International Cancer Genome Project Publishes Article in Nature
Scientists of the German Cancer Research Center among the authors

An international team of authors comprising about 200 scientists describes goals and framework conditions of the International Cancer Genome Consortium (ICGC) in the current issue of the specialist journal Nature. The German part in the world's largest research project to unravel the molecular causes of cancer is coordinated by scientists at the German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ) in Heidelberg. The publication focuses on ethical framework conditions, data release policies, study design and a list of the individual projects.

The first sequencing data of breast, liver, and pancreatic tumors have already been made available on the ICGC website (www.icgc.org). These were provided by the project partners in Great Britain, Japan, Australia and Canada. The German project partners are investigating childhood brain tumors and they are planning to present first results at the next ICGC conference in December in Brisbane. “We haven’t been able to start our work for the International Cancer Genome Project until early this year,” said DKFZ’s Professor Peter Lichter, coordinator of the German ICGC network, adding optimistically: “But we are already working full speed in order to present comparable data very soon.”

Information obtained in the various projects may soon be used to the benefit of cancer patients worldwide, because the data will be freely accessible and not patentable. The international project thus aims to make sure that the molecular data of the various tumor types can be used as swiftly as possible for new diagnostic methods or therapies. “At the National Center for Tumor Diseases we want to be able to offer every cancer patient a genetic analysis of his or her tumor in five years time,” said Professor Otmar D. Wiestler, DKFZ’s Scientific Director. “The data from the International Cancer Genome Project will help us to identify cancer-relevant genes in each individual patient and to use them for the best possible treatment.”

An extraordinary challenge is the analysis and storage of the gigantic mass of data that are produced in the course of the International Cancer Genome Project. The genome of a cell is composed of about three billion building blocks, which are captured up to 30 times in the various analyses in order to assure the quality of results. All data of the German ICGC projects will be joined together by Professor Roland Eils, the network’s deputy coordinator. To this end, Eils, who heads the Theoretical Bioinformatics Division of DKFZ, is building one of the world’s largest data storage units for life sciences at the BioQuant Center of Heidelberg University. “Currently we are already operating with a data storage capacity of 600 terabytes, which is sufficient for storing the genome sequences of about 100 patients,” calculates Eils. “In the course of this year, our storage capacity will be further expanded to 2 petabytes and ultimately, in next year’s final expansion step, to 6 petabytes.” For comparison: A laptop has a storage capacity of about 80 gigabytes; a petabyte is equal to one million gigabytes.

Funds of approximately €15 million for the German participation in ICGC will be provided jointly by the Federal Ministry of Education and Research (BMBF) and the German Cancer Aid (Deutsche Krebshilfe e. V.).
The German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ) is the largest biomedical research institute in Germany and is a member of the Helmholtz Association of National Research Centers. More than 2,000 staff members, including 850 scientists, are investigating the mechanisms of cancer and are working to identify cancer risk factors. They provide the foundations for developing novel approaches in the prevention, diagnosis, and treatment of cancer. In addition, the staff of the Cancer Information Service (KID) offers information about the widespread disease of cancer for patients, their families, and the general public. The Center is funded by the German Federal Ministry of Education and Research (90%) and the State of Baden-Württemberg (10%).

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