

## Central Lancashire Online Knowledge (CLOK)

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| Title    | Spectral classification for diagnosis involving numerous pathologies in a complex clinical setting: A neuro-oncology example                                                                                                                                                                                                                                                                                                            |
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## **Supplementary Information**

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

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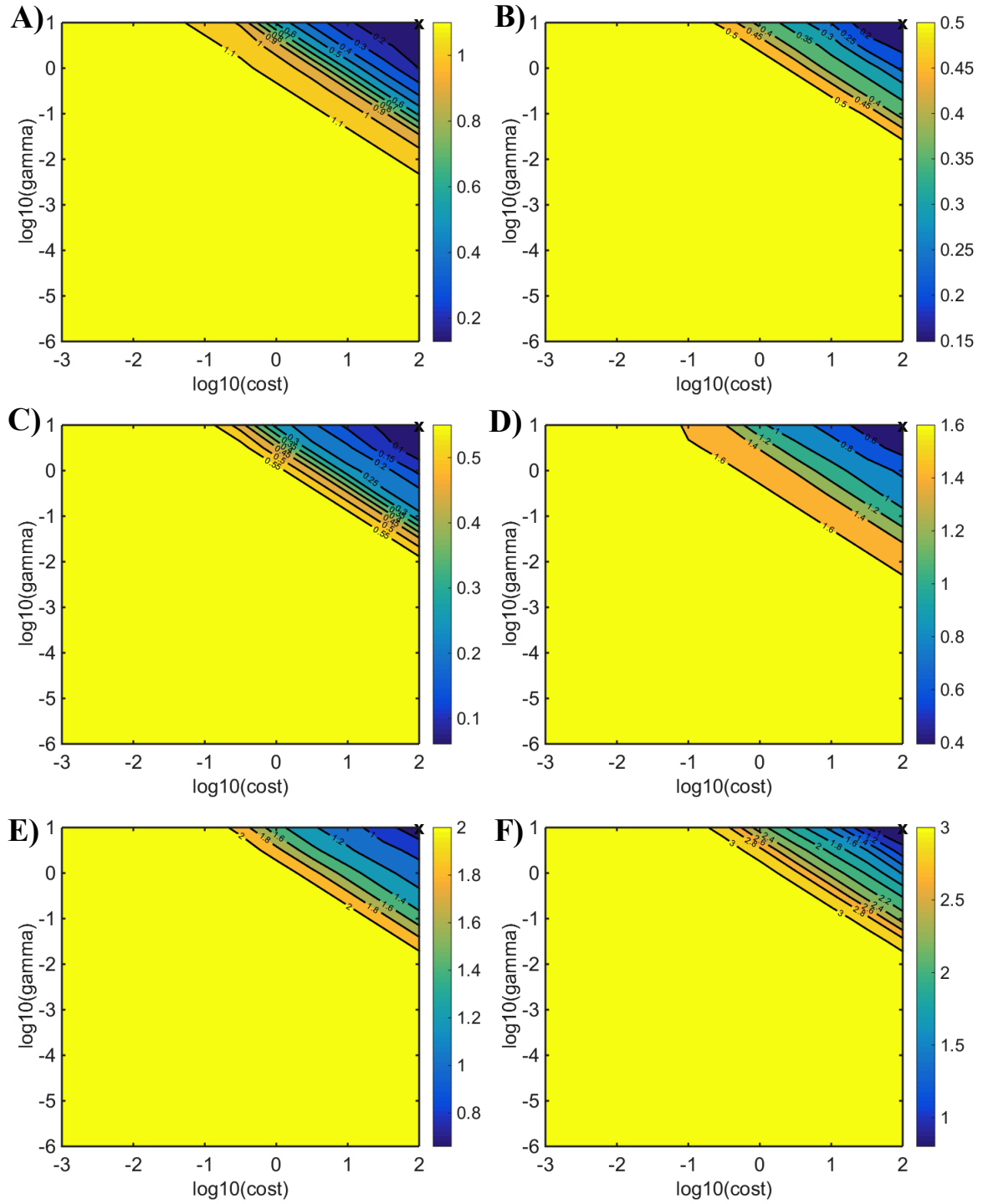
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**Table S1:** A one-way ANOVA showing the differences between each of the normal, high-grade (HG) and low-grade (LG) glioma groups. Significance level  $p < 0.05$ .

