SUPPORTING INFORMATION

"Effects of laser excitation wavelength and mode on Raman spectra of human fresh colon, pancreas, and prostate tissues"

Ran Li,[a] Dominique Verreault,[a] Andrea Payne,[a] Charles L. Hitchcock,[b] Stephen P. Povoski,[c] Edward W. Martin Jr,[c] and Heather C. Allen[a,b]*

[a] Department of Chemistry and Biochemistry, The Ohio State University, 100 West 18th Avenue, Columbus, OH 43210, USA

[b] Department of Pathology, The Ohio State University, 129 Hamilton Hall, 1645 Neil Avenue, Columbus, OH 43210, USA

[c] Division of Surgical Oncology, Department of Surgery, The Ohio State University, 410 West 10th Avenue, Columbus, OH 43210, USA

* Corresponding Author: allen@asc.ohio-state.edu

MATLAB CODE FOR SIGNAL-TO-NOISE RATIO (SNR) CALCULATIONS

An example of the Matlab code used for the signal-to-noise ratio (SNR) calculations is shown below for the Amide I band (~1650 cm^{-1}) (Fig. S1). First, the square root of the variance of the data in the spectral ranges 1500–1580 cm^{-1} and 1704–1718 cm^{-1} is calculated and taken as the root mean square (RMS) noise. The signal is then taken from the amplitude of the Amide I band at 1650 cm^{-1} and the SNR is finally calculated by taking the ratio of signal over the RMS noise.

```
%noise 785
data1a=load('ch785co.txt')
yaa=data1a(:,1)
yanoise=[yaa(388) yaa(389) yaa(390) yaa(391) yaa(392) yaa(393) yaa(394)
yaa(395) yaa(396) yaa(397) yaa(398) yaa(399) yaa(400) yaa(401) yaa(402)
yaa(403) yaa(404) yaa(405) yaa(406) yaa(407) yaa(408) yaa(409) yaa(410)
yaa(411) yaa(412) yaa(413) yaa(414) yaa(415) yaa(416) yaa(460) yaa(461)
yaa(462) yaa(463) yaa(464) yaa(465)]

va=var(yanoise)
RMSnoise=(va)^(1/2)

%signal 785
data1a=load('ch785co.txt')
yaa=data1a(:,1)
signal=yaa(441)

%SNR
SNR=signal/RMSnoise
```
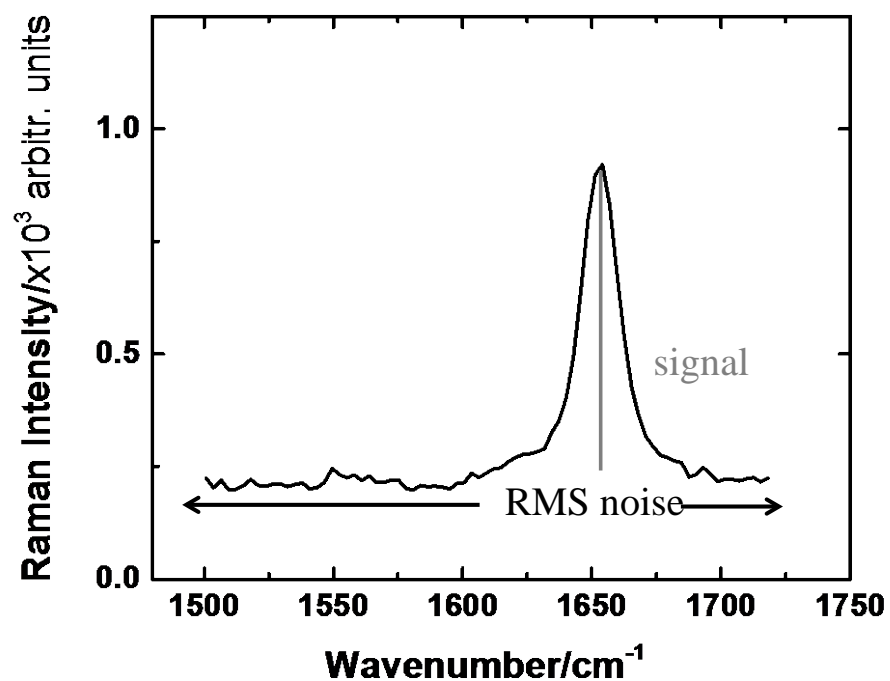
SUPPLEMENTARY FIGURES

