Nanobiodevices, Quantum Technology, and AI for Future Healthcare

Yoshinobu Baba

Department of Biomolecular Engineering, Nagoya University and Institute of Quantum Life Science, QST babaymtt@chembio.nagoya-u.ac.jp

We have devolved nanobiodevices, quantum technology, and AI for biomedical applications and healthcare [1-6], including single cancer cell diagnosis for cancer metastasis, circulating tumour cell (CTC) detection by microfluidic devices, nanopillar devices for ultrafast analysis of genomic DNA and microRNA, nanopore devices for single DNA sequencing, nanowire devices for exosome analysis, single-molecular epigenetic analysis, AI-powered nano-IoT sensors, quantum switching *intra vital* imaging of iPS cells and stem cells, and quantum technology-based cancer theranostics.

References

- [1] T. Yasui, Y. Baba, et al., Science Advances, 3 (2017) e1701133.
- [2] H. Yasaki, Y. Baba, et al., J. Am. Chem. Soc., 139 (2017) 14137.
- [3] T. Yasui, Y. Baba, et al., ACS Nano, 13 (2019) 2262.
- [4] M.F. Serag, Y. Baba, et al., ACS Nano, 13 (2019) 8155.
- [5] Z. Zhao, Y. Baba, et al., Nano Lett., 20 (2020) 599.
- [6] Y. Isobe, Y. Baba, et al., EBioMedicine (Published by THE LANCET), 50 (2020) in press.