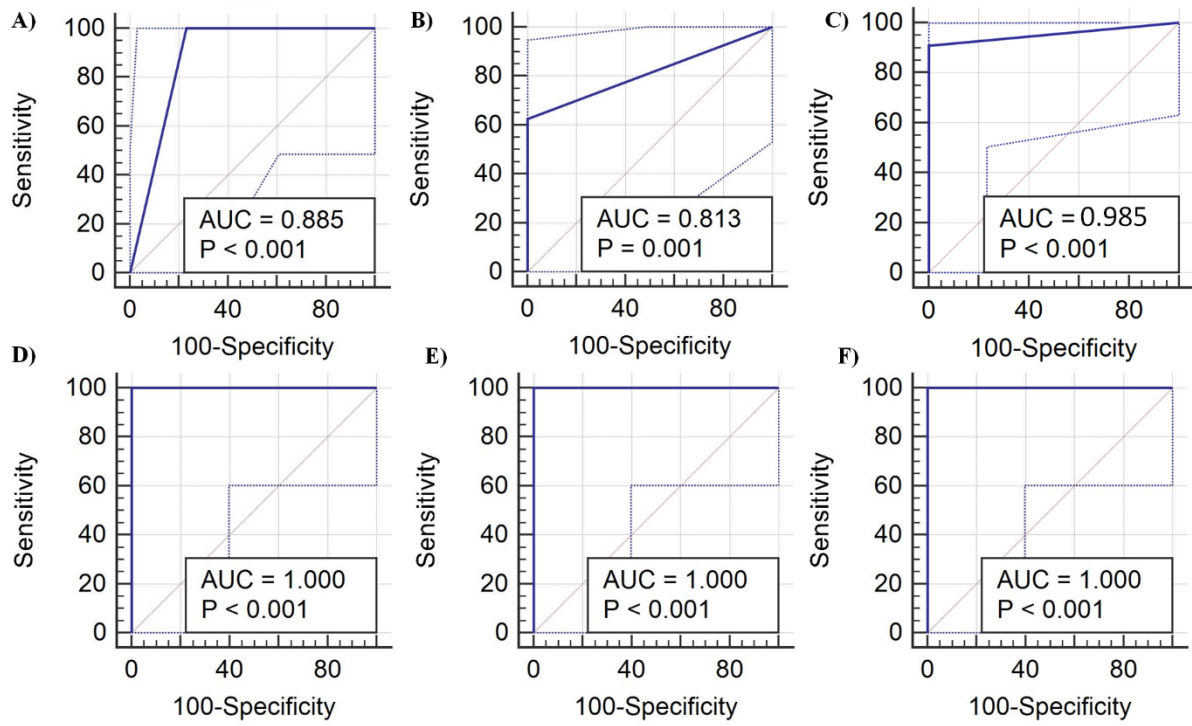
| Tukey's multiple comparisons test | Mean Difference | 95% CI of difference | Adjusted $P$ -value |
|-----------------------------------|-----------------|----------------------|---------------------|
| Normal vs. HG                     | 0.05            | 0.05 to 0.06         | <0.0001            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