Figure S1. Example of signal-to-noise ratio (SNR) for the Amide I band at ~1650 cm^{-1}. The RMS as described above, was calculated after background subtraction.
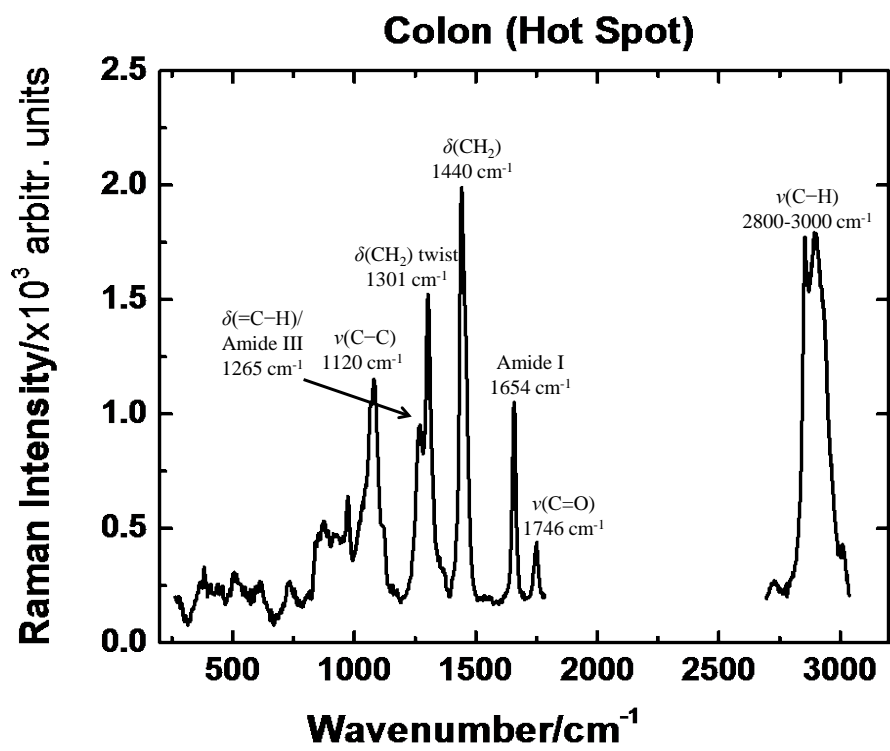
Figure S2. Raman spectrum from the hot spot on a tissue colon specimen taken with the 785 SM excitation.

SUPPLEMENTARY TABLES

Table S1. Raman shift and band assignment of Raman spectrum of colon tissue specimen.

Raman shift [cm^{-1}]	Band assignement[1-5]
1120	v(C−C), lipids
1265	δ(=C−H), lipids
	Amide III, proteins
1301	δ(CH$_2$) twist, lipids
1440	δ(CH$_2$), lipids
1654	Amide I, proteins
1746	v(C=O), lipids
2800−3000	v(C−H), lipids

v, stretching mode; δ, bending mode.

REFERENCES

(1)   C. J. Frank, R. L. McCreery, D. C. B. Redd, *Anal. Chem.* **1995**; *67*, 777.

(2)   Z. W. Huang, A. McWilliams, H. Lui, D. I. McLean, S. Lam, H. S. Zeng, *Int. J. Cancer* **2003**; *107*, 1047.

(3)   S. K. Teh, W. Zheng, K. Y. Ho, M. Teh, K. G. Yeoh, Z. Huang, *Brit. J. Cancer* **2008**; *98*, 457.

(4)   A. M. Herrero, *Crit. Rev. Food Sci.* **2008**; *48*, 512.

(5)   K. Venkatakrishna, J. Kurien, K. M. Pai, M. Valiathan, N. N. Kumar, C. M. Krishna, G. Ullas, V. B. Kartha, *Curr. Sci. India* **2001**; *80*, 665.