

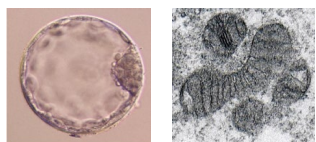
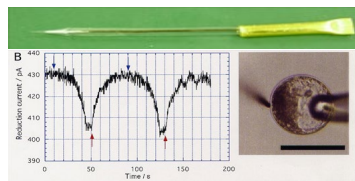
Development of Diagnostic System for Embryo and Oocyte Quality Using SECM and OCT

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Illustration

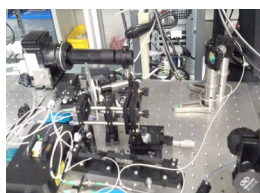


Scanning Electrochemical Microscopy (SECM) system

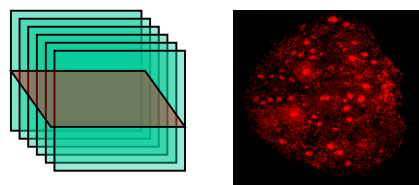


Embryo Mitochondria

- Cellular respiration measurement system based on SECM
- Cell screening system based on mitochondrial respiration



OCT system



3D imaging of oocytes

Doppler OCT system for non-invasive imaging of ovary

Subjects:

- Development of diagnostic system for embryo and oocyte quality using SECM.
- Development of evaluation system for gametes and stem cells quality using OCT.

Content:

The goals of the present study are 1) to develop a device to measure cellular respiration based on scanning electrochemical microscopy (SECM), 2) to develop a system to analyze gamete integrity using optical coherence tomography (OCT), 3) to establish a evaluation system for oocyte and embryo quality using OCT and SECM, and 4) to apply the measuring device and diagnostic system to clinical fertility treatments on a trial basis. To achieve these goals, we developed a cellular respiration and gamete integrity measurement system based on SECM and OCT. This system could measure the respiratory activity and OCT signals of a single oocyte and embryo, such as cattle and mouse, all with high reproducibility.

Appealing point:

We are conducting experimental clinical research in assisted reproductive technology. A noteworthy outcome of our research is that we successfully measured, the respiratory activity of a single oocytes and embryos various mammals including human. This study added momentum to the effort to establish a diagnostic system for evaluation of oocyte and embryos quality.

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