

Oncology

Advanced Technologies in Oncology Diagnostics

The management and care of an oncology patient is greatly enhanced by coordinating all laboratory tests and results within one facility.

One Source For:

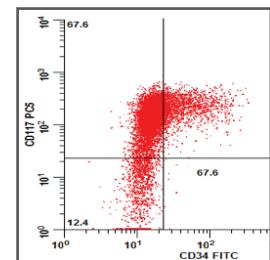
- Consultations
- Reflex testing
- Minimal residual disease detection
- Specialized Tests:
 - Molecular
 - Cytogenetic
 - Cytometric

Using advanced, complementary technologies, Molecular Pathology Laboratory Network, Inc. (MPLN) performs sequential testing on a single sample to maximize clinically relevant information and provide a complete diagnostic picture.

Flow Cytometry

Flow cytometry characterizes cells to classify disease, guide sequential testing, monitor efficacy of treatment (minimal residual disease) and rule out a reactive process. With a turnaround time of one day, flow cytometry is highly specific and sensitive for the evaluation of leukemia, lymphoma and other hematological abnormalities. The DNA content (proliferative rate and ploidy) of tumor cells can also be determined.

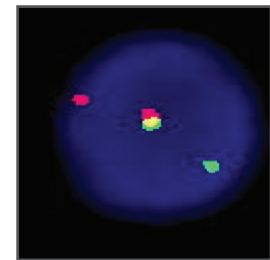
CD117+ and CD34 -/+ AML with 80% blasts



Fluorescence *in situ* hybridization (FISH)

FISH is a cytogenetic technique used to detect and localize the presence or absence of specific DNA sequences on chromosomes and has a turnaround time of one to two days. It uses fluorescent probes that bind to only those parts of the chromosome with which they show a high degree of sequence similarity. Clinical indications and/or results from previous testing are utilized to select specific gene locations for investigation.

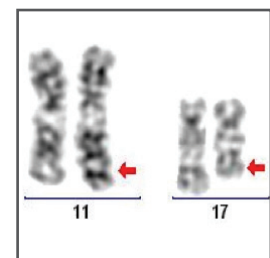
Rearrangement of the MLL gene



Cytogenetics

In some forms of cancer, especially hematological malignancies, cytogenetics can determine which chromosomal abnormalities are present in malignant cells – facilitating diagnostic, prognostic and baseline data. Chromosomes are visible in the metaphase stage of the cell cycle which allows for a full characterization of number and structure. Due to the involved technique of growing cells, the turnaround time averages five to seven days.

Translocation of chromosome 11 and 17, t(11;17)(q23;q23)





Molecular Diagnostics

Polymerase chain reaction (PCR) detects gene rearrangements to establish clonality for B-cell and T-cell disorders. It can be used to identify specific genetic translocations and detect the presence of very low levels of involvement with disease.

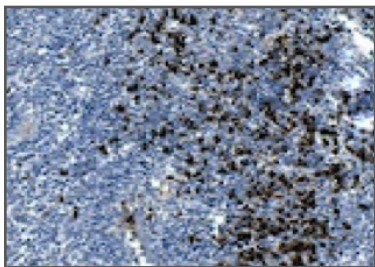
Quantitative PCR is available to follow minimal residual disease in hematological disorders including: CML, APL and ALL. Measurements are taken at baseline in newly diagnosed cases and follow up monitoring for evidence of molecular remission in response to conventional chemotherapy or allogeneic stem cell transplantation.

Gene mutation studies aid in the selection of appropriate treatment protocols and in the detection of drug resistance.

TEST NAME	INDICATION
UGT1A1	Colon cancer and Camptosar® toxicity
ABL Kinase	Chronic myeloid leukemia and Gleevec® resistance
Warfarin Sensitivity	Proper dosing levels for Coumadin®

Immunohistochemistry (IHC)

Paraffin embedded tissue samples are studied with special protein-specific stains associated with certain tumor types and interpreted in conjunction with morphology. IHC is used for classification and prognostic information.



Kappa positive IHC

Circulating Tumor Cell Detection

Circulating tumor cells can be enumerated to evaluate metastatic disease in breast, colon and prostate cancer. The CellSearch™ System incorporates both immunomagnetic isolation and immunohistochemistry characterization.

StrataFLEX™

Innovative Health Management

Through StrataFLEX, MPLN provides patient-specific reflex testing options to meet diagnostic and prognostic challenges in a timely, cost effective manner.

About MPLN

Pursuing excellence in laboratory medicine since 1989, MPLN offers comprehensive, integrated testing and professional diagnostic consultations to meet health management challenges for physicians and their patients.

Headquartered in Maryville, Tennessee, MPLN is a fully licensed laboratory, certified by the Clinical Laboratory Improvement Amendment, accredited by the College of American Pathologists, and licensed in Tennessee, New York, Florida and Maryland.

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