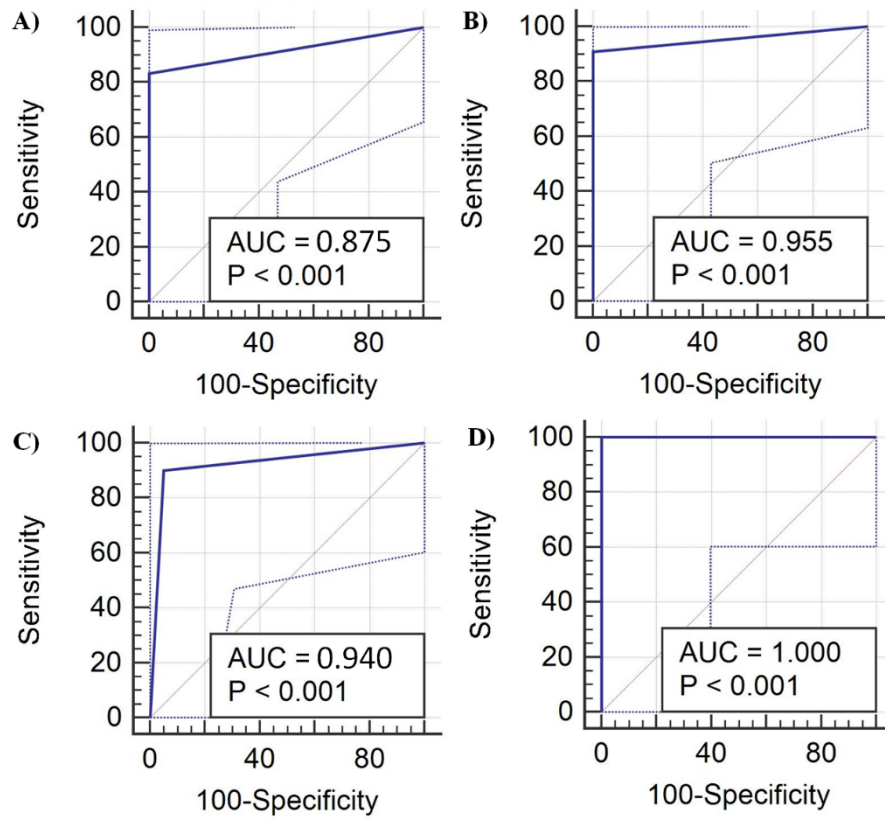
| Tukey's multiple comparisons test | Mean Difference | 95% CI of difference | Adjusted $P$ -value |
|-----------------------------------|-----------------|----------------------|---------------------|
| Normal vs. HG                     | 0.05            | 0.05 to 0.06         | <0.0001             |
| 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             |



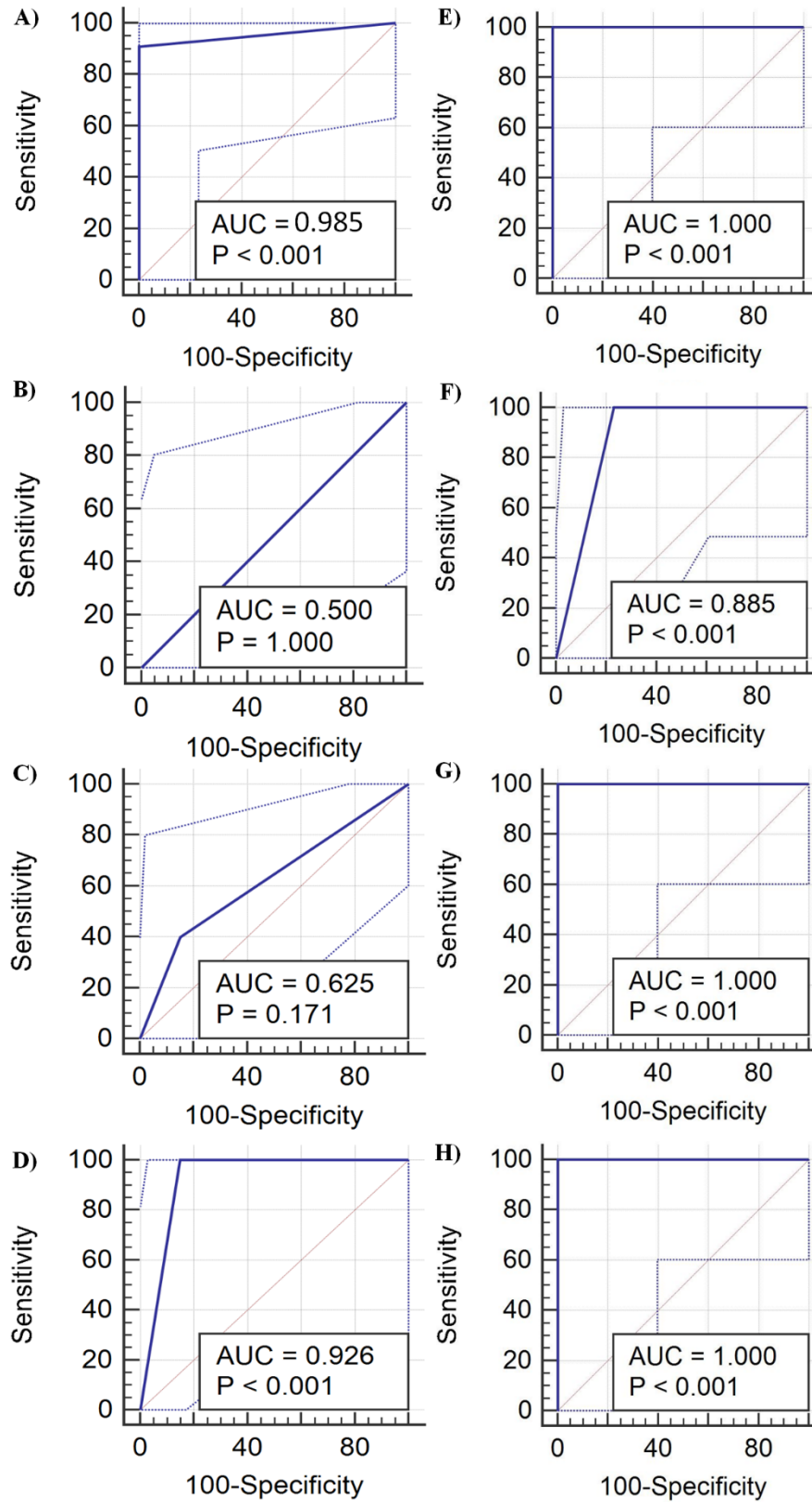
**Figure S1:** SVM optimization cost for (A) control vs. low-grade vs. high-grade gliomas; (B) control vs. meningioma; (C) control vs. metastasis; (D) control vs. colorectal adenocarcinoma vs. lung adenocarcinoma vs. melanoma; (E) control vs. low-grade glioma vs. high-grade glioma vs. meningioma vs.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



