TERT promoter mutation in non-malignant urothelium of bladder is associated with recurrence in patients with non-muscle invasive bladder carcinoma.

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Background

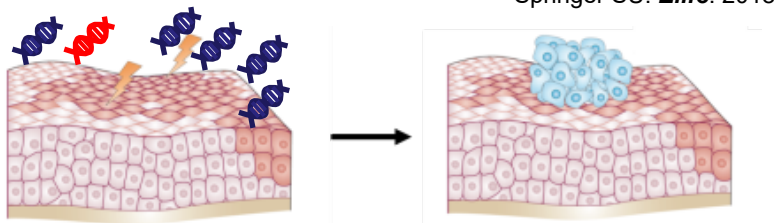
✓ *TERT* promoter mutations contribute to tumorigenesis by promoting immortalization and genomic instability.

Chiba K et al. ***Science***. 2017

✓ *TERT* promoter mutations are detected in urine from patients with no evidence of cancer, and is associated with developing urothelial carcinoma consequently.

Hayashi Y et al. ***Cancer Sci***. 2019
Springer SU. ***Elife***. 2018

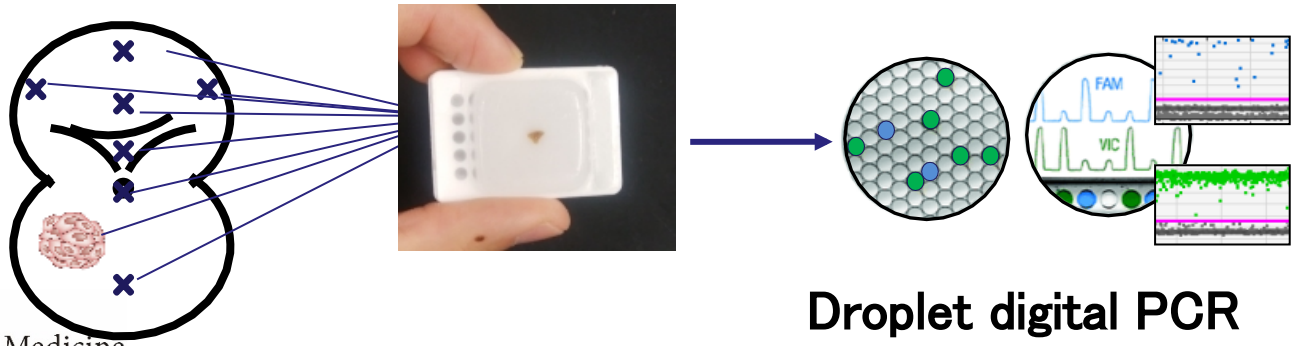
✓ We hypothesized that mutated *TERT* promoter DNA might be released from nor malignant urothelium.



Non-malignant urothelium　　Tumor formation

Materials and Methods

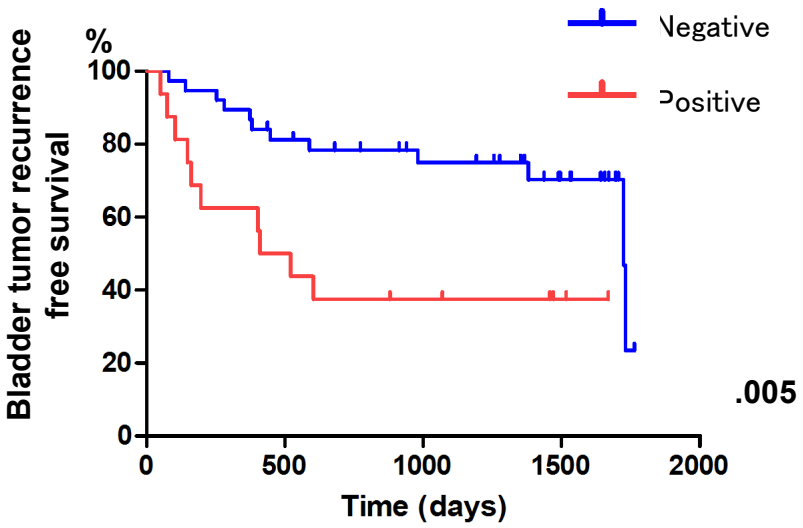
✓ We extracted DNA from biopsy samples and tumor from patients with non-muscle invasive bladder tumor, and performed droplet digital PCR analysis of *TERT* promoter.



Droplet digital PCR

Summary of results

- ✓ *TERT* C228T mutation was detected in 9% of non-malignant urothelium.
- ✓ *TERT* C228T mutation was detected in 30% of patients with NMIBC
- ✓ *TERT* C228T mutation in non-malignant urothelium was significantly associated with bladder recurrence after TURBT (p=0.005).



Conclusions

The TERT C228T mutation analysis of systemic random biopsy specimens may lead to novel treatment strategy for patients with NMIBC.