Red Fluorescence from Oral Cancer: Potential Use of Cancer Detection

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Introduction
When oral cancer tissue is irradiated with blue light, red fluorescence is sometimes seen. We think the fluorescence can be a new biomarker for cancer proliferation. Hence, in this study we investigated the properties of the red fluorescence and also examined whether the fluorescence was seen in the proliferative oral tissue other than cancer.

Materials & Methods
Eighteen oral proliferative samples were used in this study. Nine of them were gingival cancer. The most of tissue type was squamous cell carcinoma (11 of the 18 specimens). Fluorescence image of the samples was obtained using an in-vivo imaging system (IVIS, ParkinElmer) with an excitation filter of 420 nm and an emission filter of 620 nm.

Results & Discussion
The red fluorescence was seen in 7 of the 18 samples (39%). The fluorescence was not homogeneously distributed in each samples, rather spotty, patchy distribution. When the fluorescent specimens were cut into small pieces, the fluorescence was observed even from the cut surface, suggesting that the fluorescence originates from substances inside cancer tissue. On the other hand, the fluorescence was also seen in granulation tissue (1 of the 3 specimen), thus the fluorescence would not arise from the materials that are unique to cancer cells.

Conclusion
The red fluorescence was seen in approximately 40% of oral proliferative tissue. We intend to identify the origin of the fluorescence and examine whether it can be used for cancer detection.