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Presentation Title:	**Drug reposition for brain metastasis of breast cancer**
Presentation Start/End Time:	Tuesday, Apr 21, 2009, 8:00 AM -12:00 PM
Location:	Hall B-F, Poster Section 30
Poster Section:	30
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Author Block:	*Hong Zhao*, *Guangxu Jin*, *Helen Wong*, *Kemi Cui*, *Fuhai Li*, *Sufang Zhang*, *Solomen Wong*, *Xiaobo Zhou*, *Jenny Chang*, *Stephen Wong*. The Methodist Hospital Research Institute, Houston, TX, Baylor College of Medicine, Houston, TX, Elkins High School, Missouri City, TX

The incidence of central nervous system (CNS) metastases in breast cancer has been estimated as much as 16% in clinical series. Recently a trend towards increasing CNS relapse has been noted, up to 25-34%. The treatment of CNS metastases in breast cancer remains challenging. We proposed a systems approach by integrate computational biology methods and high-throughput biological analysis to decipher multiple targets in the pathways of brain metastases of breast tumors, and to rationally reposition FDA approved drugs for the brain metastasis of breast tumors. We performed Affymetrix HGU133A genome chip on 11 primary breast cancers from patients who developed eventual brain metastasis and 17 samples from breast cancer patients who relapsed at other sites but without brain metastasis. Based on the analysis of the microarray data sets and 8 breast cancer related pathways, and network motif topology clustering of these pathways, e.g. the 'MAPK', 'ErbB', 'Wnt', 'Notch', 'VEGF', 'mTOR', 'Cell Cycle', and 'P53' pathways in KEGG database, we constructed a key signal pathway with 101 gene nodes for brain metastasis of breast cancer. The identified genes can classify the brain metastatic from non-brain metastatic patients with 82.14% (for single gene) and 96.43% (for 2 genes) accuracy by the statistical classification. 32 FDA approved drugs, including SAHA, Sorafenib, Arsenic trioxide, Sunitinib and Dasatinib, et al, hit the target genes in the network as the candidates for our further validation. If validated, our systems biology approach for drug reposition offers the potential to fundamentally change the drug treatment of breast cancer brain metastasis.
Hong Zhao and Guangxu Jin contributed equally to this work

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