The Cancer Genome Atlas completes detailed ovarian cancer analysis

UNC completes miRNA and array analysis

Chapel Hill, NC – As part of The Cancer Genome Atlas (TCGA) project, UNC Lineberger researchers have contributed to the most comprehensive and integrated view of cancer genes for any cancer type produced to date.

The UNC team, which includes Charles Perou, PhD, professor of pathology and laboratory medicine and genetics, Neil Hayes, MD, associate professor of hematology/oncology, and Katie Hoadley, PhD, Research Associate, completed the microRNA and mRNA microarray analysis that contributed to the findings.

Ovarian serous adenocarcinoma tumors from 500 patients were examined and the analyses are reported in the June 30, 2011 issue of the journal *Nature*. Serous adenocarcinoma accounts for about 85 percent of all ovarian cancer deaths.

The researchers confirmed that mutations in the tumor suppressor gene TP53, are present in more than 96 percent of these cancers. Tumor suppressor genes produce proteins that normally prevent cancer formation. When the genes mutate and those protein functions are disrupted, tumors can form.

The team also found sets of genes associated with different patient survival patterns, indentifying a set of 108 genes associated with poor survival and 85 genes associated with better survival. Overall, the five-year survival rate for ovarian cancer is 31 percent, meaning that there is an urgent need for a better understanding of and therapeutic targets for the disease.

“These are exactly the types of cancers for which The Cancer Genome Atlas project can make a difference, providing the resources and collaborative scientific power to establish new investigative avenues aimed at treatments targeted to the specific biology of ovarian cancer,” said Hayes.

Investigators on the project also searched for existing drugs that might inhibit genes that seem to play a role in ovarian cancer. They identified 68 genes that could be targeted by existing FDA-approved or experimental therapeutic compounds. For example, PARP inhibitors, which have been tested in clinical trials at UNC and elsewhere, may be able to counteract a DNA repair gene observed in half of the ovarian tumors studied.

TCGA is jointly funded and managed by the National Cancer Institute (NCI) and the http://www.genome.gov/ National Human Genome Research Institute (NHGRI), both part of the National Institutes of Health. As participants in TCGA, UNC Lineberger scientists have also been involved in findings related to subtypes of the brain tumor glioblastoma and of lung cancers.

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