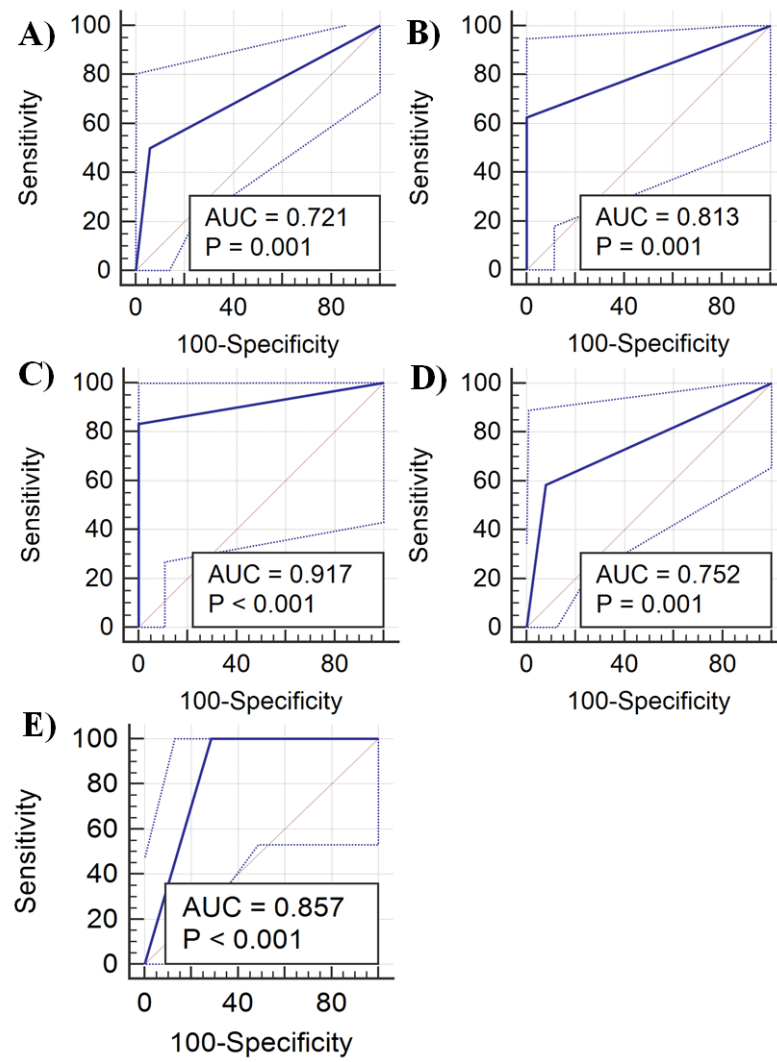
**Figure S2:** ROC curves for PCA-LDC in control (A) vs. low-grade (B) vs. high-grade (C) gliomas; and SVM in control (D) vs. low-grade (E) vs. high-grade (F) gliomas.



