Supplementary Information

Spectral classification for diagnosis involving numerous pathologies in a complex clinical setting: a neuro-oncology example

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Table S1: A one-way ANOVA showing the differences between each of the normal, high-grade (HG) and low-grade (LG) glioma groups. Significance level $p < 0.05$.

Tukey's multiple comparisons test	Mean Difference	95% CI of difference	Adjusted *P*-value
Normal *vs.* HG	0.05	0.05 to 0.06	<0.0001
Normal *vs.* LG	0.01	0.01 to 0.02	<0.0001
HG *vs.* LG	-0.04	-0.04 to -0.03	<0.0001

Table S2: Results of the one-way ANOVA showing statistically significant comparisons between each group. LG, low-grade glioma; HG, high-grade glioma; Mets, metastasis to brain. Significance level $p < 0.05$.

Tukey's multiple comparisons test	Mean Difference	95% CI of difference	Adjusted *P*-value
Normal *vs.* HG	0.05	0.05 to 0.06	<0.0001
Normal *vs.* LG	0.01	0.01 to 0.02	<0.0001
Normal *vs.* Meningioma	0.03	0.03 to 0.04	<0.0001
Normal *vs.* Mets	0.02	0.02 to 0.03	<0.0001
HG *vs.* LG	-0.04	-0.04 to -0.03	<0.0001
HG *vs.* Meningioma	-0.02	-0.03 to -0.02	<0.0001
HG *vs.* Mets	-0.03	-0.04 to -0.02	<0.0001
LG *vs.* Meningioma	0.02	0.01 to 0.02	<0.0001
LG *vs.* Mets	0.01	0.00 to 0.01	0.0005
Meningioma *vs.* Mets	-0.01	-0.01 to -0.00	<0.0001

