BEUTNER LABORATORIES

Reference Manual

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BEUTNER LABORATORIES

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General Information

INTRODUCTION

Beutner Laboratories was founded by Ernst H. Beutner, Ph.D. (create hyperlink) and Gloria Beutner in 1992. Development of defined, quantified Immunofluorescent (IF) methods now used for studies of autoimmune skin diseases started with studies of experimental autoimmune thyroiditis at the State University of New York at Buffalo (UB) under the leadership of Ernest Witebsky, M.D. and with guidance from Albert Coons, M.D. at Harvard University.

From 1968 to 1992 Tadeusz Chorzelski, M.D. and his chief, Stefania Jablonska, M.D. of the Warsaw Medical School, Poland joined with Beutner's group at UB in studies that yielded over 125 publications on autoimmunity in skin disease, 5 edited books and 8 summer teaching programs in the 1970's primarily for dermatologists on uses of IF methods in studies of skin immunopathology. Also, from 1965 to 1985 Beutner and his associates at UB led an international effort to introduce defined IF into diverse immunologic studies by quantifying fluorescein to protein ratios and labeled antibody protein content of fluorescein conjugated antibodies. This formed the foundation for the present day reproducible defined immunofluorescence.

Dermal and mucosal autoimmunity has been our focus. Supported by our extensive research and a proven track record, Beutner Laboratories is a specialized reference laboratory for immunopathology of autoimmune bullous and connective tissue diseases, oral pathology, dermatopathology and immunology tests pertaining to dermal oncology. Beutner Laboratories immunology laboratory provides testing for an extensive list of prevalent and esoteric autoimmune diseases using cutting edge diagnostics. We use multiple technologies including direct immunofluorescence (DIF) and indirect immunofluorescence (IIF), enzyme linked immunosorbent assays (ELISA), and immunoblot detection methods to support healthcare practitioners across a wide clinical spectrum of autoimmune bullous and connective tissue diseases.

LICENSURE AND ACCREDITATION

Beutner Laboratories is CLIA and CAP accredited and licensed by the New York State Department of Health and by the states of California , Maryland, Pennsylvania, and Rhode Island.

STANDARDS OF SERVICE

Beutner Laboratories is known for high quality, timely and accurate reports, keen consultations and impeccable customer service. Biological specimens are collected by complimentary courier or express mail service. Reports can be viewed at Beutner online, a convenient HIPAA compliant lab information system. Our laboratory also offers flexible billing options to suit your needs. Healthcare professionals have come to know the expert capabilities of our specialized laboratory, along with our outstanding and personal service.

HOLIDAY COVERAGE

Beutner Laboratories observes the following holidays: New Year's Day, Martin Luther King Jr. Day, President's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, Day After Thanksgiving, Christmas Eve and Christmas Day. Please be aware that we are not staffed on these holidays. Should you have any questions or concerns please contact Customer Care between the hours of 8:00 AM and 3:30 PM prior to the holiday. Commercial courier services may also be delayed or closed on these major holidays, so please check with these couriers before shipping samples.

MEDICAL TEAM

The Beutner Laboratories Medical team draws upon exclusive clinical and research experience, frequently contributing to the scientific literature in the field of immunology. Members of our staff include PhD's, DDS's and MD's, and are certified by the American Board of Medical Microbiology, the American Board of Medical Laboratory Immunology, and American Board of Oral and Maxillofacial Pathology. Clients have ready access to pathologists with expertise in immunopathology, dermatopathology and oral pathology for consultations.

BIOGRAPHIES

Raminder Grover, MD, (D)ABMM
Laboratory Director

Dr. Raminder Grover is a Diplomate of the American Board of Medical Microbiology. She is certified by the New York State Department of Health in Diagnostic Immunology and has years of clinical laboratory experience. She worked with Dr. Beutner for years gaining experience in diagnostic studies for autoimmune skin diseases. She specializes in skin immunopathology, immunofluorescence assays, ELISA and immunoblot assays for the diagnosis of autoimmune skin and mucous membrane diseases. She is a volunteer faculty in the Department of Dermatology at SUNY, Buffalo and also has authored research papers in skin autoimmunity, microbiology and virology.

Mirdza Neiders, DDS, MS, (D)ABOMP
Consultant

A SUNY Distinguished Teaching Professor at University at Buffalo, Dr. Neiders received her bachelor's degree from the Ohio State University and her master's in pathology from the University of Chicago. She earned her dental degree at University of Michigan. Dr. Neiders has certificate of qualification in Diagnostic Immunology from the NYSDOH and specializes in oral and dermal immunopathology for the diagnosis of autoimmune skin and mucous membrane diseases.

Lakshmanan Suresh, DDS, MS, PhD, (D)ABMLI, (D) ABOMP
Technical Director

Dr. Suresh is board-certified in Oral and Maxillofacial Pathology by the American Board of Oral and Maxillofacial Pathology. He is also board certificated in Laboratory Immunology by American Board of Medical Laboratory Immunology. He has authored numerous publications and book chapters, holds several patents and maintains research collaborations around the world. He is a Clinical Professor at the State University of New York at Buffalo.

BILLING INFORMATION

Beutner Laboratories will bill hospitals, reference laboratories, clinics or medical groups. Alternatively, Beutner Laboratories will bill patients' insurance directly, provided all the necessary billing information is supplied at the time services are rendered (See requirements listed below).

1. Beutner Laboratories does not have capitation contract agreements with any HMO's. Due to Knox-Keene regulations, if a third- party payer is initially billed and is denied as an HMO member, these charges will be billed back to the patients.
2. Beutner Laboratories will bill Medicare for tests performed at Beutner Laboratories. If a claim is denied as "not eligible for the specified date(s) of service", the charges will be billed to the patient.
3. Changes to Billing instructions must be supplied within 30 days from the date of the invoice. Beutner Laboratories will not process any billing instruction change requests received after the 30-day period. The charges will remain the patient's responsibility.

If local or state requirements preclude providing the patient's name to ensure confidentiality, Beutner Laboratories will be unable to bill patients' insurance directly; the charges will be billed to the client. All billing discrepancies should be reported to our Billing Department immediately. Our Billing Department is available from 8:00am to 3:30pm EST by calling, 1-800-288-0549 or 1-866-234-5018 (ask for Gina) for Billing and Collections. Our Billing Specialists are available to answer questions and resolve any problems. All bills are due and payable upon receipt.

We are able to bill all insurances and for the list of insurances we participate in, please call our billing department at 1-800-288-0549.

Beutner Laboratories Federal I.D. number is 16-1596380

Professional Courtesy

"Professional Courtesy" testing is strictly prohibited as stated in the Anti-Kick Back Statute U.S.C. 1320a – 7b; therefore, Beutner Laboratories cannot honor request for this service.

Patient Billing

Beutner Laboratories can bill the patient's insurance directly if complete billing information is provided on the Test Requisition Form or a copy of insurance card, front and back, is included at the time the specimen is submitted. Beutner Laboratories Patient Statements are issued immediately following response from insurance. The patient is solely responsible for the charges. Patient bills are due upon receipt.

Third Party Billing

Beutner Laboratories can bill the patient's insurance company directly for tests performed by Beutner Laboratories if the information listed below is provided. Beutner Laboratories will not bill third party payers for referral testing submitted to Beutner Laboratories for performance by a send out laboratory.

Billing Information Requirements (to be entered on Beutner Laboratories Test Requisition form):

- Patient Name
- Patient Date of Birth
- Patient Sex
- Patient Address, including City, State, Zip (if billing a facility, address is not needed)
- Patient Relationship to Subscriber
- Insurance Carrier Name
- Insurance Carrier Address, including City, State, Zip
- Subscriber Name and Date of Birth
- Policy Number or Members ID Group Number
- Requesting Physician Name
- Requesting Physician NPI #
- Diagnosis (ICD-10 Code) applicable to the patient's condition at time of service

Patients are responsible for the yearly deductibles, co-payments and any balance not covered by the insurance company. If insurance payment is not received within 60 days, the patient is billed directly.