**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.

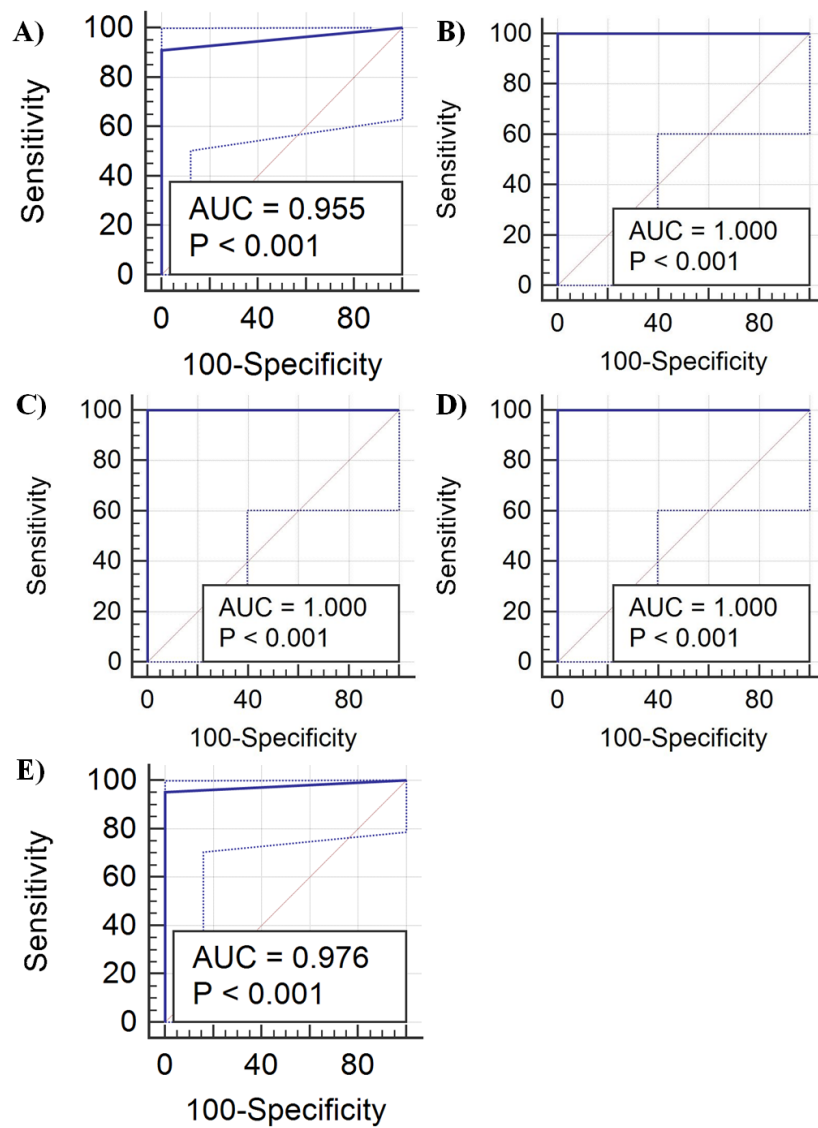


**Figure S4:** ROC curves for PCA-LDC in control (A), colorectal adenocarcinoma (B), lung adenocarcinoma (C), melanoma (D); and SVM in control (E), colorectal adenocarcinoma (F), lung adenocarcinoma (G), melanoma (H).

