

ENDOSCOPY

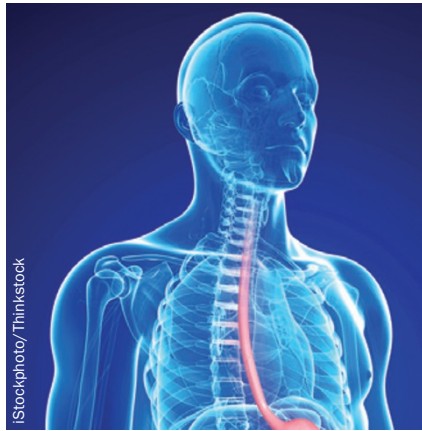
New molecular probe for targeted imaging of oesophageal neoplasia in Barrett oesophagus

A new fluorescently labelled synthetic peptide—termed ASY*-FITC—that specifically targets oesophageal adenocarcinoma (EAC) has been tested in humans for the first time.

The molecular probe enabled visualization of neoplasia in the oesophagus using *in vivo* endomicroscopy and might prove useful in the early detection of EAC.

Detection of premalignant lesions in Barrett oesophagus using conventional endoscopy is challenging—these lesions vary in shape and are flat in appearance—and new specific markers are needed. The researchers used phage display technology to select a peptide specific for Barrett neoplasia, which was then linked to a fluorophore for use in imaging.

As reported in *Science Translational Medicine*, the ASY*-FITC peptide bound specifically to high-grade dysplasia and adenocarcinoma, purportedly by targeting cyclophilin A, to distinguish these areas



from normal (squamous) or nondysplastic Barrett oesophagus tissue.

Importantly, the peptide was found to be safe and effective (75% sensitivity, 97% specificity) at highlighting areas of cancerous tissue *in vivo* in real time using confocal laser endomicroscopy in 25 individuals with Barrett oesophagus.

“We showed that peptides can be administered topically at a high concentration to maximize target binding during endoscopy and that this method of delivery can be performed safely in humans,” notes author Thomas Wang. “Onset of binding occurs in <5 min, a timeframe that is compatible with practical use in a busy clinical unit,” he adds.

The authors hope that their peptide could be used in the detection of other cancers of epithelial origin, such as colon or stomach cancer. However, much work is needed before this probe can be used widely in clinical practice; adhering to good laboratory practice and good manufacturing practice in this study were the first steps in the long and complex path towards approval.

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Original article Sturm, M. B. *et al.* Targeted imaging of oesophageal neoplasia with a fluorescently labeled peptide: first in-human results. *Sci. Transl. Med.* 5, 184ra61 (2013)