to hypertension risk and showed that behaviors can influence the effects of genes on blood pressure. The study was funded by grants from the National Heart, Lung and Blood Institute, part of the National Institutes of Health. Franceschini is supported by a grant from the American Heart Association.

Franceschini also was one of the leading authors for a study published in the June issue of *Nature Genetics*, identifying an association between genes and age at first menstruation (menarche), height and possibly body mass index (BMI).

"Our findings could trigger new research about human growth factors and diseases

Dr. Nora Franceschini

Dr. Kari North

associated with menorrhea," Franceschini says. "There is also some evidence that the age of menarche is associated with breast cancer and stroke." She says the genes found to influence puberty in girls seem to be relevant to boys, too, but their study was not extended to boys.

Another study, published June 25, 2009, in the journal *PLoS Genetics*, identified a novel link between genes and waist circumference and BMI.

"Because central abdominal fat has been shown to be a strong risk factor for diabetes and cardiovascular disease – a major health concern around the world – we searched for genes that might predispose people to a larger waist circumference," says North. "Finding genetic associations with waist circumference may help scientists better understand why some people may be more susceptible to obesity and cardiovascular disease." ■