Medicare Billing

Beutner Laboratories is a Medicare Provider. If your patient has Medicare coverage, please send us complete information including secondary insurance, if applicable. Beutner Laboratories will bill Medicare and accept 80% assignment. Complete information, including the "New" Medicare number must be entered on the Test Requisition Form or a copy of insurance cards front and back at the time the specimen is submitted. *Please note: Due to HIPAA Transaction Code Standards effective October 16, 2003, a valid diagnosis code is mandatory for billing Medicare. Medicare billing information is not complete and will not be accepted without a valid diagnosis code.*

LMRP and NCD Requirements

Medicare tests listed on the National Coverage Determinants (NCD) & Local Medical Review Policies (LMRP) will not be reimbursed by Medicare without a covered diagnosis code applicable to the patient at time of service. If a diagnosis code cannot be provided that matches the NCD or LMRP requirement, an Advance Beneficiary Notice (ABN) should be obtained from the patient and forwarded with the requisition.

Referrals from Hospitals

Under Medicare rules, Beutner Laboratories can only bill Medicare for a hospital-referred test when the specimen was not collected as part of an inpatient or outpatient encounter, i.e., the specimen was not drawn in a hospital facility or by hospital personnel. All other testing for hospital patients must be billed directly to the hospital.

CPT Codes

CPT codes listed in this Directory are provided only as guidance to assist you in billing. CPT codes listed reflect our interpretation of CPT coding requirements and are subject to change at any time. It is the client's responsibility to verify the accuracy of the codes. A copy of the changes to CPT coding recommendations for 2005 precedes the test listing section. If you have any questions, please refer to the Current Procedural Terminology (CPT) manual published by the American Medical Association. To verify reimbursement, or if you have any questions regarding usage of a CPT code, please contact your local Medicare carrier.

Medical Necessity/Diagnosis Codes

Every third-party bill must have a valid diagnosis code. Please be sure to put the ICD-10 Code(s) applicable to the patient's condition for the specified date of service on the requisition in the box marked "Diagnostic Codes ICD-10". Medicare diagnosis codes must be coded to the highest level of specificity. Please refer to the International Classification of Diseases (ICD-10) manual, as well as the Medical Regulations and Manuals issued or authorized by the Center for Medicare and Medicaid Services (CMS) for diagnosis coding rules and regulations. If the claim is denied due to lack of medical necessity, Beutner Laboratories will send a request for an additional ICD-10 code or other evidence of medical necessity directly to the ordering Doctor.

Specimen Requirements

SPECIMEN COLLECTION KITS ARE AVAILABLE FREE OF CHARGE FROM BEUTNER LABORATORIES. CALL 1-800-288-0549 FOR AN IMMEDIATE SHIPMENT OF COLLECTION KITS.

GENERAL REQUIREMENTS

- Biopsy Specimens for Direct immunofluorescence studies must be collected in Michel's medium (yellow top tube) or Zeus medium. Specimens inadvertently placed in formalin solution and then transferred into Michel's medium may compromise the results (J Am Acad of Dermatol 2011;65:106-11).
- **Biopsy Specimens for H&E should be placed in 10% formalin (blue top tube).**

SERUM STUDIES

- Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place 2-5ml serum into red capped tube provided. If separation facilities are not available, the blood can be sent in the tube used for collection.

T CELL GENE REARRANGEMENT STUDIES

- Whole blood, bone marrow, formalin-fixed, paraffin-embedded (FFPE) tissue block or slides, fresh or frozen tissue are acceptable specimens for the test.
- 3 to 5 mL whole blood, 1 mL bone marrow, Lavender-top (EDTA) tube, yellow-top
- (ACD) tube and green-top (heparin) tubes are accepted but not preferred
- Five unstained slides at 10 µM or formalin-fixed, paraffin-embedded tissue block Tissue in RPMI or frozen (A minimum of 2 x 2 x 2 mm).
- Transport Temperature: Refrigerated. For FFPE tissue unstained slides, or tissue in RPMI or frozen

Disease Specific Requirements

BULLOUS DISEASES: INDICATED DIRECT IMMUNOFLUORESCENT (DIF) AND SERUM STUDIES

SKIN LESIONS

If pemphigoid or epidermolysis bullosa acquisita (EBA), anti-cicatricial pemphigoid (AECP) or bullous lupus erythematosus (LE) is suspected,

- take skin biopsy with ~2/3 normal skin and ~1/3 edge of lesion. For DIF on 1.0 M NaCl split skin to differentiate between pemphigoid and EBA, AECP and bullous LE, take second biopsy ~3mm from lesion. Serum studies may also be indicated to determine the specific autoantibodies.

If pemphigus is suspected,

- take skin biopsy with ~2/3 normal skin and ~1/3 lesion edge plus serum for best diagnostic results. Serum studies are also indicated for confirmation.

If dermatitis herpetiformis is suspected,

- take normal skin ~3 mm from lesion for best results. Serum tests by IIF-lgA EmA and tTG ELISA increase sensitivity. Test for eTG antibodies by ELISA may also be helpful in ruling out DH.

If porphyria or pseudoporphyria is suspected

- take skin biopsy with ~2/3 normal skin and ~1/3 lesion edge for best DIF results.

If in doubt,

- take two biopsies — one perilesional, as for pemphigoid, and one normal, as for DH, for best results.

If eruptions with other non-disease specific immune deposits are suspected, including lichenoid eruptions or lichen planus or related disorders,

- take biopsy as for porphyria for DIF and lesional biopsy for light microscopy.

MUCOSAL LESIONS

If pemphigoid is suspected,

- take normal mucosa ~3 mm from lesion or Nikolsky sign.

If pemphigus or paraneoplastic pemphigus is suspected,

- take normal mucosa ~3 mm from lesion or Nikolsky sign plus serum.

If erosive lichen planus (LP) is suspected,

- take mucosal biopsy with ~2/3 normal mucosa and ~1/3 edge of lesion or of Nikolsky sign for best DIF results.

If hereditary EB needs to be classified or confirmed

- take biopsy of induced lesion in normal skin.

Preferred Skin Site:

- Normal appearing skin preferably upper inner arm just above the elbow.

SPECIAL METHOD OF OBTAINING SPECIMENS

An attempt should be made prior to biopsy to induce microscopic cleavage. The only possible exception would be in patients with generalized junctional or severe generalized recessive dystrophic EB, in whom there is such inherent mechanical skin fragility as to readily demonstrate cleavage planes just with the performance of routine punch biopsy technique. In general, it is suggested that the following be done prior to biopsy of such a skin area:

- The area to be biopsied should be sterilely prepped.
- Using the eraser (cleaned with an alcohol swab) part of a pencil, apply firm pressure downward and then laterally in a rotary fashion (approximately 180 degrees each way for 3-5 times).

If after lifting up the pencil eraser it is obvious that the skin has markedly split, then this procedure should be re-done a bit less vigorously (to at most demonstrate a minimal puckering of the skin) in an adjacent area. However, if absolutely no change is visible after having tried to induce a blister, then one should still biopsy that area in the hope that microscopic cleavage will be noted. For example, the latter is usually the case with localized EB simplex although we can still usually demonstrate cleavage in distant skin if it is pretreated in this manner. 4mm. punch biopsy should then be taken of this area and the entire specimen then placed into immunofluorescence transport medium (BL, Zeus or Michel's).

Under no circumstances should:

- Lesional tissue be sent since frequently it contains multiple artifactual as well as true cleavage planes, thereby making diagnosis very difficult. In addition, the presence of a blister usually is associated with the release of enzymes which tend to digest the skin proteins such that we cannot satisfactorily get antibodies to react with the specific antigens.
- Skin be obtained from the palms or soles, since the overall thickness of that tissue makes it very difficult to demonstrate skin cleavage or early blister formation.

