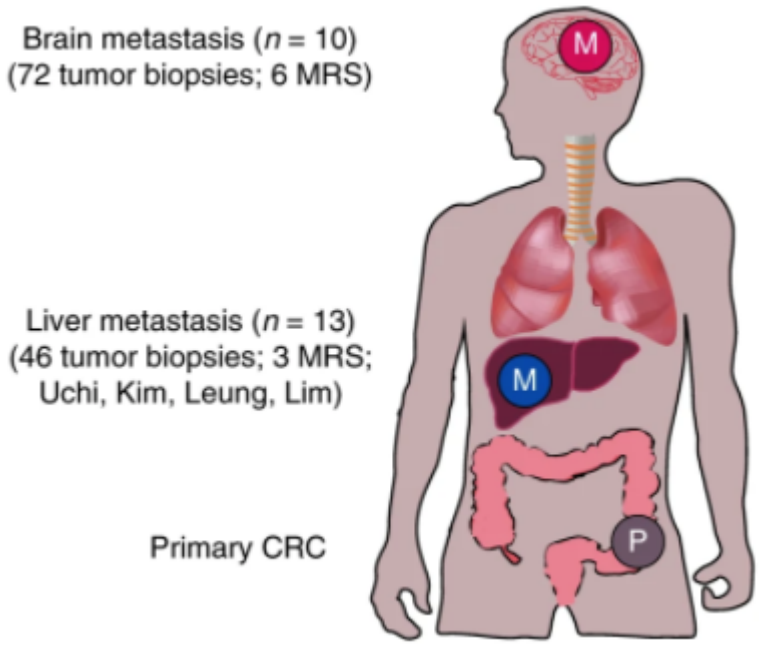
Docket #: S19-326

Early Detection and Treatment of Colorectal Cancer Based on Metastatic Potential

Researchers at Stanford have developed methods of diagnosing and treating colorectal cancer based on the discovery of genetic aberrations indicative of a patient's risk of metastasis. These genomic biomarkers can be readily screened for in tumor tissue and blood plasma, and can inform the therapeutic approach. There is a critical need to define biomarkers of aggressive disease, including those associated with lethal metastasis, to stratify patients for more aggressive or targeted therapeutic approaches. **Up to 80% of metastatic colorectal cancers are likely to have spread to distant locations in the body before the original tumor has exceeded the size of a poppy seed.** The detection of biomarkers of aggressive disease in early stage colorectal cancer patients (Stage I-III) can inform the use of chemotherapy and/or targeted and immunotherapies. Additionally, the ability to detect such biomarkers non-invasively in the blood can facilitate earlier detection of colorectal cancer, thus enabling improved patient outcomes.



Study overview: Exome sequencing data were analyzed from 118 biopsies from 23 metastatic colorectal cancer patients with paired distant metastases to the liver or brain to delineate the timing and routes of metastasis and to define metastasis competent clones (Curtis et al., Quantitative evidence for early metastatic seeding in colorectal cancer. *Nature Genetics*, 2019)

Stage of Development
Validation in human tissue samples.

Applications

- Early, non-invasive detection of colorectal cancer
- Determination of treatment approach (i.e., use of chemotherapy/type of targeted therapy)
- Determination of risk of relapse following therapy or metastasis
- Monitoring of minimal residual disease following treatment

Advantages

- Current lack of biomarkers for colorectal cancer patient stratification
- Can be readily screened for
- Can be used to define therapy and risk of metastasis

Publications

- Hu, Z., Ding, J., Ma, Z. et al. Quantitative evidence for early metastatic seeding in colorectal cancer. *Nat Genet* 51, 1113–1122 (2019). https://doi.org/10.1038/s41588-019-0423-x

Patents

- Published Application: WO2020257353

Innovators

- Christina Curtis

Licensing Contact

Imelda Oropeza

Senior Licensing Manager, Physcial Sciences

Email