REPEAT EXPANSIONS - FRAGILE SITES - AND AUTISM SPECTRUM DISORDER (ASD)

Repeat expansions have been associated with specific diseases, the Fragile X syndrome being the prototypical example. Many of them are associated with fragile sites. The variability of these loci is difficult to detect using short read genome sequencing. Trost et al. (Nature 2020), exploiting newly developed detection methods, have examined 17,231 individuals (1,558 affected) from ASD families. 2,500 control individuals were also sequenced. The study identified 31,793 repeat domains. Many of these correlate to known fragile sites and 2,588 of them lie in gene domains. The authors found a significantly higher prevalence of rare repeat expansions (23.3%) in children with ASD compared to the control population (20.7%). These rare tandem repeat expansions represent a collective risk of ASD of 2.6%.
Unfortunately, technical limitations still persist, the detection threshold being 150 bp.