

Immunophenotyping by Flow Cytometry

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CLINICAL APPLICATION

- Immunophenotyping by flow cytometry is essential in characterizing acute leukemia to allow proper diagnosis and therapy.
- Flow cytometry is helpful in evaluating bone marrow disease or involvement of marrow by lymphoma.
- Immunophenotyping should be considered in characterizing increased cell counts in a CBC or when abnormal or atypical cells are seen by microscope.
- Flow is especially useful in evaluation of cell populations in blood and bone marrow but may also be useful in other tissues or fluids with hematopoietic cells such as lymph nodes.

IMMUNOPHENOTYPING BATTERIES

PAML offers the following disease-specific batteries:

- **Hairy Cell Leukemia (IPHCL):** CD3, 5, 8, 10, 11c, 13, 14Mo, 16, 19, 20, 22, 23, 25, 34, 45, 56, 103, FMC7, Kappa, Lambda
- **Lymphoma (IPLYM):** CD2, 3, 4, 5, 7, 8, 10, 11c, 13, 14Mo, 16, 19, 20, 23, 33, 34, 38, 45, 56, 103, DR, FMC7, Kappa, Lambda
- **Multiple Myeloma (IPMM):** CD2, 3, 5, 7, 8, 10, 11c, 16, 19, 20, 22, 23, 38, 45, 56, 103, 138, FMC7, Kappa, Lambda
- **Chronic Lymphocytic Leukemia (IPCLL):** CD3, 4, 5, 7, 8, 10, 11c, 13, 14Mo, 16, 19, 20, 23, 34, 38, 45, 56, 103, FMC7, Kappa, Lambda, Zap 70
- **Acute Leukemia (IPAL):** CD2, 3, 4, 5, 7, 8, 10, 13, 14Mo, 14My, 15, 16, 19, 20, 33, 34, 41, 45, 56, 64, 117, DR, Kappa, Lambda, MPO, Tdt, cCD3, cCD79a, Glycophorin A
- **Neuroblastoma (IPNEUR):** CD3, 8, 10, 13, 14Mo, 19, 20, 22, 33, 34, 45, 56, 9, DR, Kappa, Lambda, MPO, Tdt, cCD3, cCD79a
- **Pediatric Acute Leukemia (IPPED):** CD2, 3, 4, 5, 7, 8, 9, 10, 13, 14Mo, 14My, 15, 19, 20, 33, 34, 38, 41, 45, 56, 58, 64, 117, DR, Kappa, Lambda, MPO, Tdt, cCD3, cCD79a, Glycophorin A
- **Miscellaneous (IPMISC):** CD3, 4, 5, 7, 8, 10, 11c, 13, 14Mo, 16, 19, 20, 33, 34, 45, 56, 103, DR, Kappa, Lambda, MPO, Tdt, cCD3, cCD79a

TEST UPDATE

Quick Facts

- ▶ Flow cytometry allows analysis of tens of thousands of cells within seconds.
- ▶ Flow cytometry is an important diagnostic tool in the diagnosis of leukemia and lymphomas.
- ▶ Batteries designed for specific clinical indications simplify ordering, resulting and billing.
- ▶ A "miscellaneous" battery is available if the clinical indications are not specific.
- ▶ All batteries include an interpretation by a board-certified hematologist or clinical pathologist.
- ▶ Diagnosis and/or clinical indication is helpful when performing this test.

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CLINICAL MANAGEMENT

- Immunophenotyping by flow cytometry provides identification and characterization of hematopoietic cells to aid in the diagnosis, prognosis and treatment monitoring of hematologic neoplasms.
- Flow cytometry is a technique for counting, examining, and sorting microscopic particles suspended in a stream of fluid. The technique permits analysis of tens of thousands of cells within seconds for the rapid characterization of the immunophenotype of cells, by evaluating specific antigen expression on those cells. This not only allows for the classification of large numbers of cells, but also the identification of small populations of abnormal cells, as might be seen after therapy. It also differentiates and characterizes “small lymphocytes” found in various lymphomas.
- Flow is especially useful in evaluation of cell populations in blood and bone marrow but may also be useful in other tissues or fluids with hematopoietic cells such as lymph nodes.

TEST INFORMATION

DESCRIPTION	Immunophenotyping, Acute Leukemia	METHOD	Flow Cytometry
ORDER CODE	IPHAL		
CPT CODES	88189, 88184, 88185×29	SPECIMEN REQUIREMENTS	7 mL ACD (A or B) whole blood (yellow-top tube), 3 mL EDTA whole blood (lavender-top tube), and 2-4 peripheral blood smears. Maintain at room temperature. Transport ASAP. Samples must be processed within 48 hours of collection. Note: Immunophenotyping is also available on tissues, bone marrow, and body fluids.
DESCRIPTION	Immunophenotyping, CLL		
ORDER CODE	IPHCLL		
CPT CODES	88189, 88184, 88185×21	COMMENTS	Minimum amount: 7 mL ACD and 2 mL EDTA. Clinical indication and patient’s date of birth must be included when ordering this study.
DESCRIPTION	Immunophenotyping, LYMPHOMA		
ORDER CODE	IPHLY		
CPT CODES	88189, 88184, 88185×21	SCHEDULE	Monday - Saturday, 5:00 pm
DESCRIPTION	Immunophenotyping, HAIRY CELL Leukemia		
ORDER CODE	IPHHC	TURNAROUND	3 days
CPT CODES	88189, 88184, 88185×19	RANGES	Immunophenotyping Result. This test was developed and its performance characteristics determined by Sacred Heart Medical Center and Childrens Hospital. It has not been cleared or approved by the U.S. Food & Drug Administration. The FDA has determined that such clearance or approval is not necessary. This test is used for clinical purposes in many laboratories and is necessary for standard medical care. It should not be regarded as investigational or for research. This laboratory is certified under the Clinical Laboratory Improvement Amendments of 1988 (“CLIA”) as qualified to perform high-complexity clinical testing.
DESCRIPTION	Immunophenotyping, NEUROBLASTOMA		
ORDER CODE	IPHNE		
CPT CODES	88189, 88184, 88185×20		
DESCRIPTION	Immunophenotyping, PEDIATRIC Leukemia		
ORDER CODE	IPHPLK		
CPT CODES	88189, 88184, 88185×31		
DESCRIPTION	Immunophenotyping, MISCELLANEOUS		
ORDER CODE	IPHMI		
CPT CODES	88189, 88184, 88185×24		
DESCRIPTION	Immunophenotyping, MULTIPLE MYELOMA		
ORDER CODE	IPHMM		
CPT CODES	88189, 88184, 88185×19		
DESCRIPTION	Natural Killer Cell		
ORDER CODE	IPHNK		
CPT CODES	86357		

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