

Comparison of SelectMDx, Prostate Health Index, and MRI for Diagnosis of High-Grade Prostate Cancer

E. David Crawford[†], MD, Paul Arangua, Francisco G. La Rosa, MD,
Gretchen P. Hoyer, Whitney N. Stanton, Adrie van Bokhoven, PhD, M.
Scott Lucia, MD, *Wendy L. Poage, Samuel Chang, MD, Nelson N.
Stone^{**}, and Priya N. Werahera, PhD

University of Colorado Anschutz Medical Campus, Aurora, CO

*Prostate Condition Education Council, Aurora, CO

**Mount Sinai School of Medicine, Suffern, NY

- Evaluated performance of SelectMDx, prostate health index (*phi*), and mpMRI for diagnosis of high-grade (HG) and clinically significant (CS) PCa
- Used histopathology of 5 mm grid interval transperineal mapping biopsy (TMB) as reference (**Fig. A**)
- TMB identified 34/39 (87%) patients with prostate cancer, 15/34 (44%) had high grade prostate cancer, and 18/34 (53%) had CS PCa. (**Fig B**)

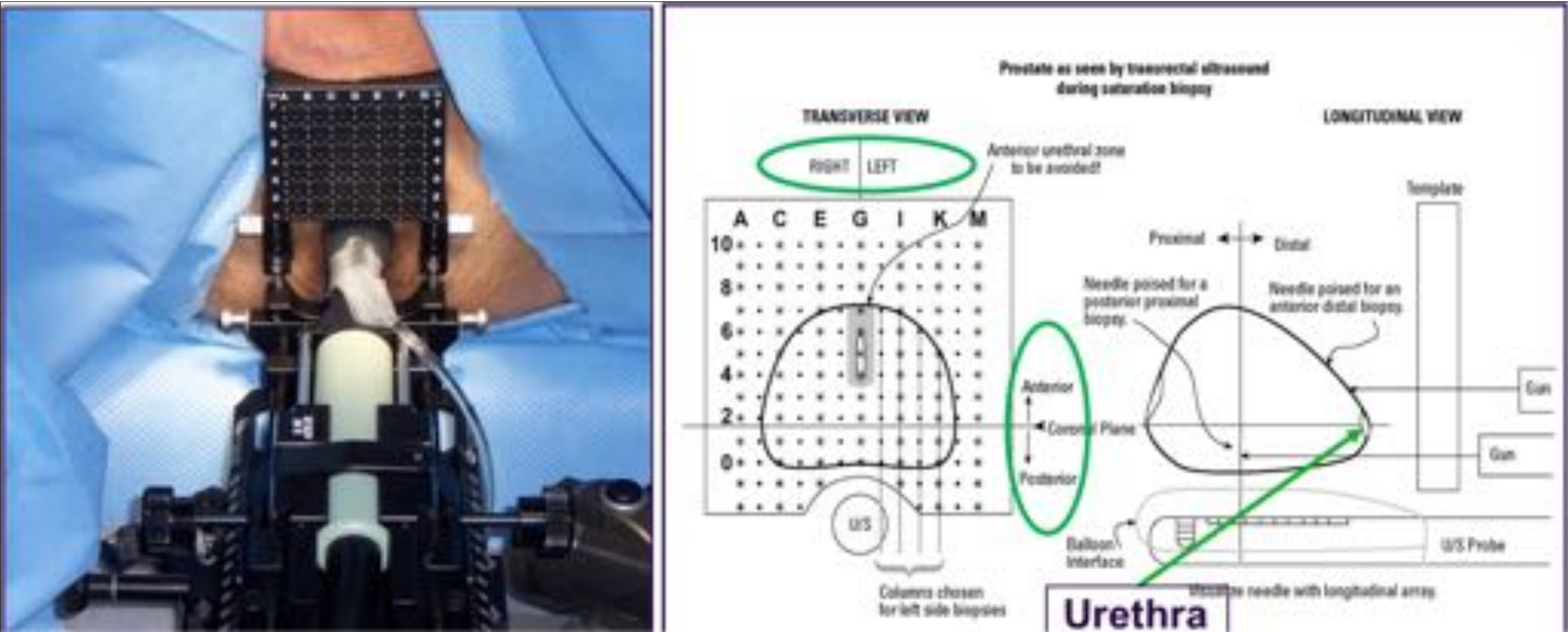


Fig A: TMB

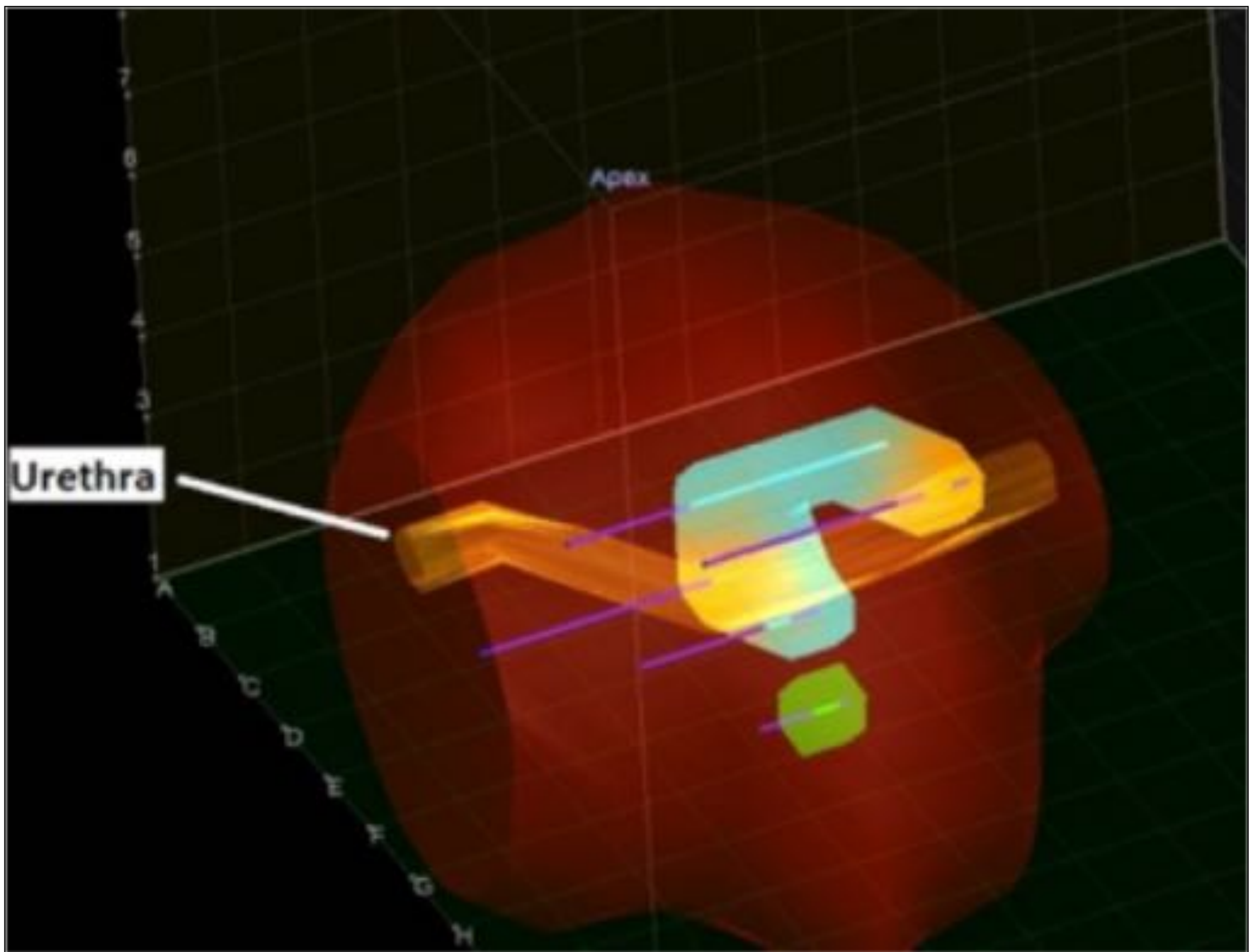


Fig B: Histopathology

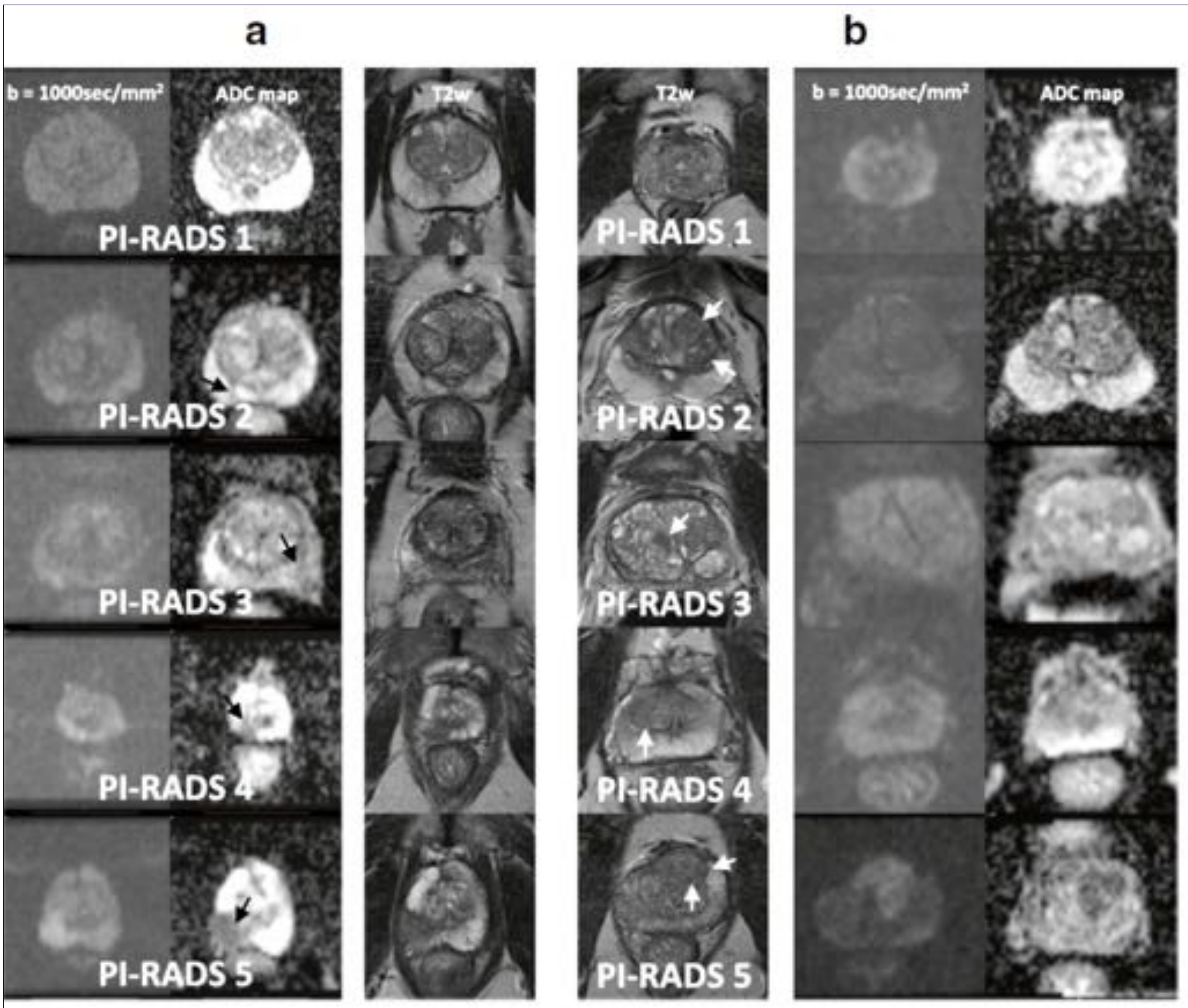
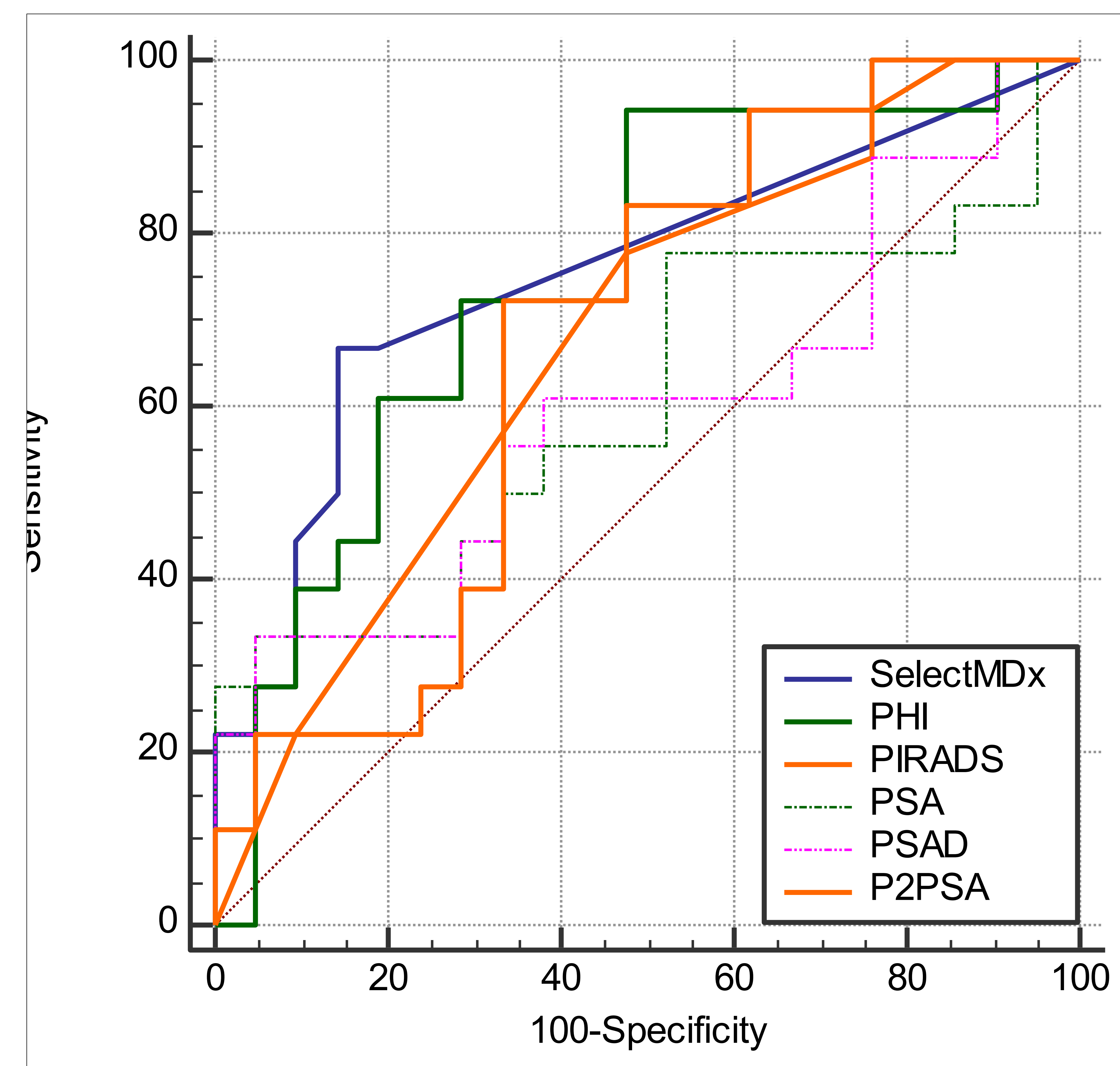