References

- Fine JD, Eady RAJ, Bauer EA et al. Revised classification system for inherited epidermolysis bullosa: Report of the second international consensus meeting on diagnosis and classification of epidermolysis bullosa. J Am Acad Dermatol. 2000; 42:1051-66.
- Fine JD, McGrath J, Eady RA. Inherited epidermolysis bullosa comes into the new millennium: A revised classification system based on current knowledge of pathogenetic mechanisms and the clinical, laboratory, and epidemiologic findings of large well-defined patient cohorts. J Am Acad Dermatol. 2000; 43:135-37.
- Fine JD, Eady RAJ, Bauer EA et al. The classification of inherited epidermolysis bullosa (EB): Report of the Third International Consensus Meeting on Diagnosis and Classification of EB. J Am Acad Dermatol. 2008; 58:931-50.

CONNECTIVE TISSUE DISEASES: INDICATED DIRECT IMMUNOFLUORESCENT (DIF) AND SERUM STUDIES

If SLE is suspected,

- take biopsy of sun-exposed, normal skin of forearm for DIF for LE band test and in vivo ANA reaction.3-5 ml blood should be collected in red top tube for serum studies for ANA and tests for ARA criteria.

If DLE is suspected,

- take biopsy of untreated lesion of 3 or more months duration in sun-exposed area for DIF and for light microscopy. Non-sun-exposed areas are of little value.

If SCLE or Sjogren's syndrome is suspected

- take sun-exposed skin lesion biopsy for DIF for in vivo ANA and blood in red top tube for serum tests for ANA, Ro (SS-A) and La (SS-B) antibodies.

If scleroderma is suspected,

- take biopsy of sun-exposed skin for DIF and C+DIF studies and blood for serum studies (Profile E).

IMMUNE COMPLEX MEDIATED VASCULITIS: INDICATED DIRECT IMMUNOFLUORESCENT STUDIES

If leukocytoclastic vasculitis is suspected, (or most other immune complex vasculitides),

- take biopsy for DIF of a fresh lesion, less than 48 hours old. DIF studies of older lesions (more than 72 hours old) yield low sensitivity. Perilesional normal skin specimens have lower sensitivity for detection of immune complexes by DIF. Light microscopic biopsy studies are also indicated.

If Henoch Schoenlein purpura is suspected,

- take biopsy of a fresh lesion (less than 48 hours old). Light microscopic biopsy studies are also indicated.

If stasis dermatitis is suspected,

- take biopsy for DIF of edge of skin lesion plus adjacent normal skin.

MOLECULAR TESTING FOR T CELL NEOPLASMS

If T cell neoplasm is suspected,

- send (a) 3-5ml whole blood in EDTA, ACD or heparin tube, or (b) skin biopsy in RPMI media, or (c) 5 unstained skin section slides.

Disease Specific Testing

BULLOUS DISEASES:
BIOPSY STUDIES / SKIN AND MUCOSA

Direct Immunofluorescence (DIF)

Beutner Test Code:

- #001

Routine Panel Tests for the Presence of:

- IgG, IgA, IgM, Fibrin, C3 and IgG4.

Note:

- IgG1 may be added at an additional charge, if greater sensitivity is required.

Methodology:

- Direct Immunofluorescence

Reference Range:

- Detailed interpretation accompanies report.

CPT Code:

- 88346 (x no of biopsies) 88350 (x immune stains)

Turnaround Time:

- Report availability is within 48 hours from the time of specimen receipt.

Biopsy Site Selection:

- Proper biopsy sites are dependent on the suspected diagnosis.

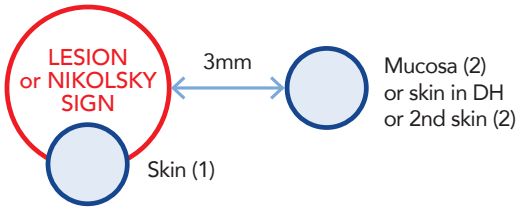
Specimen Requirements:

- The yellow capped tubes provided with Beutner collection kits contain a holding solution for immunofluorescence specimens. A biopsy from a Lesional, Normal and/or Perilesional site should be placed in these collection tubes. If these tubes are unavailable, submit specimen in Zeus/Michel's fixative. Transport at room temperature.

Sample Stability:

- Stable in appropriate solution at room temperature for 5 days.

BLISTERING AND OTHER ERUPTIONS



(1) Skin biopsy in most pemphigus/ pemphigoid cases.

(2) Mucosal biopsy or skin biopsy for DH or 2nd skin biopsy for pemphigus or pemphigoid cases.

Differentiation of Bullous Pemphigoid from Epidermolysis Bullosa Acquisita by DIF of 1M NaCl split biopsy (with no vesicles)

Beutner Test Code:

- #002

Methodology:

- Direct Immunofluorescence

Reference Range:

- Detailed interpretation accompanies report.

CPT Code:

- 88346 (x no of biopsies) 88350 (x immune stains)

Turnaround Time:

- Report availability is within 48-72 hours from the time of specimen receipt.

Biopsy Site Selection:

- Normal skin (3mm from a lesion). This test requires an intact epidermis and dermal-epidermal junction. If the initial DIF (test code#001) reveals epidermal separation, this test cannot be done.

Specimen Requirements:

- The yellow capped tubes provided with Beutner collection kits contain a holding solution for immunofluorescence specimens. A biopsy from a Normal site should be placed in these collection tubes. If these tubes are unavailable, submit specimen in Zeus/Michel's fixative. Transport at room temperature.

Sample Stability:

- Stable in appropriate solution at room temperature for 5 days.

Light Microscopy

Beutner Test Code:

- #003

Methodology:

- Histology processing, staining and Interpretation

Reference Range:

- Not applicable. Detailed interpretation accompanies report.

CPT Code:

- 88305

Turnaround Time:

- Report availability is within a week from the time of specimen receipt.

Specimen Requirements:

- Biopsies for H &E studies should be submitted in 10% formalin containers. Transport at room temperature.

Sample Stability:

- Stable at room temperature indefinitely.

Light Microscopy Consultation Only

Beutner Test Code:

- #004

Methodology:

- Analysis and Interpretation

Reference Range:

- Not applicable. Detailed interpretation accompanies report.

CPT Code:

- 88321

Turnaround Time:

- Report availability is within a week from the time of specimen receipt.

Specimen Requirements:

- H&E slides of skin &/or mucosa specimens submitted in a slide folder will be accepted. If applicable, please send a copy of previous report with slides. Please note that slides cannot be returned. Transport at room temperature.

Sample Stability:

- Stable at room temperature indefinitely.

Pemphigus/Pemphigoid antibody titer -IgG & IgG4

Beutner Test Code:

- #013

Methodology:

- Indirect Immunofluorescence

Substrate:

- Primate Esophagus

Reference Range:

- Negative: <1:10

Units:

- Titer

CPT Code:

- 88346 and 88350

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- The detection of anti-skin (IC and BMZ) antibodies aids in the diagnosis, and sometimes prognosis, of autoimmune bullous diseases including pemphigus, pemphigoid, cicatricial pemphigoid, and epidermolysis bullosa acquisita (EBA). Epithelial intercellular antibodies are diagnostic for pemphigus and occur in over 90% of patients with active forms. Antibodies to basement membrane antigens of stratified squamous epithelium occur in about 70% of active bullous pemphigoid, 50% of EBA and 10% of cicatricial pemphigoid patients.

Differentiation of Bullous Pemphigoid from Epidermolysis Bullosa Acquisita (EBA) on Split Skin-IgG & IgG4

Beutner Test Code:

- #014

Methodology:

- Indirect Immunofluorescence

Substrate:

- Split Human Skin

Reference Range:

- Negative: <1:5

Units:

- Titer

CPT Code:

- 88346 and 88350

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Epidermolysis bullosa acquisita (EBA) can mimic bullous pemphigoid (BP) clinically, histologically and immunologically. In this indirect immunofluorescence assay, EBA and BP antibodies can be distinguished by their localization in skin that is split at the lamina lucida. This test and added follow up tests help differentiate EBA/bullous LE/anti-epiligrin cicatricial pemphigoid from bullous pemphigoid.

