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Summary

DEVELOPMENT OF A GRAPHENE OXIDE-BASED POLYETHYLENE GLYCOL-MODIFIED FLUORESCENT APTASENSOR FOR LABORATORY DETECTION OF GASTRIC CANCER

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UEG Week Barcelona 2026 | Presentation

Oesophagus | Stomach & H. Pylori | Mechanisms & Personalised Medicine | Digestive Oncology

October 20, 2026

Graphene oxide-based PEGylated fluorescent aptasensors demonstrated high diagnostic accuracy for gastric cancer and early-stage disease in a 300-patient study, significantly outperforming conventional serum tumor markers.

KEY POINTS

- Five aptasensors showed individual AUCs of 0.849-0.879 for distinguishing gastric cancer from benign gastric disease (n=200 GC vs. n=100 BGD), with the combination of five aptasensors achieving AUC 0.973 (95% CI 0.953-0.992).
- The aptasensor combination achieved AUC 0.970 (95% CI 0.949-0.992) for detecting early-stage gastric cancer (TNM stage I+II, n=109) versus benign gastric disease.
- Individual aptasensors for early-stage gastric cancer showed AUCs ranging from 0.832 to 0.862, with AP15-16 achieving the highest AUC of 0.862 (95% CI 0.811-0.912).
- Aptasensors substantially outperformed conventional serum tumor markers CEA (AUC 0.694), CA19-9 (AUC 0.573), and CA72-4 (AUC 0.617).
- The detection method uses a standard 96-well microplate reader, requires less than one microliter of serum, and does not require sensor prefabrication, according to the presenter.

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