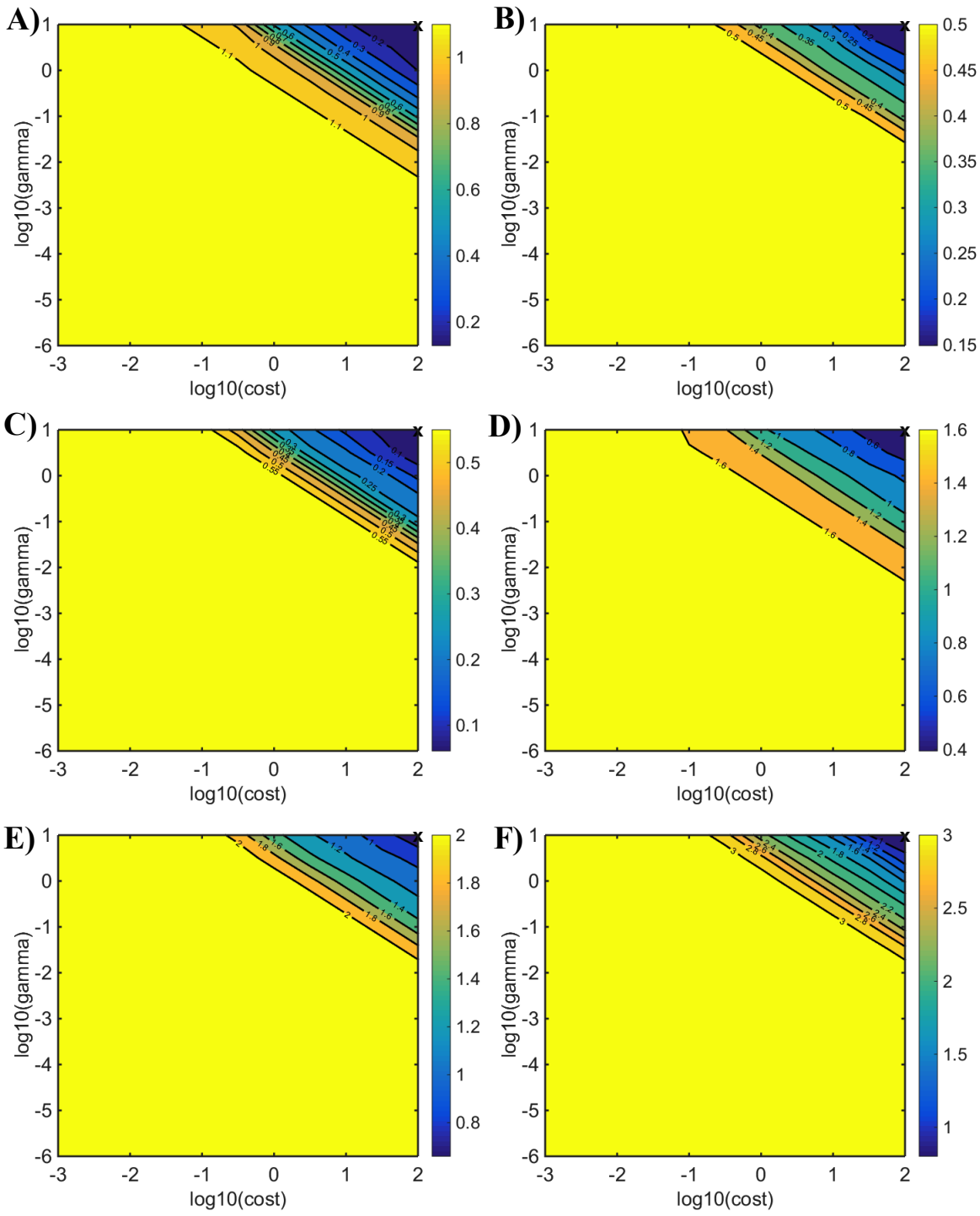

Figure S1: SVM optimization cost for (A) control *vs.* low-grade *vs.* high-grade gliomas; (B) control *vs.* meningioma; (C) control *vs.* metastasis; (D) control *vs.* colorectal adenocarcinoma *vs.* lung adenocarcinoma *vs.* melanoma; (E) control *vs.* low-grade glioma *vs.* high-grade glioma *vs.* meningioma *vs.* and metastasis; (F) control *vs.* low-grade glioma *vs.* high-grade glioma *vs.* meningioma *vs.* melanoma metastasis *vs.* colorectal adenocarcinoma metastasis *vs.* lung adenocarcinoma metastasis.

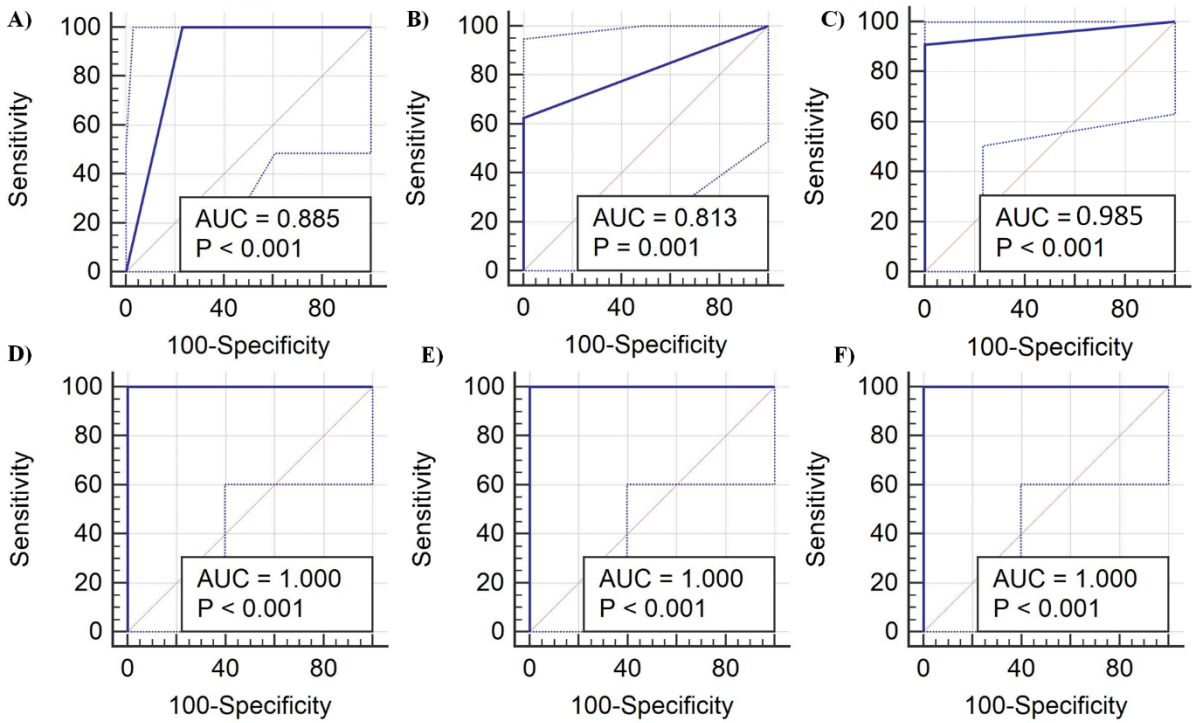

Figure S2: ROC curves for PCA-LDC in control (A) *vs.* low-grade (B) *vs.* high-grade (C) gliomas; and SVM in control (D) *vs.* low-grade (E) *vs.* high-grade (F) gliomas.

