

# ***Cancer Screening via Infrared Spectral Cytopathology (SCP): Results for the Upper Digestive Tract***

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Instrumental advances in infrared micro-spectroscopy have made possible the observation of individual human cells at acquisition rates that allow the construction of large datasets. The observed spectra represent a snapshot of the biochemical composition of a cell; this composition varies subtly but reproducibly with cellular effects such as progression through the cell cycle, cell maturation and differentiation, and disease.

The aim of this summary is to provide a synopsis of the progress achieved in infrared spectral cytopathology (SCP) – the combination of infrared micro-spectroscopy and multivariate methods of analysis – for the detection of abnormalities in exfoliated human cells of the upper digestive tract, namely the oral cavity<sup>1,2</sup> and the esophagus<sup>3</sup>. The efforts included the development of data acquisition protocols<sup>4</sup>, and methods for data pre-processing and analysis<sup>5</sup>.

These results have demonstrated the sensitivity of SCP toward detecting cellular abnormalities, and have confirmed earlier observations from several research groups that SCP detects disease earlier<sup>6</sup> (*i.e.*, for cells that still exhibit normal morphology) and not only from an abnormal lesion but from the vicinity of such a lesion<sup>1,7</sup>. These results will be discussed in terms of the overall accuracy and clinical utility of SCP.

## References

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