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HIGHER GENETIC RISK TIED TO LIFETIME ASTHMA SUFFERING

Note to Editors: Dan Belsky can be contacted at (919) 357-8200 dbelsky@duke.edu. A summary of the study will appear at http://sites.duke.edu/danbelsky after the embargo lifts.

DURHAM, N.C. -- Children with more genetic risks for asthma are not only more likely to develop the condition at a young age, but they are also more likely to continue to suffer with asthma into adulthood. The finding reported by Duke University researchers is one of the latest to come from a 40-year longitudinal study of New Zealanders.

"We've been able to look at how newly discovered genetic risks relate to the life course of asthma at an unprecedented level of resolution," said Daniel Belsky, a postdoctoral fellow at the Duke Institute for Genome Sciences & Policy and the Center for the Study of Aging and Human Development.

Earlier studies had linked several genes to small increases in asthma risk. Belsky, along with Duke's Avshalom Caspi, Terrie Moffit and others, wanted to know whether those individual risks literally add up. They looked to the Dunedin Multidisciplinary Health and Development Study, an effort to examine the behavior and health -- including lung function -- of 1,037 individuals who have been tracked since their birth in Dunedin, New Zealand during a 12-month period from 1972-1973.

Belsky and his colleagues calculated a genetic risk score for each of 880 individuals in the Dunedin cohort by summing the number of risk variants each of them carried. They then asked whether those scores were related to the development and course of asthma from early childhood through midlife.

Indeed, they were. Those at higher genetic risk developed asthma earlier in life than did those with lower risk. Among the Dunedin study participants who developed asthma in childhood, those with higher genetic risk scores were also more likely to suffer with persistent asthma into adulthood. They more often had allergic reactions associated with severe and persistent asthma and developed problems with lung function.

Their quality of life suffered too, as those with higher genetic risk missed work and school more often and were more often admitted to the hospital because of asthma.

Belsky said there is still a long way to go before genetic risk scores like this one can be used in routine medical practice. In the meantime, the study could lead to a

better understanding of the biology of asthma and advance research to devise new treatment and prevention strategies.

In the United States, 26 million people suffer from asthma, including more than 7 million children, according to the latest estimates from the Centers for Disease Control. Those numbers are growing every year at a cost of billions of dollars.

"It will be important to explore how these genetic risks play out in environments that differ in terms of air pollution or other important, modifiable factors," Belsky said.

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Citation: "Polygenic Risk and the Development and Course of Asthma: An Analysis of Data from a Four-Decade Longitudinal Study," Daniel Belsky et al. The Lancet Respiratory Medicine. June 28, 2013 DOI- **10.1016/S2213-2600(13)70101-2**

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