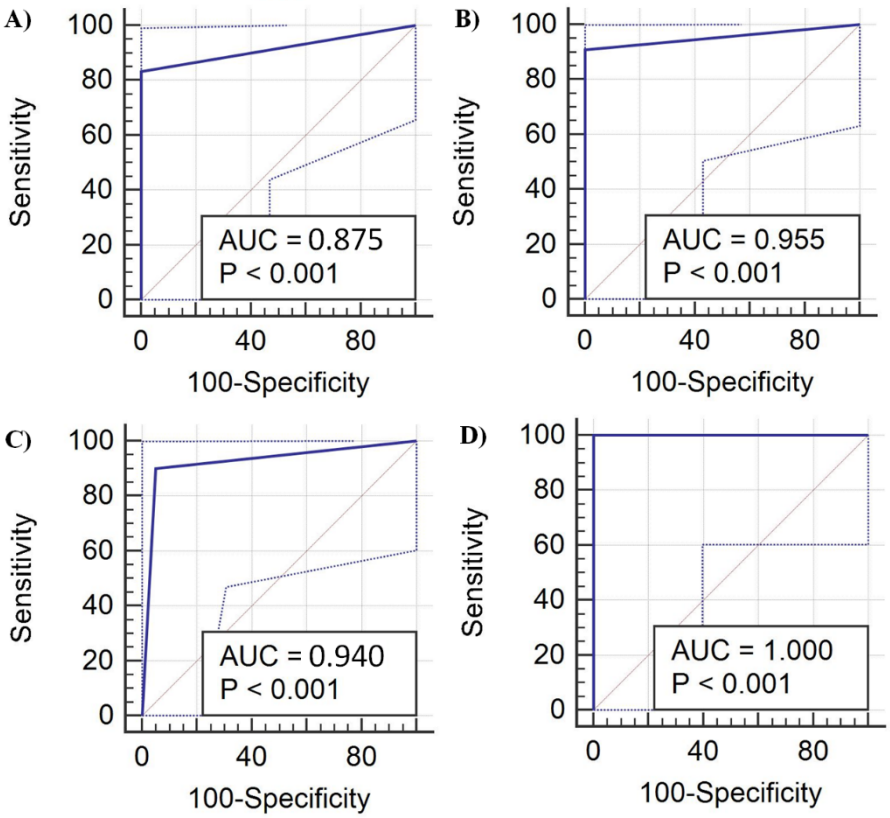

Figure S3: ROC curves for PCA-LDC (A) and SVM (B) in control *vs.* meningioma; and PCA-LDC (C) and SVM (D) in control *vs.* metastasis.