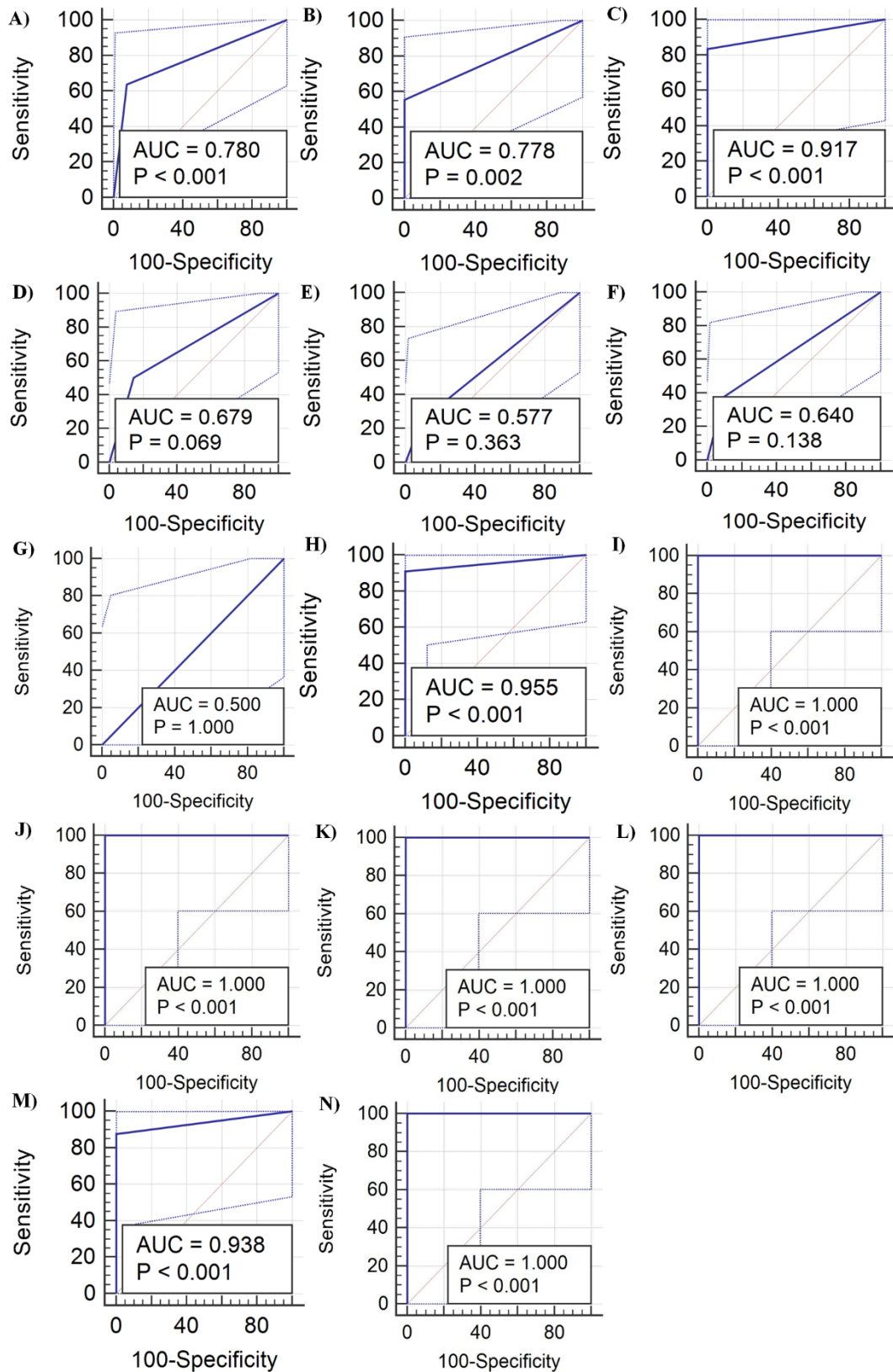


**Figure S5:** ROC curves for PCA-LDC in control (A), high-grade glioma (B), low-grade glioma (C), meningioma (D) and metastasis (E).





**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.