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## Circulating tumor cells: Clinical utility, challenges and future prospects

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The detection of CTCs has been used as useful biomarkers in prognosis and monitoring therapeutic response of patients with metastatic cancer. However, during the course of cancer therapy, CTCs have undergone epithelial-mesenchymal transition (EMT) (i.e., EMT CTCs) and the current FDA-approved technology is unable to detect such EMT CTCs. Using new technologies such as antibody against cell-surface vimentin (CSV) exclusively expressed on EMT CTCs, we are able to detect EMT CTCs from breast, colon, and prostate tumor types and monitor disease progression and predict the prognosis. This presentation will briefly

review the current status of CTC detection, the detection technology and clinical utility of CTC. The challenges of the current technology and new technology in determination of CTC will be addressed. The detection of EMT CTCs especially CTC with molecular profiling for cancer diagnosis, monitoring therapeutic responses, predicting prognosis, and guiding personalized therapy will be discussed. Detection of CTCs and molecular characterization as one of the liquid biopsy approach may serve as an instrumental role for noninvasive approach in personalized cancer medicine

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