Chart, pie chart

Description automatically generatedChart, pie chart

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C

D

A

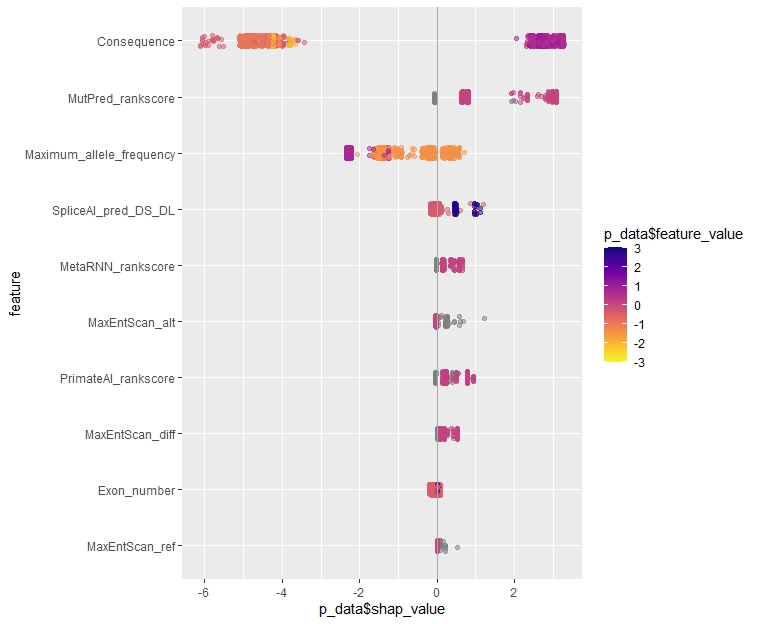
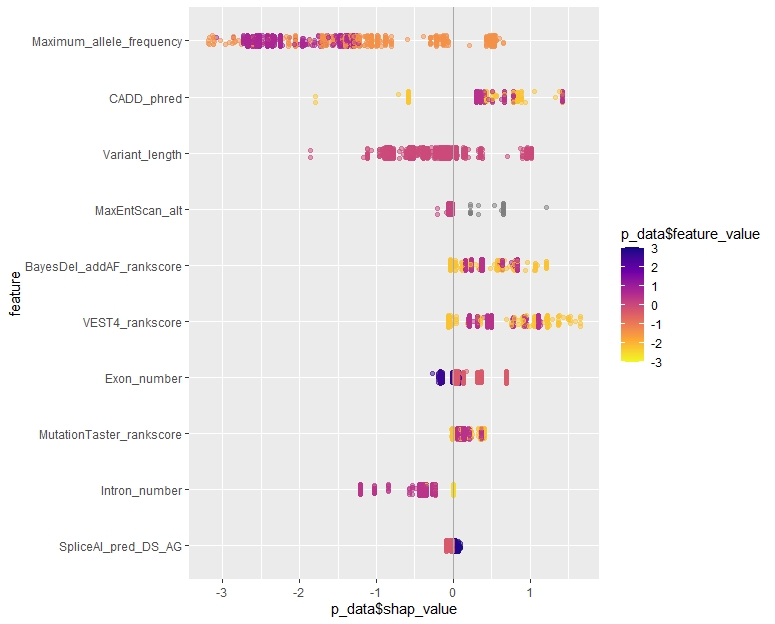
B

**Supplementary Figure 1.** Distribution of consequences according to the Ensembl Variant Effect Predictor for variants downloaded from *BRCA* exchange database. A) Consequences of all *BRCA2* variants. B) Consequences of all coding variants. C) Consequences of *BRCA2* variants that were classified by the expert panel and were used to build the models. D) Consequences of coding variants that were classified by the expert panel.

**Supplementary Figure 2.** Comparison of the percent distribution of the 141 pathogenic and benign reviewed missense variants across the *BRCA2* exons.

