

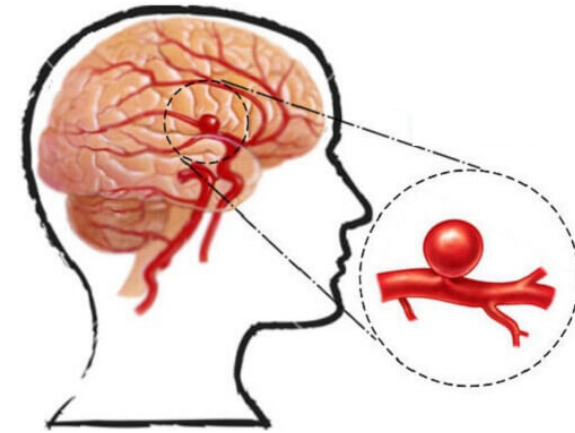
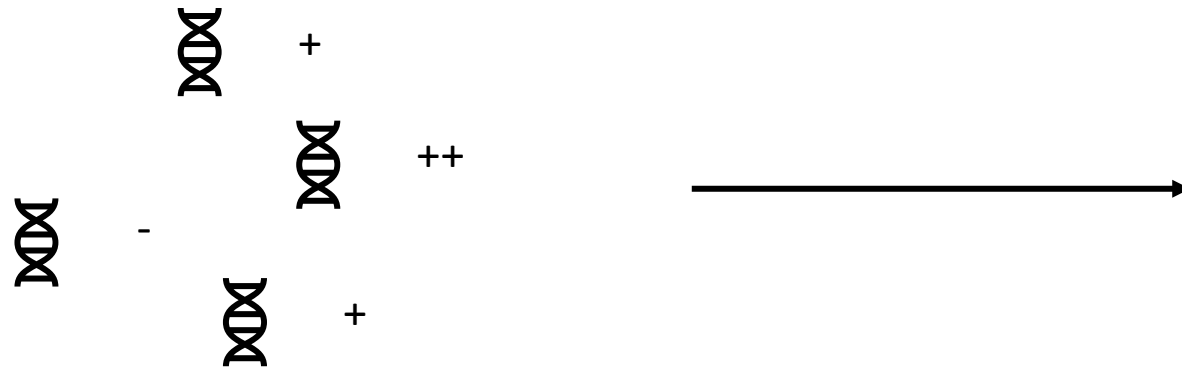
The relationship between  
intracranial aneurysms genetic risk  
and  
aneurysm location, multiplicity, and age at rupture

**Mark K. Bakker, Jos P. Kanning, Gad Abraham, Amy E. Martinsen, Bendik S. Winsvold, Tomonobu Sawada, Masaru Koido, Yoichiro Kamatani, Sandrine Morel, Philippe Bijlenga, Takiy Berrandou, Nabila Bouatia-Naji, Matt Bown, the International Stroke Genetics Consortium (ISGC) Intracranial Aneurysm Working Group, Gabriël J. E. Rinkel, Jan H. Veldink, Ynte M. Ruigrok**



UMC Utrecht

Genetic risk score (metaGRS)  
for intracranial aneurysms



Intracranial aneurysm (IA)

**Genetic association data**

Obtained from largest genome-wide association studies of IA and 17 IA-related traits