Desmoglein (Dsg) 1 & Dsg 3 Antibodies

Beutner Test Code:

- #015

Methodology:

- ELISA

Reference Range Values:

Dsg1	Dsg3
Negative: <18	Negative: <19
Indeterminate 18-36	Indeterminate: 19-37
Positive > 36	Positive: > 37

Units:

- Units/ml

CPT Code:

- 86235 (x2)

Schedule/Turnaround Time:

- Report availability is 2-4 days from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8°C) up to five days and frozen (-20°C or lower) up to one year.

Clinical Relevance:

- Pemphigus includes a group of often fatal autoimmune blistering diseases characterized by intraepidermal and/or intraepithelial lesions. Pemphigus vulgaris and its variants may present with oral or other mucosal lesions alone or with mucosal plus skin lesions. Pemphigus foliaceus and its variants present with skin lesions alone. Indirect Immunofluorescence studies reveal that both forms of pemphigus are caused by autoantibodies to cell surface antigens of stratified epithelia of mucous membranes and epidermal layer of the skin. These antibodies bind to calcium dependent adhesion molecules in cell surface desmosomes, notably desmoglein 1(DSG-1) in pemphigus foliaceus and desmoglein 3 (DSG-3) in pemphigus vulgaris. Pemphigus vulgaris patients with both mucosal and skin lesions have antibodies to both DSG-3 and DSG-1. The diagnosis of pemphigus depends on biopsy and serum studies that characterize lesions and detect the autoantibodies that cause them. Serum studies afford highly sensitive diagnostic aids. The identification of the reactive antigens as DSG-1 and DSG-3 has made it possible to develop highly specific and sensitive ELISA methods.

Bullous Pemphigoid (BPAG2) 180 & BP (BPAG1) 230 Antibodies

Beutner Test Code:

- #016

Methodology:

- ELISA

Reference Range Values:

- Negative: < 9 Units: Units/ml Positive: ≥ 9

CPT Code:

- 86235 (x2)

Schedule/Turnaround Time:

- Report availability is 2-4 days from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8°C) up to five days and frozen (-20°C or lower) up to one year.

Clinical Relevance:

- Bullous pemphigoid (BP) is an autoimmune mediated immunobullous skin disorder found mainly in the elderly population and is characterized by frequent occurring of tense blisters and erythema. Antibodies are directed to the basement membrane zone and are frequently found in the serum of patients. Target antigens of the autoantibodies in BP patient serum are BP230 and BP180, also called BPAG1 and BPAG2.
- Molecular weight of these antigens is 230 kD and 180 kD respectively. BP180 is thought to be the direct target of the autoantibody because of its location, and the autoantibodies against BP230 are thought to be secondarily produced. The antibodies against BP180 are thought to be pathogenic, because the rabbit antibody against mouse in the NC16a region of BP180 forms blisters similar to BP when injected into neonatal mice. The main epitope of BP180 is located in the region close to cell membrane called NC16a and most patient serum reacts with the recombinant NC16a protein. Serum levels of BP180 co-relate with the disease activity.

Paraneoplastic Pemphigus Antibody Titer

Beutner Test Code:

- #017

Methodology:

- Indirect Immunofluorescence

Substrate:

- Rat bladder

Reference Range:

- Negative: <1:10

Units:

- Titer

CPT Code:

- 88346

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Paraneoplastic pemphigus, or PNP, is a rare but often fatal autoimmune blistering disease, with five-year mortality rates approaching 40%. PNP is most commonly associated diagnoses are hematologic malignancies and occasionally sarcomas and other solid-organ malignancies. In children, the most commonly associated cancer is Castleman disease. Indirect immunofluorescence using rat bladder epithelium substrate is a sensitive and specific test, and it is positive in about 80% of cases of PNP. Paraneoplastic pemphigus, or PNP, is a rare but often fatal autoimmune blistering disease, with five-year mortality rates approaching 40%.

Pemphigus antibody titer prognostic test - IgG & IgG4 (compares old & new sera)

Beutner Test Code:

- #018

Methodology:

- Indirect Immunofluorescence

Substrate:

- Primate Esophagus

Reference Range:

- Negative: <1:10

Units:

- Titer

Note:

- Positive samples at a 1:10 screening dilution are titered to an endpoint at an additional charge. CPT Code: 88346 and 88350

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.
- Sample Stability: Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.
- Clinical Relevance: The comparison of the titers of anti-skin (IC) antibodies in old and new sera aid in diagnosis and prognosis of pemphigus patients.

Envoplakin Antibody

Beutner Test Code:

- #009

Methodology:

- ELISA

Reference Range:

- Ratio <1.0 Negative Ratio >1.0 Positive

Units:

- Ratio

CPT Code:

- 83516

Schedule/Turnaround Time:

- Assay performed once every week. Report availability is one week from the time of specimen receipt. Please calls the laboratory if expedited results are needed.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Paraneoplastic pemphigus (PNP) is a life-threatening form of pemphigus that is associated with a neoplasm (e.g., non-Hodgkin's lymphoma, chronic lymphocytic leukemia, Castleman tumor, thymoma, sarcoma, Waldenstrom's macroglobulinemia). Pathogenesis is based on a combination of humoral and cellular autoimmune responses. Circulating autoantibodies are directed against multiple antigens, including predominantly plakins (envoplakin, periplakin, desmoplakin I, desmoplakin II, epiplakin), plectin, Dsg1, Dsg3 and BP230. Due to their high specificity (91–100%), anti-envoplakin autoantibodies are considered an important diagnostic marker for paraneoplastic pemphigus. This ELISA is _____% sensitive in detecting antibodies to envoplakin in PNP patients.

Pemphigoid Gestationis (HG) Factor

Beutner Test Code:

- #019

Methodology:

- Indirect Immunofluorescence

Substrate:

- Primate Esophagus

Reference Range:

- Negative: <1:10

Units:

- Titer

CPT Code:

- 88346

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Pemphigoid gestationis, also known as herpes gestationis, is a rare autoimmune blistering disease associated with pregnancy. It's clinical and immunopathological features are similar to pemphigoid. The autoantibodies in HG bind to the NC16A, non- collagenous domain of BPAG2 or BP180. The antibodies can be transmitted from mother to child leading to premature birth, low birth weight, bullous and popular lesions in the newborn and a high stillbirth rate(Di Zengo, 2007). HG factor test detects complement fixing IgG BMZ antibodies in serum of patients with pemphigoid gestationis. ELSIA for BP180 antibodies should also be done.

Selected Reference:

Di Zenzo G et al. The Intracellular and extracellular domains of BP180 antigen comprise novel epitopes targeted by pemphigoid gestationis autoantibodies. J Invest Dermatol 2007;127:864-73.

Endomysial (EmA) Antibody IgA Antibody Titer

Beutner Test Code:

- #020

Methodology:

- Indirect Immunofluorescence

Substrate:

- Primate Smooth Muscle (Primate Lower Esophagus)

Reference Range:

- Negative: <1:2.5

Units:

- Titer

CPT Code:

- 88346

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- The detection of endomysial antibodies (EmA) aids in the diagnosis of gluten sensitive enteropathy, i.e. celiac disease (CD) and dermatitis herpetiformis (DH). Patients with CD and DH are reported to have antibodies to endomysium, reticulin and gliadin. Of the various antibody markers of CD and DH, EmA of the IgA class seem to be the most sensitive and specific for the diagnosis of DH. Tests for IgA TG2 (tTG or tissue transglutaminase) and for TG3 (eTG or epidermal transglutaminase) by ELISA should also be done for greater sensitivity.

IgA Tissue Transglutaminase Antibody

Beutner Test Code:

- #021

Methodology:

- ELISA

Reference Range:

<20 Units Negative 20-30 Units Weak Positive
> 30 Units Moderate to Strong Positive

Units:

- Units

CPT Code:

- 83516

Schedule/Turnaround Time:

- Assay performed once every week. Report availability is one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Presence of the tissue transglutaminase (tTG) IgA antibody is associated with gluten sensitive enteropathies such as celiac disease and dermatitis herpetiformis. tTG IgA antibody concentrations greater than 40 U/mL usually correlate with results of duodenal biopsies consistent with a diagnosis of celiac disease. For antibody concentrations greater or equal to 4 U/mL but less than or equal to 40 U/mL, additional testing for endomysial (EMA) IgA concentrations may improve the positive predictive value for disease.

