Precision Oncology Research Findings of Avera and German Group Are Published

A collaboration between the Avera Cancer Institute Center for Precision Oncology in Sioux Falls, S.D., and the Institute for Clinical and Molecular Biology (IKMB) of Kiel University, Germany, has published reference data to improve breast cancer diagnostics and help identify the best possible targeted personalized therapy.

"The goal of modern precision oncology is to better know the enemy - cancer. Drugs can be selected based on a tumor's molecular profile to precisely target the tumor. In this study, we have identified a set of genes suitable for personalized breast cancer therapy," said Michael Forster, research scientist with IKMB, the first author of the study.

The article, "RNA based individualized drug selection in breast cancer patients without patient-matched normal tissue," was published online by *Oncotarget* on Aug. 17, 2018.

"The presented data will help to identify the best possible targeted therapies," said Tobias Meissner, Cancer Genomics Manager and Bioinformatician with the Avera Cancer Institute Center for Precision Oncology.

The collaboration between the IKMB group and the Avera Cancer Institute Center for Precision Oncology is ongoing for three years now, with the focus to jointly improve cancer diagnostics. This is the second publication of this collaborative effort.

"This is a strategic collaboration to work on next-generation sequencing data analysis to improve patient outcomes," Meissner said. "We specifically looked at RNA expression data from healthy breast tissue, which is compared to tumor tissue to find altered genes. By pooling knowledge across research groups – nationally and internationally – we can find better ways to tackle the problems we're dealing with in the cancer world right now."

New in this study is that researchers also looked at gene expression from healthy breast tissue. "We discovered that especially samples with high fat content will yield false signals," Forster said. "About three quarters of RNA overexpression, for which drugs are available, are also expressed in healthy tissue."

In the presented research, the researchers identified altered genes that present targets for precision oncology. The reference data will help to identify the true alterations caused by the disease and incorporate that knowledge when selecting a personalized treatment plan. The method will also work in the case where a matched normal sample is not available – which is common in today's clinical setting.

“This presents an important first step, to gather new information for the patients’ benefit,” emphasizes Prof. Norbert Arnold, head of the Oncological Lab at the Department of Gynaecology and Obstetrics, Schleswig-Holstein University Hospital and also head of Tumor Diagnostics at IKMB. “For the clinical treatment decision-making process we now need to generate further knowledge through ongoing research.”

“Based upon the results of this initial collaboration, I look forward to incorporating current and future results into the design of clinical trials utilizing novel therapeutic strategies to treat multiple malignancies,” said Casey Williams, PharmD, Chief Scientific Officer, Experimental Therapeutics, at the Avera Cancer Institute.

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About Avera
Avera Health, based in Sioux Falls, S.D., has over 18,000 employees and physicians, serving more than 330 locations and 100 communities in a five-state region. Our ministry, our people and our superior value distinguish Avera. We carry on the health care legacy of the Benedictine and Presentation Sisters, delivering care in an environment guided by our values of compassion, hospitality and stewardship. For more information about Avera, see our website at Avera.org.

Contact:
Jay Gravholt
Director of Media Relations, Avera Health
Cell: 605-660-1944
Office: 605-668-8585
jay.gravholt@avera.org

Christian-Albrechts-Universität zu Kiel
Press, Communication and Marketing, Dr. Boris Pawlowski, Text/Editorial:
Mail: D-24098 Kiel, Telefon: (0431) 880-2104, Telefax: (0431) 880-1355
E-Mail: presse@uv.uni-kiel.de Internet: www.uni-kiel.de Twitter: www.twitter.com/kieluni
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