Gradient boosting:

“A gradient tree boosting [29] algorithm was used for

prediction. Gradient tree boosting is a machine learning

technique that combines the prediction of an

ensemble of weak regression trees, which are added

sequentially to the model in order to maximize predictive

performance and minimize model complexity.

In this study we used the freely available gradient tree

boosting algorithm implemented in the R package

XGBoost [33] (see Additional file 1: Table S1 for description

of model parameters).” (Maali et al., 2018)

“We first built a set of

predictive models based on a gradient tree boosting

algorithm [29]. **In the presence of noisy correlated**

**categorical data with unknown interactions**, these types

of machine learning methods are preferable to the more

common logistic regression models [30].” (Maali et al., 2018)