IgA Epidermal Transglutaminase Antibody

Beutner Test Code:

- # 022

Methodology:

- ELISA

Reference Range:

- <16 AU/ml Negative 16-22 AU/ml Grey range >22 AU/ml Positive

Units:

- AU/ml

CPT Code:

- 83516

Schedule/Turnaround Time:

- Assay performed once every two weeks. Report availability is two weeks from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Patients with Dermatitis Herpetiformis (DH) have gluten induced circulating IgA autoantibodies to tissue transglutaminase (TG2) and epidermal transglutaminase (TG3). Recent data indicated that DH is IgA-TG3 immunocomplex mediated disease developing in some gluten sensitive enteropathy (GSE) patients. There is pathogenic TG3 deposition in the papillary dermis and small blood vessels in skin of patients, colocalized with granular IgA deposits. IgA epidermal transglutaminase antibodies ELISA is a sensitive test for initial diagnosis and follow up of patients with DH.

Collagen VII antibody ELISA (to rule out EBA)

Beutner Test Code:

- #023

Methodology:

- ELISA

Reference Range:

- <6.0 U/ml Negative ≥6.0 U/ml Positive

Units:

- U/ml

CPT Code:

- 86235

Schedule/Turnaround Time:

- Assay performed once every week. Report availability is one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Type VII Collagen is found in the lamina densa and the sublamina densa fibrillar area of the dermal-epidermal junction. The pathogenicity of autoantibodies targeting collagen VII has been independently demonstrated both in vitro, ex vivo and in vivo. Collagen VII autoantibodies specific to COL7 is the current standard for EBA diagnosis (Hashimoto, 2012). Type VII collagen (COL7)-specific autoantibodies were primarily of the IgG isotype and are found in over 75% of the EBA patients (Iwata, 2018). The immunodominant domains of type VII collagen can also be recognized by IgG autoantibodies from patients with bullous lupus erythematosus (BSLE). Anti– type VII collagen autoantibodies can be detected 3 months before the inception of BSLE in patients with SLE. In a study by Grabell (2015) of BSLE, 100% of the patients had circulating Collagen VII antibodies before and during the skin eruption. The healthy and SLE controls did not show any circulating collagen VII antibodies (Grabell, 2015, Ishikawa,1997).This ELISA (MBL) detects antibodies to autoreactive non-collagenous 1 and 2 (NC1 and NC2) domains of type VII collagen. In a study on suspected patients with EBA/bullous LE by Bain E et al., this test gave 87.5% sensitivity and 100% specificity.
- Anti–type VII collagen autoantibodies can be detected 3 months before the inception of BSLE in patients with SLE. In a study by Grabell (2015) of BSLE, 100% of the patients had circulating Collagen VII antibodies before and during the skin eruption. The healthy and LSE controls did not show any circulating collagen VII antibodies (Grabell, 2015, Ishikawa,1997).

Selected References:

Hashimoto T, Ishii N, Ohata C, Furumura M. Pathogenesis of epidermolysis bullosa acquisita, an autoimmune subepidermal bullous disease. J Pathol. 2012;228:1–7
Iwata, H., Vorobyev, A., Koga, H., Recke, A., Zillikens, D., Prost-Squarcioni, C., ... & Ludwig, R. J. (2018). Meta-analysis of the clinical and immunopathological characteristics and treatment outcomes in epidermolysis bullosa acquisita patients. *Orphanet journal of rare diseases*, *13*(1), 153.
Grabell, D. A., Matthews, L. A., Yancey, K. B., & Chong, B. F. (2015). Detection of type VII collagen autoantibodies before the onset of bullous systemic lupus erythematosus. *JAMA dermatology*, *151*(5), 539-543.
Ishikawa O, Zaw KK, Miyachi Y, Hashimoto T, Tanaka T. (1997). The presence of anti–basement membrane zone antibodies in the sera of patients with non-bullous lupus erythematosus. *Br J Dermatol. 136(2)*:222-226.
Bain EE, Grover RK, Plunkett RW, Beutner EH. Bain EE, Grover RK, Plunkett RW, Beutner EH. Detection of collagen VII autoantibodies to NC1 and NC2 domains of collagen VII by ELISA in suspected epidermolysis bullosa acquisita and bullous lupus erythematosus patients. J Dermatol Sci. 2012 Feb;65(2):155-6.

Linear IgA Bullous Dermatosis (LABD), Chronic Bullous Dermatosis of Childhood (CDBC) antibody titer -IgA

Beutner Test Code:

- #024

Methodology:

- Indirect Immunofluorescence

Substrate:

- Normal human skin and Split Human skin

Reference Range:

- Negative: <1:5

Units:

- Titer

CPT Code:

- 88346

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Linear IgA Bullous Dermatosis (LABD) is a chronic, acquired, autoimmune blistering disease. It is characterized by subepidermal blistering and linear deposition of immunoglobulin A (IgA) basement membrane antibodies. The disease affects both children and adults. There are some differences in their clinical presentations, therefore the disease in children is termed as Chronic Bullous Disease of Childhood (CBDC). The immunopathology of LABD and CBDC is similar (Venning, 2011). IgA antibodies to BMZ of skin by IIF on split human skin can be detected in about 30% of adult patients with LABD and in almost 75% of children with CBDC. This test helps to differentiate the autoantibodies reacting on the epidermal roof of the split human skin (target antigens are the shed ectodomains of BP180 molecule) from the antibodies reacting on the floor (target antigen is LAD285 and in rare cases type VII Collagen). Patients with LABD may have co-existing IgG antibodies, therefore IIF test for IgG and IgG4 antibodies on Split Human Skin (#014) should also be done.

Selected Reference:

Vanessa A. Venning. Linear IgA Disease: Clinical Presentation, Diagnosis, and Pathogenesis. Dermatologic Clinics, 2011;29 (3): 453-458.

BULLOUS DISEASES: SERUM PROFILES

Profile #1 – Pemphigus

Beutner Test Code:

- #025 Includes Tests: #013 Pemphigus/Pemphigoid antibody titer - IgG & IgG4
  #015 Desmoglein (DSG) 3 & DSG 1 Antibodies

Methodology:

- Indirect Immunofluorescence AND ELISA

Substrate:

- Primate Esophagus/ELISA plate

Reference Range:

- Please see individual tests

CPT Code:

- Please see individual tests

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt (profiles will be longer).

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year. Clinical Relevance: Please see individual tests.

Profile #2 – Paraneoplastic Pemphigus

Beutner Test Code:

- #026 Includes Tests: #013 Pemphigus/Pemphigoid antibody titer - IgG & IgG4
  #015 Desmoglein (DSG) 3 & DSG 1 Antibodies
  #017 Paraneoplastic Pemphigus Antibody Titer - IIF on Rat Bladder
  #009 Envoplakin ELISA

Methodology:

- Indirect Immunofluorescence and ELISA

Substrate:

- Primate Esophagus/ELISA plate/Rat Bladder

Reference Range:

- Please see individual tests

CPT Code:

- Please see individual tests

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt (profiles will be longer).

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year. Clinical Relevance: Please see individual tests.

Profile #3 – Pemphigoid/EBA Profile

Beutner Test Code:

- #027 Includes Tests: #013 Pemphigus/Pemphigoid antibody titer - IgG & IgG4
  #014 Differentiation of Bullous Pemphigoid from EBA on Split Skin - IgG & IgG4
  #016 BP230 & BP180 Antibodies - ELISA **OR**
  #023 Collagen VII Antibody ELISA)

Methodology:

- Indirect Immunofluorescence AND ELISA

Substrate:

- Primate Esophagus/Human Split Skin/ELISA plate

Reference Range:

- Please see individual tests

CPT Code:

- Please see individual tests

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt (profiles will be longer).

