Multidrug resistance (MDR), which is caused by drug efflux via ATP-binding cassette (ABC) transporters, is one of the major obstacles in cancer drug delivery. MDR may be overcome by using inhibitors. But the use of MDR inhibitors unnecessarily may lead to drug toxicity, resulting in failures in previous clinical trials. We now employ a new method called microfluidic single cell biochip (SCB) technology to capture patient cancer cells and to measure them [1]. Now, we measure uptake of cancer drugs (e.g. paclitaxel, daunorubicin) in these cells in vitro with MDR inhibitors in order to determine whether the cancer cells are MDR or not. The measurement results may be used for patient selection.

Calcium release and influx are cell membrane receptor responses due to binding of ligands to G-protein coupled receptors (GPCR). These ligands may be potential drug candidates. We apply SCB technology to measure cell calcium changes using fluorescence dyes due to the interactions between cell receptors and ligands [2]. Recently, we have measured cell calcium changes in single glioma cells due to curcumin (from ginger), resveratrol (from blueberry) and cannabidiol (CBD from marijuana).


Wednesday January 27, 2021- 3:00PM

Zoom- https://bit.ly/3qGC0mq  Passcode: Toxicology  
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