

## **Biologic Risk Models for Predicting Recurrence for Patients with Resected Non-Small Cell Lung Cancer (NSCLC)**

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### **Abstract**

Developing a risk model to predict recurrence is important for individualizing therapy. 370 patients with early stage (I 63%, II 20%, or IIIA 17%) NSCLC resected at MDACC between 2002 and 2005 were identified for the study. 21 pre-specified biomarkers were investigated. Cox models were fitted to estimate the effect of clinical factors and biomarkers on recurrence-free survival (RFS). Predictive accuracy was quantified by C-index. With median follow-up of 5.3 yrs, 1-, 3-, and 5-year recurrence rates were 80%, 59% and 45%, respectively, with a median RFS of 4.1 years. Adjusted for clinical factors (smoking status, gender and stage), important risk predictors (hazard ratio, p-value) for RFS include cytoplasmic pAMPK (0.60, .0008), membrane insulin (1.47, .008), cytoplasmic EpCAM (0.70, .02), cytoplasmic CXCR2 (1.40, .02), membrane CASK (0.996, .04), cytoplasmic IGF1R (1.004, .04), and cytoplasmic pmTOR (0.73, .06). C-index for RFS is 0.68 with a 95% confidence interval of (0.60, 0.75). The biologic risk model will be validated in another prospective study population. Further risk stratification by stage and treatment will be assessed. We will compare and contrast different approaches of evaluating prediction accuracy for time-to-event outcomes including C-index and time dependent ROC analysis by bootstrap resampling and cross validation.

*Keywords:* Prediction of risk of recurrence; C-index; Time-dependent ROC analysis; Bootstrap; Cross validation.

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