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year. Clinical Relevance: Please see individual tests.

Dermatitis Herpetiformis Profile

Beutner Test Code:

- #028 Includes Tests: #020 IgA Endomysial antibodies
  #021 IgA Tissue Transglutaminase Antibodies ELISA
  #022 IgA Epidermal Transglutaminase Antibodies - ELISA

Methodology:

- Indirect Immunofluorescence and ELISA

Substrate:

- Primate Esophagus/ELISA plate

Reference Range:

- Please see individual tests

CPT Code:

- Please see individual tests

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt (profiles will be longer).

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year. Clinical Relevance: Please see individual tests.

Direct Immunofluorescence (DIF) for LE (systemic, discoid, & sub-acute cutaneous)

Beutner Test Code:

- #005

Routine Panel Tests for the Presence of:

- IgG, IgA, IgM, Fibrin, and C3

Methodology:

- Direct Immunofluorescence

Reference Range:

- Detailed interpretation accompanies report.

CPT Code:

- 88346 (x no of biopsies) 88350 (x 4)

Turnaround Time:

- Report availability is within 48 hours from the time of specimen receipt.

Biopsy Site Selection:

- Proper biopsy sites are dependent on the suspected diagnosis.

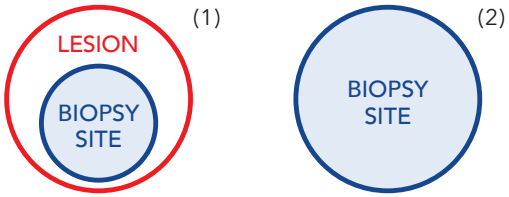
Specimen Requirements:

- The yellow capped tubes provided with Beutner collection kits contain a holding solution for immunofluorescence specimens. A biopsy from a Lesional, Normal and/or Perilesional site should be placed in separate collection tubes. If these tubes are unavailable, submit specimen in Zeus/Michel's fixative. Transport at room temperature.

Sample Stability:

- Stable in appropriate solution at room temperature for 5 days.

COLLAGEN VASCULAR DISEASES



(1) Sun Exposed skin biopsy in most LE cases. Skin biopsy to rule out Henoch Schoenlein purpura and vasculitis (lesion less than 48 hours old)

(2) Skin biopsy to rule out SLE

Direct Immunofluorescence (DIF) for Vasculitis

Beutner Test Code:

- #006

Routine Panel Tests for the Presence of:

- IgG, IgA, IgM, Fibrin, and C3

Methodology:

- Direct Immunofluorescence

Reference Range:

- Detailed interpretation accompanies report.

CPT Code:

- 88346 (x no of biopsies) 88350 (x 4)

Turnaround Time:

- Report availability is within 48 hours from the time of specimen receipt.

Biopsy Site Selection:

- Proper biopsy sites are dependent on the suspected diagnosis.

Specimen Requirements:

- The yellow capped tubes provided with Beutner collection kits contain a holding solution for immunofluorescence specimens. A biopsy from a Lesional site should be placed in these collection tubes. If these tubes are unavailable, submit specimen in Zeus/Michel's fixative. Transport at room temperature.

Sample Stability:

- Stable in appropriate solution at room temperature for 5 days.

Direct Immunofluorescence (DIF) for Dermatomyositis

Beutner Test Code:

- #007

Routine Panel Tests for the Presence of:

- IgG, IgA, IgM, Fibrin, C3, and C5b9

Methodology:

- Direct Immunofluorescence

Reference Range:

- Detailed interpretation accompanies report.

CPT Code:

- 88346 (x no of biopsies) 88350 (x 5)

Turnaround Time:

- Report availability is within 48 hours from the time of specimen receipt.

Biopsy Site Selection:

- Proper biopsy sites are dependent on the suspected diagnosis.

Specimen Requirements:

- The yellow capped tubes provided with Beutner collection kits contain a holding solution for immunofluorescence specimens. A biopsy from a Lesional site should be placed in these collection tubes. If these tubes are unavailable, submit specimen in Zeus/Michel's fixative. Transport at room temperature.

Sample Stability:

- Stable in appropriate solution at room temperature for 5 days.

Complement plus DIF for Scleroderma and Others

Beutner Test Code:

- #008

Routine Panel Tests for the Presence of:

- IgG, IgA, IgM, Fibrin and C3.

Methodology:

- Direct Immunofluorescence

Reference Range:

- Detailed interpretation accompanies report.

CPT Code:

- 88346 (x no of biopsies) 88350 (x 5)

Turnaround Time:

- Report availability is within 48 hours from the time of specimen receipt.

Biopsy Site Selection:

- If scleroderma is suspected, take biopsy of sun-exposed skin for DIF

Specimen Requirements:

- The yellow capped tubes provided with Beutner collection kits contain a holding solution for immunofluorescence specimens. A biopsy from a Lesional, Normal and/or Perilesional site should be placed in these collection tubes. If these tubes are unavailable, submit specimen in Zeus/Michel's fixative. Transport at room temperature.

Sample Stability:

- Stable in appropriate solution at room temperature for 5 days.

Sample Stability:

- Stable at room temperature indefinitely.

Antinuclear Antibodies (ANA) Titer and Pattern on HEp-2

Beutner Test Code:

- #029

Methodology:

- Indirect Immunofluorescence

Substrate:

- HEp-2

Reference Range:

- Negative: <1:40

Units:

- Titer & ANA pattern reported on all positives.

Note:

- Positive samples at a 1:40 screening dilution are titered to 5120

CPT Code:

- 86038, 86039 (if reflexed), 86255

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt.

Specimen Requirements:

- Collect 5 -10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8°C) up to five days and frozen (-20°C or lower) up to one year.

Clinical Relevance:

- This test is for detection of antibodies to nuclear antigens. The homogeneous pattern is primarily associated with Systemic Lupus Erythematosus (SLE). Antibodies to centromere antigens are highly specific for Calcinosis, Raynaud's phenomenon, Esophageal dysmotility, Sclerodactyly, and Telangiectasia, commonly referred to as CREST syndrome, a limited form of systemic sclerosis (SSc). Centromere antibodies can also occasionally be found in low titers in some other autoimmune variants. Antinuclear antibodies with a speckled pattern are commonly associated with SLE, although they do occur in some cases of Sjögren's syndrome and mixed connective tissue disorders. ANA antibodies with a nucleolar pattern are commonly associated with SSc, although they do occur in some cases of SLE and overlap syndromes. Overlap syndromes include dermatomyositis/polymyositis.

Antibodies to Native Double Stranded DNA (nDNA) Antibody Titer

Beutner Test Code:

- #030

Methodology:

- Indirect Immunofluorescence

Substrate:

- Crithidia luciliae Double Stranded DNA Antibody (nDNA) IgG

Reference Range:

- Negative: < 1:10

Units:

- Titer

Note:

- Positive samples at a 1:10 screening dilution are titered to an endpoint at an additional charge.

CPT Code:

- 86225

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- nDNA are highly specific for systemic lupus erythematosus. The frequency and titer of nDNA antibodies fluctuate with disease activity and tend to disappear with immunosuppressive treatment and during remission.

Anticentromere Antibodies (ACA)

Beutner Test Code:

- #032

Methodology:

- Indirect Immunofluorescence

Substrate:

- HEp-2

Reference Range:

- Negative: < 1:40

Units:

- Titer & ANA pattern reported on all positives.

Note:

- Positive samples at a 1:40 screening dilution are titered to 5120 at an additional charge. CPT Code: 86038, 86225

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt.

Specimen Requirements:

- Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8°C) up to five days and frozen (-20°C or lower) up to one year.

Clinical Relevance:

- Antibodies to centromere antigens are highly specific for Calcinosis, Raynaud's phenomenon, Esophageal dysmotility, Sclerodactyly, and Telangiectasia, commonly referred to as CREST syndrome, a limited form of systemic sclerosis (SSc). Centromere antibodies can also occasionally be found in low titers in some other autoimmune variants.