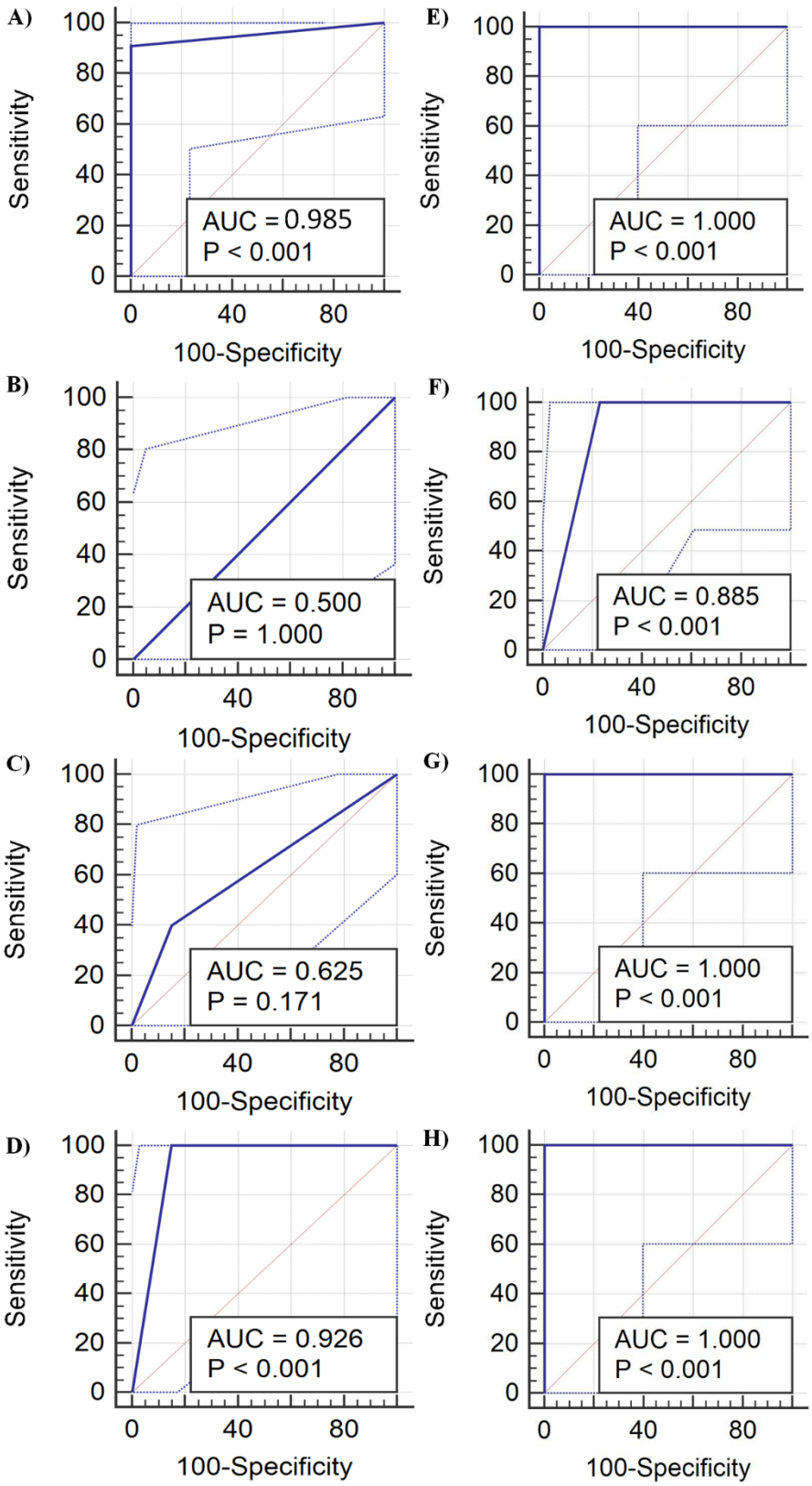

Figure S4: ROC curves for PCA-LDC in control (A), colorectal adenocarcinoma (B), lung adenocarcinoma (C), melanoma (D); and SVM in control (E), colorectal adenocarcinoma (F), lung adenocarcinoma (G), melanoma (H).