Fig C: PIRADS

- Serum and post-DRE urine used for phi and Select MDx tests
- mpMRI classified using PIRADS scores (**Fig C**)
- Multivariate logistic regression analyses (MLRA) and receiver operating characteristic (ROC) curves were used to determine diagnostic accuracy. DeLong test was used to determine statistical significance of ROC curves.

Table: Performance of SelectMDx, phi, and PIRADS Compared to Histopathology of TMB						
Performance Measure	SelectMDx > 0%		phi ≥ 27		PIRADS ≥ 3	
	HG Cancer	CS Cancer	HG Cancer	CS Cancer	HG Cancer	CS Cancer
Sensitivity	80%	67%	93%	94%	93%	94%
Specificity	88%	81%	29%	33%	21%	24%
PPV*	36%	28%	10%	14%	9%	12%
NPV*	98%	96%	98%	98%	97%	97%
Accuracy	82%	74%	54%	62%	49%	56%
AUC*	0.83	0.75	0.81	0.75	0.72	0.66
*PPV = positive predictive values; NPV = negative predictive value; AUC = area under the ROC curve						

- Except between SelectMDx and PSA (**0.753 vs 0.6, p=0.04**) for CS PCa, there were no differences in ROC curves of SelectMDx, phi, PIRADS, PSA, PSAD, proPSA, and free PSA for the diagnosis HG or CS PCa.
- LRA showed SelectMDx test was significantly better than the rest for diagnosis of HG ($\beta = 5.57, p = 0.001$) and CS ($\beta = 4.05, p = 0.004$) PCa with an overall accuracy of 82% and 74%, respectively.



Variable	AUC	SE ^a	95% CI ^b
SelectMDx	0.753	0.0733	0.589 to 0.876
PHI	0.749	0.0812	0.584 to 0.873
PIRADS	0.675	0.0815	0.506 to 0.816
PSA	0.603	0.0967	0.434 to 0.756
PSAD	0.598	0.0962	0.429 to 0.751
P2PSA	0.675	0.0884	0.506 to 0.816

^a DeLong et al., 1988
^b Binomial exact

• SelectMDx is better suited to identify patients with HG or CS PCa prior to prostate biopsy. Patients with negative SelectMDx test results may be spared from prostate biopsy.

Source of Funding: The study was supported in parts by the Bingham Research Fund and Schramm Foundation