Stratified Epithelium Specific Antinuclear Antibody (SES-ANA) & CANA Titer for Chronic Ulcerative Stomatitis

Beutner Test Code:

- #033

Methodology:

- Indirect Immunofluorescence

Substrate:

- Primate Esophagus

Reference Range:

- Based upon selective reactions on substrates used in the differential assay.

Units:

- Titer

Note:

- Positive samples at 1:10 screening are titered to an end point at an additional charge.

CPT Code:

- 86038, 86039 (if reflexed), 86225

Schedule/Turnaround Time:

- Assay performed daily Monday-Friday. Report availability is within 48 hours from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- The detection of stratified epithelium specific antinuclear antibodies assists in the diagnosis of connective tissue disease, and/or chronic ulcerative stomatitis.

ANTIBODIES TO EXTRACTABLE NUCLEAR ANTIGENS (ENA) & CYTOPLASMIC ANTIGENS

RNP, Sm, SS-A (Ro), SS-B (La) Screening test -For SLE & Others

Beutner Test Code:

- #034

Methodology:

- ELISA

Reference Range:

- Negative <20 Units
- Weak Positive 20-39 Units
- Moderate Positive 40-80 Units
- Strong Positive >80 Units

CPT Code:

- 86235

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is within one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Autoantibodies directed against ENA are useful in the diagnosis and monitoring of various systemic connective tissue diseases.

SS-A (Ro)- (For SLE, SCLE, SjSy, & Others)

Beutner Test Code:

- #035

Methodology:

- ELISA

Reference Range:

- Negative <20 Units
- Weak Positive 20-39 Units
- Moderate Positive 40-80 Units
- Strong Positive >80 Units

CPT Code:

- 86235

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is within one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8℃ up to five days and frozen (-20℃ or lower) up to one year.

Clinical Relevance:

- Antibodies to SS-A (Ro) occur in approximately 30-40% of systemic lupus erythematosus (SLE) patients. They also occur in 60% of patients with subacute cutaneous lupus erythematosus (LE), in almost all cases of neonatal LE, in almost all SLE patients with C2 deficiency and an about one half of patients with Sjögren's syndrome.

SS-B (La) - (For SLE, SCLE, Sjogren's syndrome & Others)

Beutner Test Code:

- #036

Methodology:

- ELISA

Reference Range:

- Negative <20 Units
- Weak Positive 20-39 Units
- Moderate Positive 40-80 Units
- Strong Positive >80 Units

CPT Code:

- 86235

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is within one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- SS-B (La) antibodies occur in approximately 10-15% of systemic lupus erythematosus (SLE) patients and 40-60% of patients with Sjögren's syndrome. Antibodies to SS-B (La) occur frequently in association with SS-A (Ro).

Sm (for SLE)

Beutner Test Code:

- #037

Methodology:

- ELISA

Reference Range:

- Negative <20 Units
- Weak Positive 20-39 Units
- Moderate Positive 40-80 Units
- Strong Positive >80 Units

CPT Code:

- 86235

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is within one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Antibodies to Sm occur in approximately 30-40% of systemic lupus erythematosus (SLE) patients. They are rare in other systemic connective tissue diseases and if present, indicate either overlap of disease.

RNP (For SLE, MCTD and others)

Beutner Test Code:

- #038

Methodology:

- ELISA

Reference Range:

- Negative <20 Units
- Weak Positive 20-39 Units
- Moderate Positive 40-80 Units
- Strong Positive >80 Units

CPT Code:

- 86235

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is within one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Antibodies to RNP occur in 35-45% of systemic lupus erythematosus patients and in over 95% of patients with mixed connective tissue disease.

SCl-70 (for Scleroderma)

Beutner Test Code:

- #039

Methodology:

- ELISA

Reference Range:

- Negative <20 Units
- Weak Positive 20-39 Units
- Moderate Positive 40-80 Units
- Strong Positive >80 Units

CPT Code:

- 86235

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- The presence of Scl-70 antibodies (also referred to as topoisomerase I, topo-I or ATA) is considered diagnostic for systemic sclerosis (SSc). Scl-70 antibodies alone are detected in about 20 percent of SSc patients and are associated with the diffuse form of the disease, which may include specific organ involvement and poor prognosis. Scl-70 antibodies have also been reported in a varying percentage of patients with systemic lupus erythematosus (SLE). Negative results do not necessarily rule out the presence of SSc. If clinical suspicion remains, consider further testing for centromere, RNA polymerase III and U3-RNP, PM/Scl, or Th/To antibodies.

Jo-1 (for Polymyositis & Dermatomyositis)

Beutner Test Code:

- #040

Methodology:

- ELISA

Reference Range – Semi-quantitative:

- Negative <20 Units
- Weak Positive 20-39 Units
- Moderate Positive 40-80 Units
- Strong Positive >80 Units

CPT Code:

- 86235

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Jo-1 antibodies are seen in 20-40% of patients with dermatomyositis, polymyositis or mixed PM/DM. The presence of these antibodies may be associated with pulmonary involvement in patients with myositis. Antibody titer may fluctuate with disease activity.

Histone Antibodies

Beutner Test Code:

- #041

Methodology:

- ELISA

Reference Range – Semi-quantitative:

- Negative <1.0 Units
- Weak Positive 1.0 - 1.5 Units
- Moderate Positive 1.6 - 2.5 Units
- Strong Positive >2.5 Units

CPT Code:

- 86235

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Antibodies to histone are detected in approximately 30% to 60% of patients with systemic lupus erythematosus (SLE), but their presence in about 95% of patients with drug-induced lupus is more important diagnostically. Drug-induced lupus is primarily caused by procainamide and hydralazine. Anti-histone antibodies also occur in approximately 20% of patients with rheumatoid arthritis.

Anti-beta 2 Glycoprotein 1 IgG

Beutner Test Code:

- #042

Methodology:

- ELISA

Reference Range:

- Negative 0-20 Units
- Positive >20 Units

CPT Code:

- 86147

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Beta-2-GP1-dependent binding is frequently detected in patients with clinical symptoms of antiphospholipid syndrome (APS). All three isotypes of anti-β2-GP1 (IgG, IgM, and IgA) have been associated with thrombosis.Approximately 20% of patients who test negative for anticardiolipin antibodies (ACA) will test positive for β2-GP1. Anti-β2-GP1 testing can be useful in the evaluation of patients with positive ACA results and a clinical picture that is not consistent with APS. A negative anti-β2-GP1 result in this context would not support a diagnosis of APS. Anti-β2-GP1 testing can also support the diagnosis of APS in patients with a strong clinical picture for APS with negative Lupus anticoagulant and ACA results.

SYSTEMIC CONNECTIVE TISSUE DISEASE: SERUM STUDY PROFILES

BASIC PROFILE A

Beutner Test Code:

- #043 Includes Tests: #029 Antinuclear Antibodies (ANA) Titer and Pattern on HEp-2
  #035 Ro (SS-A)
  #036 La (SS-B)

Methodology:

- Indirect Immunofluorescence AND ELISA

Substrate:

- HEp2/ELISA plate

Reference Range:

- Please see individual tests

CPT Code:

- Please see individual tests

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is within one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year. Clinical Relevance: Please see individual tests.

Systemic LE Screen- PROFILE B

Beutner Test Code:

- #044 Includes Tests: #029 Antinuclear Antibodies (ANA) Titer and Pattern on HEp-2
  #030 Antibodies to nDNA
  #034 Ro (SS-A) La (SS-B), Sm, RNP

Methodology:

- Indirect Immunofluorescence AND ELISA

Substrate:

- HEp2/ELISA plate

Reference Range:

- Please see individual tests

CPT Code:

- Please see individual tests

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is within one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year. Clinical Relevance: Please see individual tests.

Systemic Connective Tissue Screen - Profile C

Beutner Test Code:

- #045 Includes Tests: #029 Antinuclear Antibodies (ANA) Titer and Pattern on HEp-2
  #030 Antibodies to nDNA
  #034 Ro (SS-A) La (SS-B), Sm, RNP
  #039 Scl-70
  #040 Jo-1
  #042 Anti-beta 2 Glycoprotein 1 IgG

Methodology:

- Indirect Immunofluorescence and ELISA

Substrate:

- HEp2/ELISA plate

Reference Range:

- Please see individual tests

CPT Code:

- Please see individual tests

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is within one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Please see individual tests.