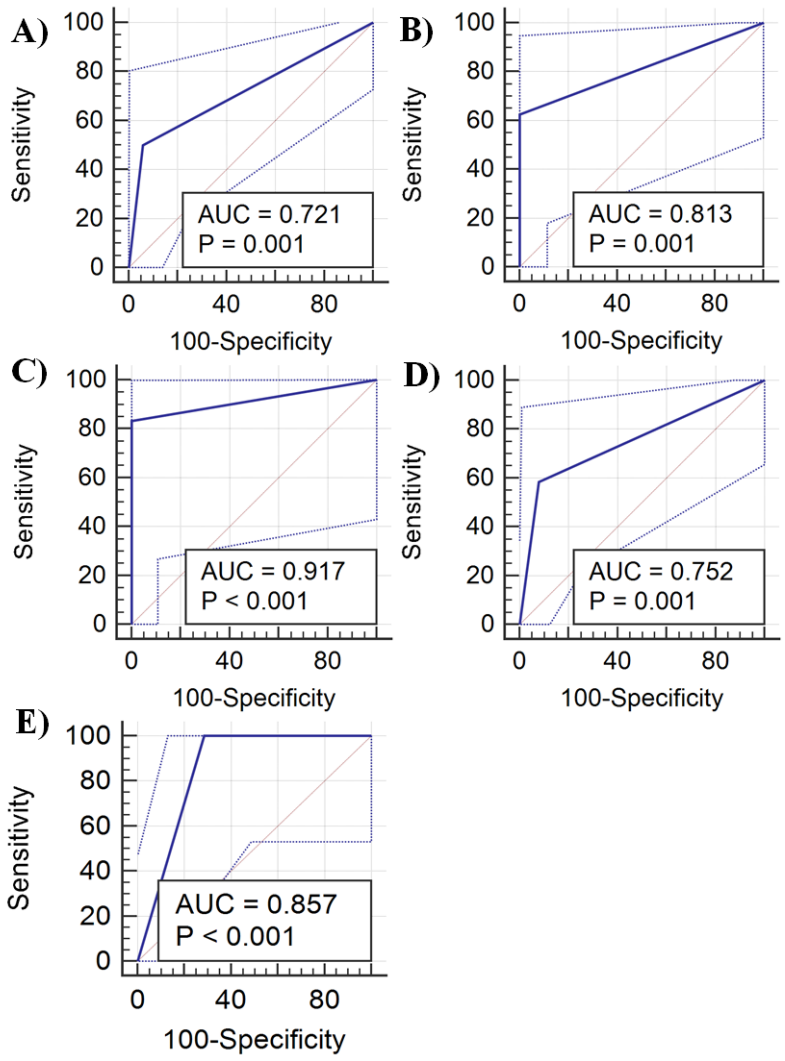

Figure S5: ROC curves for PCA-LDC in control (A), high-grade glioma (B), low-grade glioma (C), meningioma (D) and metastasis (E).

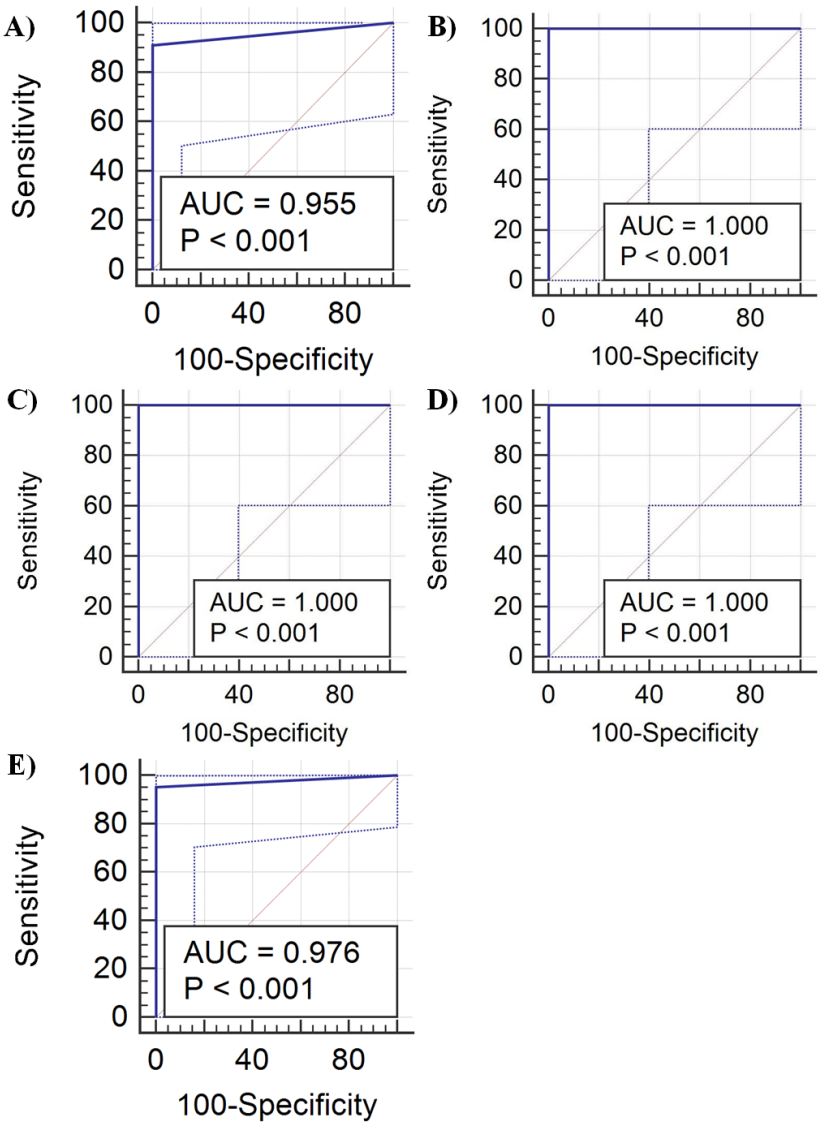

Figure S6: ROC curves for SVM in control (A), high-grade glioma (B), low-grade glioma (C), meningioma (D) and metastasis (E).