**GRS training**

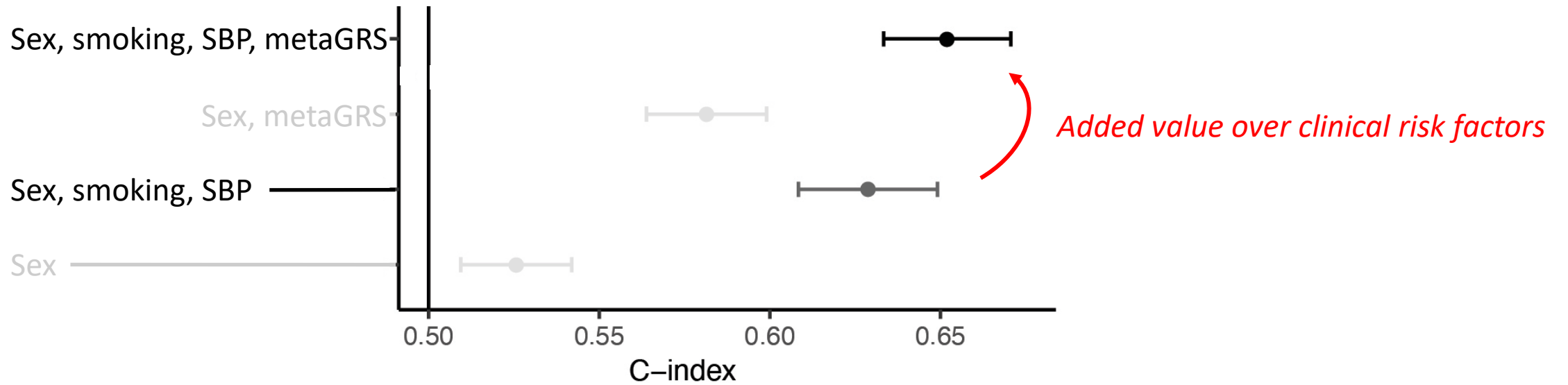
UK Biobank  
1161 IA cases  
407,392 controls



**GRS validation**

Nordic HUNT cohort study  
818 IA cases (318 ASAH)  
68,568 controls

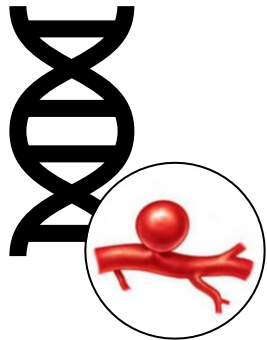
# Prediction of age at aneurysmal subarachnoid haemorrhage (ASAH)



\*SBP: systolic blood pressure  
\*Smoking: ever vs never smoked

## Association with patient characteristics

Higher genetic risk

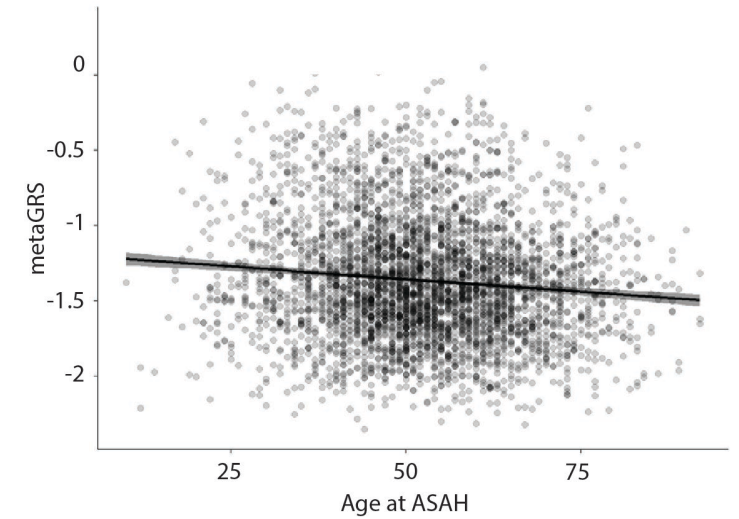


Associated with:

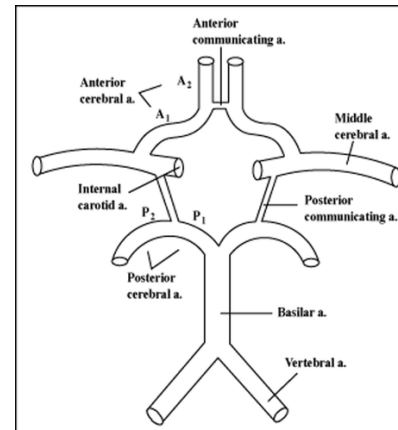


Age at ASAH

Top 1% metaGRS: 3.83 [CI<sub>95</sub>=0.95-6.70] years younger ASAH



Locations other than internal carotid artery (ICA)



Odds ratio ICA vs rest  
= 0.917  
CI95% = 0.858-0.976