Drug Induced LE /SLE Screen - Profile D

Beutner Test Code:

- #046 Includes Tests: #029 Antinuclear Antibodies (ANA) Titer and Pattern on HEp-2
  #030 Antibodies to nDNA, #034- Ro (SS-A) La (SS-B), Sm, RNP
  #041 Histone

Methodology:

- Indirect Immunofluorescence AND ELISA

Substrate:

- HEp2/ELISA plate

Reference Range:

- Please see individual tests

CPT Code:

- Please see individual tests

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is within one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Please see individual tests.

Systemic Connective Tissue Screen - Profile E

Beutner Test Code:

- #047 Includes Tests: #029 Antinuclear Antibodies (ANA) Titer and Pattern on HEp-2
  #032 ACA
  #037 Sm
  #038 RNP
  #039 Scl-70

Methodology:

- Indirect Immunofluorescence AND ELISA

Substrate:

- HEp2/ELISA plate

Reference Range:

- Please see individual tests

CPT Code:

- Please see individual tests

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is within one week from the time of specimen receipt.

Specimen Requirements:

- Specimen need not be refrigerated or frozen. Collect 5-10 ml of blood in a red top or serum separator tube. If possible, separate serum from clot and place into red capped tube provided with Beutner Laboratories collection kits. If separation facilities are not available, the blood can be sent in the tube used for collection.

Sample Stability:

- Sample is stable at ambient temperature during shipment. If sample is stored prior to shipment, it is stable refrigerated (2-8˚C) up to five days and frozen (-20˚C or lower) up to one year.

Clinical Relevance:

- Please see individual tests

T-Cell Receptor Gene Rearrangement, γ

Beutner Test Code

- #048

Methodology:

- PCR

Reported as:

- Positive (either Monoclonal or Clonal)
- Negative (either Oligoclonal or Polyclonal)
- Indeterminate/Inconclusive CPT Code: 81342

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is one week from the time of specimen receipt.

Specimen Requirements:

- Specimen: Whole blood, bone marrow, formalin-fixed, paraffin-embedded (FFPE) tissue block or slides, fresh or frozen tissue are acceptable specimens
- Volume: 3 to 5 mL whole blood, 1 mL bone marrow, five unstained slides at 10 µM or formalin-fixed, paraffin-embedded tissue block, tissue in RPMI or frozen (A minimum of 2 x 2 x 2 mm)
- Container: Lavender-top (EDTA) tube, yellow-top (ACD) tube and green-top (heparin) tubes are accepted but not preferred.
- Transport Temperature: Refrigerated, FFPE tissue unstained slides, or tissue in RPMI or frozen
- Sample Stability: Maintain blood, bone marrow or tissue in RPMI at 2°C to 8°C; FFPE specimens at room temperature; tissue at -80°C.

Clinical Relevance:

- An assessment of T-cell clonality is an important for the evaluation of suspected lymphoproliferative disorders. Historically, Southern blot studies for T-cell receptor beta chain (TCRB) rearrangements have been considered to represent the gold standard for T-cell clonality evaluation. Southern blot studies are labor-intensive and time-consuming for the laboratory and often are impractical for routine practice as they require fresh or frozen tissue and cannot be performed on formalin-fixed, paraffin-embedded (FFPE) material. PCR assays for T-cell receptor gamma chain (TCRG) and/or TCRB rearrangements offer the ability to assess clonality from standard FFPE, but until recently, PCR studies have been limited by a higher false negative rate compared to Southern blot studies.
- T-cell clonality assay that employs primers for both TCRB and TCRG, a combination that has been shown to detect clonality in essentially 100% of T-cell prolymphocytic leukemias, T-cell large granular lymphocyte disorders, and peripheral T-cell lymphomas, unspecified, with somewhat lower rates reported in angioimmunoblastic T-cell lymphomas and anaplastic large cell lymphoma. These assays are designed for detection of clonal T-cell populations in suspected lymphoproliferative disorders using fresh, frozen, or FFPE tissue.

T-Cell Receptor Gene Rearrangements Profile, γ and β

Beutner Test Code:

- #049

Methodology:

- PCR

Reported as:

- Positive (either Monoclonal or Clonal)
- Negative (either Oligoclonal or Polyclonal)
- Indeterminate/Inconclusive

CPT Code:

- 81342, 81340

Schedule/Turnaround Time:

- Assay performed once per week. Report availability is one week from the time of specimen receipt.

Specimen Requirements:

- Whole blood, bone marrow, formalin-fixed, paraffin-embedded (FFPE) tissue block or slides, fresh or frozen tissue are accepatable specimens.
- Volume: 3 to 5 mL whole blood, 1 mL bone marrow, five unstained slides at 10 µM or formalin-fixed, paraffin-embedded tissue block, tissue in RPMI or frozen (A minimum of 2 x 2 x 2 mm)
- Container: Lavender-top (EDTA) tube, yellow-top (ACD) tube and green-top (heparin) tubes are accepted but not preferred.
- Transport Temperature: Refrigerated, FFPE tissue unstained slides, or tissue in RPMI or frozen

Sample Stability:

- Maintain blood, bone marrow or tissue in RPMI at 2°C to 8°C; FFPE specimens at room temperature; tissue at -80°C.

Clinical Relevance:

- An assessment of T-cell clonality is an important part of the evaluation of suspected lymphoproliferative disorders. Historically, Southern blot studies for T-cell receptor beta chain (TCRB) rearrangements have been considered to represent the gold standard for T-cell clonality evaluation. Southern blot studies are labor-intensive and time-consuming for the laboratory and often are impractical for routine practice as they require fresh or frozen tissue and cannot be performed on formalin-fixed, paraffin-embedded (FFPE) material. PCR assays for T-cell receptor gamma chain (TCRG) and/or TCRB rearrangements offer the ability to assess clonality from standard FFPE, but until recently, PCR studies have been limited by a higher false negative rate compared to Southern blot studies.
- T-cell clonality assay that employs primers for both TCRB and TCRG, a combination that has been shown to detect clonality in essentially 100% of T-cell prolymphocytic leukemias, T-cell large granular lymphocyte disorders, and peripheral T-cell lymphomas, unspecified, with somewhat lower rates reported in angioimmunoblastic T-cell lymphomas and anaplastic large cell lymphoma. These assays are designed for detection of clonal T-cell populations in suspected lymphoproliferative disorders using fresh, frozen, or FFPE tissue.

Test Name: T-Cell Receptor Gene Rearrangements Profile, γ and β

Indication for Testing:

- Diagnosis of T-cell lymphoproliferative disorders Methodology: Polymerase chain reaction (PCR)

CPT code:

- 81340; 81342

Analytical sensitivity:

- One clonal cell in a background of 20 polyclonal cells, or 5.0%.

Interpretation

- Results are reported as:
    - Positive (either Monoclonal or Clonal)
    - Negative (either Oligoclonal or Polyclonal)
    - Indeterminate/Inconclusive

Expected Turnaround Time:

- 5-7 days

Specimen Requirements

- Specimen: Whole blood, bone marrow, formalin-fixed, paraffin-embedded (FFPE) tissue block or slides, fresh or frozen tissue
- Volume: 3 to 5 mL whole blood, 1 mL bone marrow, five unstained slides at 10 µM or formalin-fixed, paraffin-embedded tissue block, tissue in RPMI or frozen (A minimum of 2 x 2 x 2 mm)
- Container: Lavender-top (EDTA) tube, yellow-top (ACD) tube and green-top (heparin) tubes are accepted but not preferred.
- Transport Temperature: Refrigerated, FFPE tissue unstained slides, or tissue in RPMI or frozen
- Storage Instructions: Maintain blood, bone marrow or tissue in RPMI at 2°C to 8°C; FFPE specimens at room temperature; tissue at -80°C.