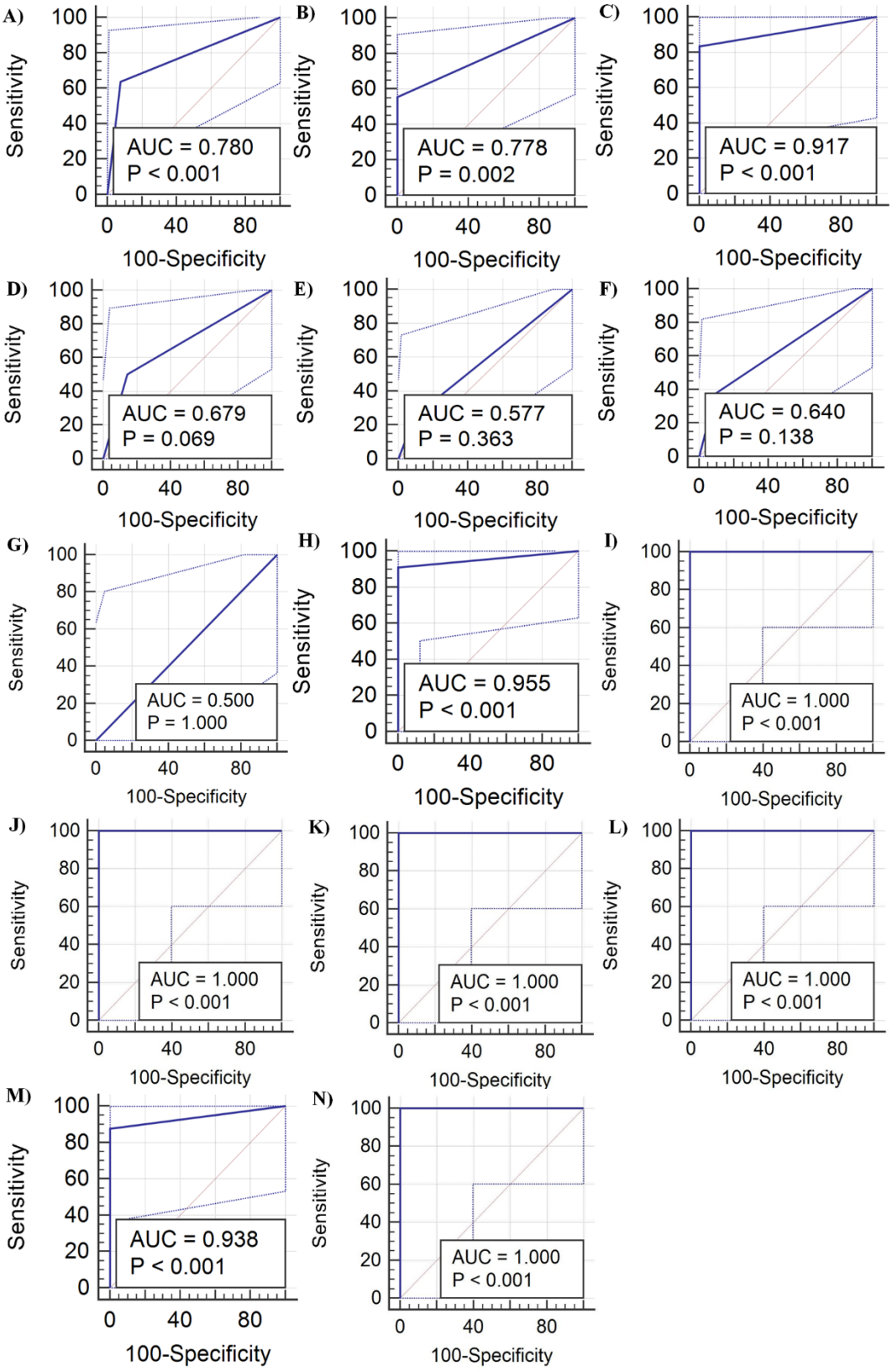

Figure S7: ROC curves for PCA-LDC in (A) control, (B) low-grade glioma, (C) high-grade glioma, (D) meningioma, (E) melanoma metastasis, (F) colorectal adenocarcinoma metastasis, (G) lung adenocarcinoma metastasis; and SVM in (H) control, (I) low-grade glioma, (J) high-grade glioma, (K) meningioma, (L) melanoma metastasis, (M) colorectal adenocarcinoma metastasis, (N) lung adenocarcinoma metastasis.