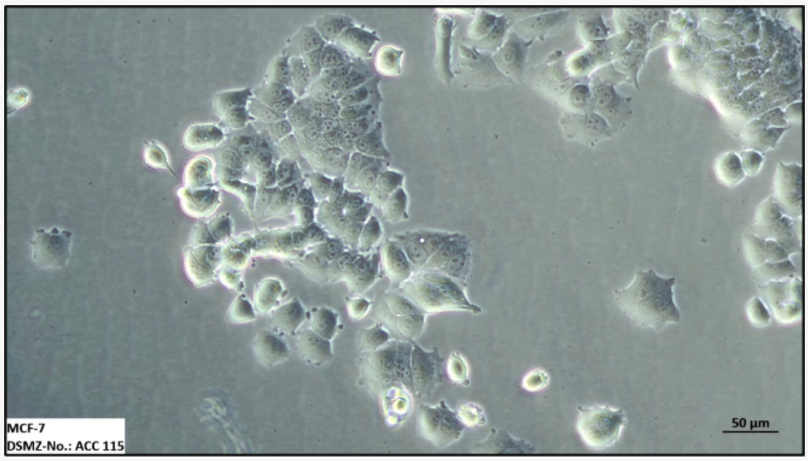
Cancer research: scientists from DSMZ characterize breast cancer cell lines

Results enable research on better breast cancer treatment options



Cell line MCF-7 (ACC 115) was established 50 years ago from a metastatic breast tumor of a 69-year-old woman and is still the most utilized cell line in breast cancer research and is one of the best-selling cell lines from DSMZ. Source: DSMZ

BRAUNSCHWEIG, LOWER SAXONY, GERMANY, March 19, 2024 /EINPresswire.com/ -- Cell lines are an important in vitro model in breast cancer research. A team around biochemist Dr. Sonja Eberth and bioinformatician Dr. Claudia Pommerenke from the Leibniz Institute DSMZ-German Collection of Microorganisms and Cell Cultures GmbH (Braunschweig, Germany) has extensively characterized the molecular properties of the breast cancer cell lines from the institute's collection. The results of the study, recently published in the renowned journal Cells, allow the individual breast cancer cell lines to be assigned to the known clinically relevant breast cancer subtypes and provide insights into potentially new tumor-relevant genes. DSMZ is the first cell bank in the world to perform its own characterization of cancer cell lines using high-throughput sequencing, to publicly present the molecular data and to make it available to the scientific community via DSMZCellDive.

Breast cancer comes in many different forms

Breast cancer is the most common cancer in women worldwide. However, breast cancer is not a uniform disease, as there are many different types. These subtypes exhibit different molecular alterations, for example in relation to the activity of hormone receptors, which are very important for diagnosis, treatment and prognosis. To better understand these alterations in cancer cells and establish new targeted approaches for therapy, in vitro models such as human cancer cell lines are indispensable in breast cancer research. These cell lines can grow almost indefinitely in a culture medium in the laboratory and be used for experiments. However, for research results to be meaningful and interpretable, it is essential that a suitable model is used that can actually represent the tumor type under investigation with its molecular alterations.

The cell line collection of the DSMZ comprises more than 700 different human cancer cell lines for research purposes, including cell lines established from different primary or metastatic breast tumors. Scientists from the DSMZ and the Hannover Medical School have now extensively studied and newly characterized the 29 breast cancer cell lines in the collection using various state-of-the-art methods. The molecular characteristics of the cell lines gained in this project will make it even easier for researchers worldwide to select suitable models for their breast cancer studies.

Free access to cell data via the DSMZ Digital Diversity platform
The data collected in the study is presented interactively on the open access web tool DSMZCellDive, a component of the DSMZ Digital Diversity Platform. Researchers can precisely check for each individual gene whether and in which breast cancer cell lines it is expressed. This further optimizes the process of selecting suitable model cell lines for a specific research question. The cell lines with the appropriate characteristics can then be ordered from the DSMZ for research purposes.

Original publication:
Pommerenke C., Nagel S., Haake J., Koelz A.L., Christgen M., Steenpass L., Eberth S. (2024) Molecular Characterization and Subtyping of Breast Cancer Cell Lines Provide Novel Insights into Cancer Relevant Genes. Cells 13 (4), 301. https://doi.org/10.3390/cells13040301.

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About the Leibniz Institute DSMZ
The Leibniz Institute DSMZ-German Collection of Microorganisms and Cell Cultures is the world's most diverse collection of biological resources (bacteria, archaea, protists, yeasts, fungi, bacteriophages, plant viruses, genomic bacterial DNA as well as human and animal cell lines). Microorganisms and cell cultures are collected, investigated and archived at the DSMZ. As an institution of the Leibniz Association, the DSMZ with its extensive scientific services and biological resources has been a global partner for research, science and industry since 1969. The DSMZ was the first registered collection in Europe (Regulation (EU) No. 511/2014) and is certified according to the quality standard ISO 9001:2015. As a patent depository, it offers the only possibility in Germany to deposit biological material in accordance with the requirements of the Budapest Treaty. In addition to scientific services, research is the second pillar of the DSMZ. The institute, located on the Science Campus Braunschweig-Süd, accommodates more than 86,500 bioresources and has almost 230 employees. www.dsmz.de

The Leibniz Association

The Leibniz Association connects 96 independent research institutions that range in focus from the natural, engineering and environmental sciences via economics, spatial and social sciences to the humanities. Leibniz Institutes address issues of social, economic and ecological relevance. They conduct basic and applied research, including in the interdisciplinary Leibniz Research Alliances, maintain scientific infrastructure, and provide research-based services. The Leibniz Association identifies focus areas for knowledge transfer, particularly with the Leibniz research museums. It advises and informs policymakers, science, industry and the general public. Leibniz institutions collaborate intensively with universities – including in the form of Leibniz ScienceCampi – as well as with industry and other partners at home and abroad. They are subject to a transparent, independent evaluation procedure. Because of their importance for the country as a whole, the Leibniz Association Institutes are funded jointly by Germany's central and regional governments. The Leibniz Institutes employ around 20,500 people, including 11,500 researchers. The financial volume amounts to 2 billion euros. www.leibniz-gemeinschaft.de

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