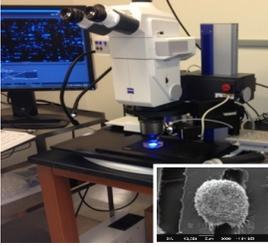


## Circulating Tumor Cell Research Core

**Purpose:** Circulating tumor cells (CTCs) are cancer cells shed by solid tumors into the bloodstream. CTCs have recently emerged as valuable prognostic and predictive cancer biomarkers, providing a non-invasive window into disease biology and progression that can be sampled repeatedly over time from a simple blood draw. Moreover, CTC sampling enables real time tracking of cancer phenotypes as tumor cells evolve over time and through progressive lines of therapy, thereby elucidating mechanisms of cancer dissemination and resistance and identifying new therapeutic targets. Thus, CTC analysis holds the promise of advancing precision medicine by enabling real-time molecular characterization of individual cancer patients' tumors at diagnosis and throughout treatment. The USC Norris CTC Research Core is a state-of-the-art, multi-platform facility for the capture and analysis of peripheral blood CTCs. The Core employs a variety of technologies that enrich CTCs for enumeration or molecular characterization. Enrichment is done from blood samples drawn by standard venous puncture from patients. In addition, Dr. Goldkorn's team has developed mouse xenograft research models using labeled CTCs that can be recovered from the mice.

**Facilities:** The Core is located in the laboratory of Dr. Amir Goldkorn (Faculty Director) on the 6<sup>th</sup> floor of the Harlyne Norris Research Tower (HNRT 6516) in the USC Norris Comprehensive Cancer Center. For CTC capture, the laboratory has the following platforms: 1. DEPArray (Silicon Biosystems); 2. Cellsearch (Janssen/J&J); 3. LiquidBiopsy (Cynvenio); 4. ClearCell FX (Clearbridge); and 5. two Parylene-C microfiltration platforms (developed by Dr. Goldkorn's team in collaboration with Caltech).

	<b>Parylene-C slot microfilters (USC/Caltech):</b> Rapid size-based live CTC capture for immunofluorescence (IF), culture, or live cell assays (e.g. telomerase activity)		<b>DepArray – 2<sup>nd</sup> generation (Silicon Biosystems):</b> Dielectrophoretic cage capture, 5-channel IF, and single cell recovery of ultra-pure CTCs for DNA, RNA, and protein profiling.	
	<b>CellSearch (Janssen/J&amp;J):</b> Automated, FDA-cleared immuno-affinity capture, enumeration and immunofluorescence (IF) protein profiling			<b>ClearCell FX (Clearbridge Biomedics):</b> Size-based capture for enumeration, immunofluorescence and genomic profiling
	<b>LiquidBiopsy (Cynvenio):</b> Immuno-affinity capture for high throughput genomic profiling (e.g. targeted sequencing)			

**CTC enrichment platforms available at USC Norris CTC Core**

**Access:** The facilities are available to all USC investigators, as well as collaborators outside the university. The price for CTC enrichment using any of the available platforms is \$500 per sample. Invoicing is set up through the online CORES system. Dr. Goldkorn and his staff assist investigators in choosing the most appropriate platform for their experimental and clinical trial needs. Downstream molecular profiling can be discussed as well. Samples generally are received and processed during regular laboratory operating hours but also can be received during off-hours (e.g. weekend) by special arrangement when necessary.

**Staffing and Contacts:** Faculty director: Amir Goldkorn, MD ([agoldkor@med.usc.edu](mailto:agoldkor@med.usc.edu)); core manager: Gareth Morrison, PhD ([garethmo@usc.edu](mailto:garethmo@usc.edu)); technical research associate: Yucheng Xu, PhD ([yuchengx@usc.edu](mailto:yuchengx@usc.edu))