

## [Department of Molecular Diagnosis](#) [1]

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The Department of Molecular Diagnostics was established in 2003 the Laboratory of Molecular Biology created within the Department of Pathology. In 2012, the Laboratory was transformed into the Department of Molecular Diagnostics. The Department of Molecular Diagnostics also includes the Biobank of the Holy Cross Cancer centre, which collects material for research.

We conduct research with the help of molecular biology techniques adapted to the needs of patients of the Holy Cross Cancer Centre. The research can be divided into three main types:

1. detection of genetic predispositions to cancer development (e.g. BRCA1); these studies are carried out in close cooperation with the Genetic Clinic of the Holy Cross Cancer Centre,
2. selecting patients for targeted therapies (colorectal cancer - KRAS, NRAS; melanoma – BRAF; non-small-cell lung cancer - EGFR),
3. diagnosis and monitoring of the effectiveness in hematological malignancies (e.g. CML, ALL, AML, PV and others).

We apply the following techniques:

- next generation sequencing – NGS,
- capillary DNA sequencing,
- qPCR, PCR, RT-PCR
- digital PCR,
- *ImageStream Mark II* Imaging Flow Cytometer.

Our research activity focuses on the search for new genes for diagnosis and therapy of cancer using, among others, the NGS technology. We also conduct research on the use of circulating tumor cells (CTC), extracellular nucleic acids (cfNA) and exosomes as a source of diagnostic material, the so-called "liquid biopsy".

We conduct research in cooperation with centers in Poland and abroad (NCI, Washington, USA) - more in the Science Section.

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