SHAP value

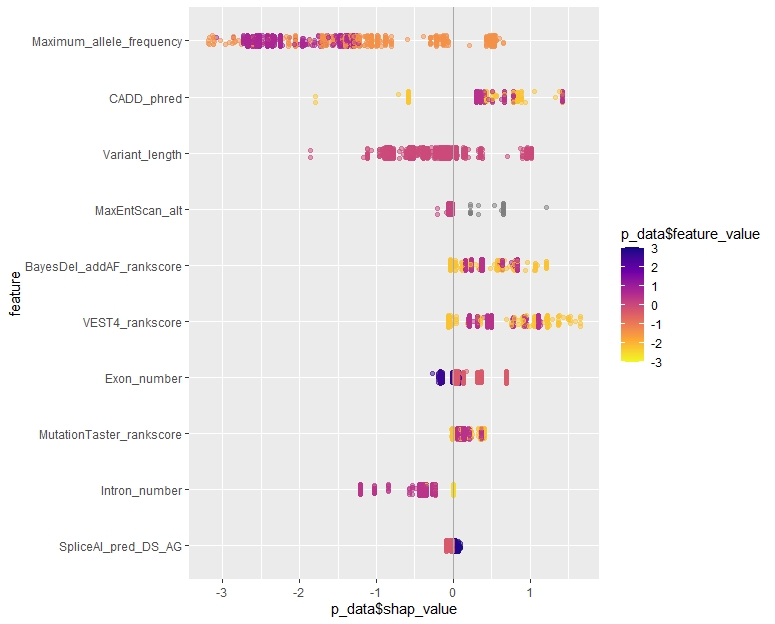
SHAP value



A

B

feature value

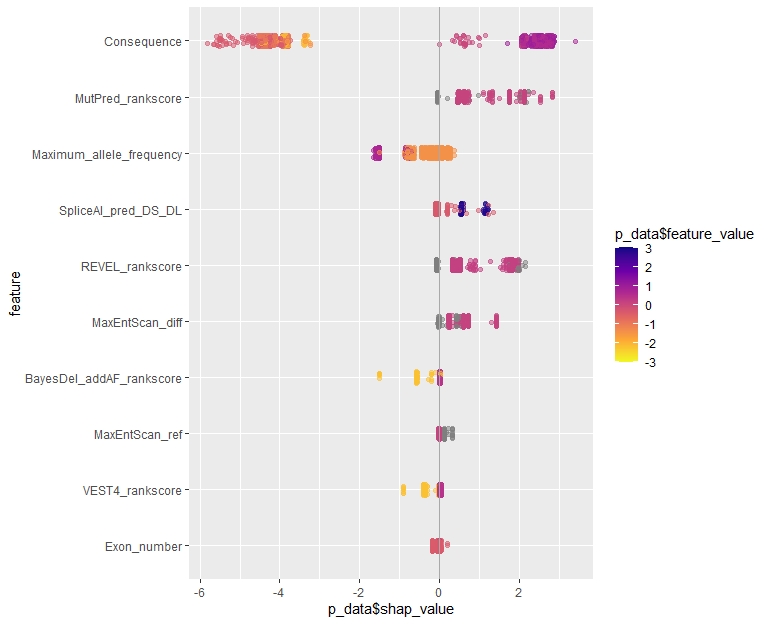


**Supplementary Figure 3.** The *BRCA2* XGBoost models. A) SHAP values for the features in the full XGboost model. B) SHAP values for the features of the XGBoost model without consequence.

Chart, line chart, scatter chart

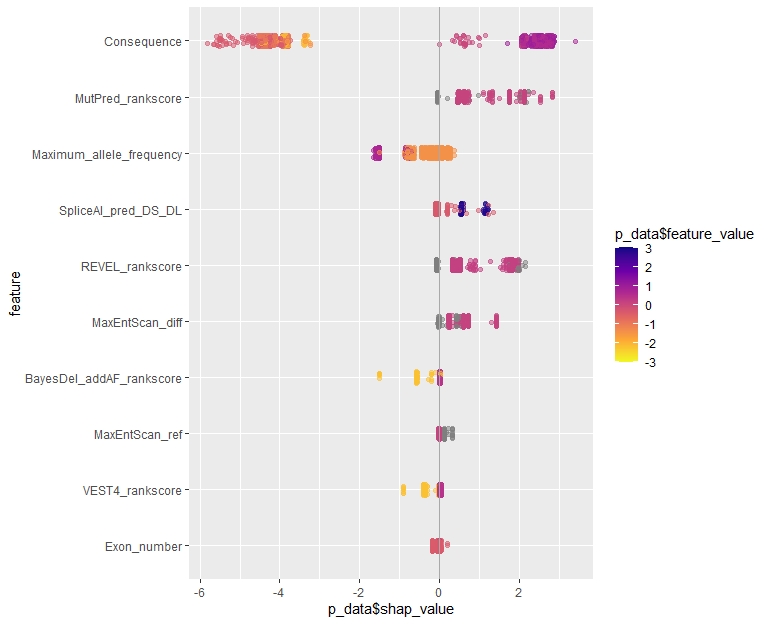
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**Supplementary Figure 4.** The receiver operating characteristic curve (ROC curve) of the consequence as a measure of variant pathogenicity.



feature value

SHAP value



**Supplementary Figure 5.** The SHAP values of the *BRCA2* XGBoost model that was used to predict functional assay results for variants uncertain significance.