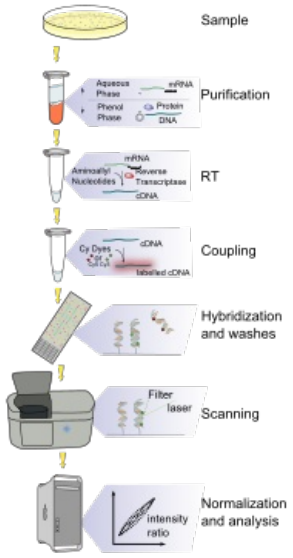
Possibilities of detection of minimal residual disease

Minimal residual disease

It is a subclinical level of cancer where malignant cells are no longer detected by conventional cytological methods during therapy. The patient is in complete clinical remission, but up to 10 ^{10} malignant cells may be present in the body. Finding them is associated with a poor prognosis for the patient, mostly related to relapse of the disease.

Their detection is also important for the further course of therapy.



Detection

Minimal residual disease is detected mainly in hematological malignancies, but is now also being tested in solid tumors. The principle of its monitoring is to find such a trait on the tumor cell that will carry the whole clone and will be different from healthy cells. In the past, qualitative and semi-quantitative methods were used, but today more quantitative methods are being developed, which make it possible to monitor a possible increase or decrease in the tumor population. Currently, several methodological approaches are used, which differ in their specificity, sensitivity, cost, etc. The most sensitive method is RT-PCR in real time. A sought-after feature of tumor cells is mRNA. This is because tumor cells differ from normal cells in their expression profile - they express other genes. Isolated tumor cells are detected in the blood, bone marrow and lymphatic system. Collection of bone marrow punctures or peripheral blood collected in an anticoagulant (EDTA) is used. Using RT-PCR, it is possible to detect a cancer cell among 106-107 normal bone marrow cells.

Example of the use of specific markers of malignancy in clinical practice:

- **Chronic myeloid leukemia**: transposition of the **ABL** gene from chromosome u 9 to the *'BCR'* gene on the & nbsp; chromosome & nbsp; 22 & nbsp ; → & nbsp; chimeric gene & nbsp; BCR-ABL & nbsp; → & nbsp; protein & nbsp; p210 (persistent positivity in patients at risk of relapse).
- **Acute myeloid leukemia**: translocation chromosome t (15; 17) & nbsp; → & nbsp; expression of fusion gene & nbsp; PML-RAR-α (marker of residual diseases).

Markers of minimal residual disease

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  - in ca breast: cytokeratins, carcinoembryonic antigen, mammaglobin, tumor associated glycoprotein, epithelial mucins
  - u melanoma u: tyrosinase

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