eTable 1. Equation for Prediction of Pathogenic *APC* and Biallelic *MUTYH* Mutations

Predicted probability of a pathogenic *APC* mutation= $\exp(L_{APC}) / [1+\exp(L_{APC}) + \exp(L_{MUTYH})]$

Predicted probability of pathogenic biallelic *MUTYH* mutations= $\exp(L_{MUTYH}) / [1+\exp(L_{APC}) + \exp(L_{MUTYH})]$

where L_{APC} = 1.7821- 1.5525*(V1) - 0.7148*(V2) + 0.2452*(V3) + 2.1359*(V4) + 3.2522*(V5) - 0.0724*(V6) - 0.1620*(V7) - 0.0224*(V8) + 0.5489*(V9)

and L_{MUTYH} = - 3.1170+ 0.0817*(V1) + 1.1556*(V2) + 1.9642*(V3) + 2.5692*(V4) + 1.6877*(V5) - 0.0129*(V6) + 0.7661*(V7) - 0.0173*(V8) - 0.1965*(V9)

V1= presence of < 10 adenomas, V2= presence of 10-19 adenomas, V3= presence of 20-99 adenomas, V4= presence of 100-999 adenomas, V5= presence of ≥ 1000 adenomas, V6= proband age at first adenoma diagnosis, V7= proband diagnosis of CRC, V8= proband age at first CRC diagnosis, V9= presence of a first degree relative with CRC