Direct Immunofluorescence, Tissue Biopsy (Cutaneous, Mucosal, Epithelial)

ARUP LABORATORIES

Patient: [redacted] DOB: [redacted] Age: [redacted] Sex: [redacted] **Patient Identifiers:** [redacted] **Visit Number (FIN):** [redacted]	Client: ARUP Example Report Only 500 Chipeta Way Salt Lake City, UT 84108 Physician: [redacted]	ARUP Test Code: 0092572 Collection Date: 02/02/2024 Received in lab: 02/02/2024 Completion Date: 02/11/2024

Immunodermatology Direct Immunofluorescence Tissue Test Report Navigation Guide

The Immunodermatology TESTING REPORT from the University of Utah follows "See Note" and is arranged as outlined below on the following pages:

CLINICAL INFORMATION
This content is provided by the ordering clinician and includes the indications for testing.

Specimen Details
This includes specimen identification, clinician-provided body location, procurement information and date, and laboratory received date.

DIAGNOSTIC INTERPRETATION
This is a synopsis of key test findings and their diagnostic relevance.

RESULTS
This section reports the discrete finding of each test component, which includes testing for IgG, IgG4, IgM, IgA, third component of complement (C3), and fibrinogen in the tissue specimen(s).

COMMENTS
The comments provide an explanation of the test results as they relate to clinical considerations and may include recommendations to correlate with other testing, including serum testing, to enhance diagnostic sensitivity.

TESTING METHODS
The section summarizes the procedures performed, the interpretation schema, and the applicable laboratory-developed test disclaimer.

RESULT IMAGES (only included and available when applicable)
Images of unusual, select positive, and/or special interest findings* are displayed in this section, which may be found on the next page. High resolution, color digital files of the images may be requested by contacting ARUP Client Services at 1-800-242-2787, option 2, and ask to speak with the Immunodermatology Laboratory at the University of Utah regarding patient results.

* Note that immunofluorescence-stained tissue slides are not kept longer than two weeks after testing because fluorescence fades and patterns become indiscernible; therefore, additional images cannot be acquired after that time without retesting.

Biopsy site and adequate tissue are critical for accurate diagnostic findings. For additional information, refer to:
arupconsult.com/content/immunobullous-skin-diseases-screening

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IMMUNODERMATOLOGY LABORATORY REPORT

[redacted]

Submitter

ARUP Sendouts

Direct Immunofluorescence, Tissue Biopsy (Cutaneous, Mucosal, Epithelial)
(Final result)

TESTING REPORT follows "See Note"
See Note

CLINICAL INFORMATION
Blisters on urticarial base for 3 months with occasional oral lesions, evaluate for pemphigoid and other immunobullous diseases

Specimen Details
[redacted] - Left arm, punch, perilesional, sun-exposed; Collected: 2/2/2024; Received: 2/6/2024
[redacted] - Right buccal mucosa, punch, perilesional; Collected: 2/2/2024; Received: 2/6/2024

DIAGNOSTIC INTERPRETATION

Consistent with pemphigoid and pemphigoid variants, including possible lichen planus pemphigoides

(See Results, Comments, and representative images of positive findings in the Enhanced Electronic Report/EELR and/or available upon request)

RESULTS
Examination of sun-exposed left arm perilesional skin punch biopsy (Specimen A) and right buccal perilesional oral mucosa punch biopsy (Specimen B) tissue sections tested for immunoglobulins, complement, and fibrinogen reveals:

Specimen A

IgG: 3+ linear basement membrane zone
IgG4: 2+ linear basement membrane zone
Specimen B
IgG: 3+ discontinuous linear basement membrane zone
IgG4: 3+ linear basement membrane zone

Specimen A
IgM: 2+ few scattered and clumped cytoids
Specimen B
IgM: 3+ several scattered and clumped cytoids

Specimen A
IgA: Scattered inflammatory cells, apparent eosinophils
Specimen B
IgA: Negative

Specimen A
C3: 3+ linear basement membrane zone and scattered inflammatory cells, apparent eosinophils
Specimen B
C3: 2+ linear to focal granular basement membrane zone

Specimen A
Fibrinogen: 2+ discontinuous linear basement membrane zone and 3+ patchy deposition on upper and mid dermal connective tissue fibers
Specimen B
Fibrinogen: 2-3+ linear to shaggy basement membrane zone, 3+ few scattered and clumped cytoids, and 3+ deposition on subepithelial connective tissue fibers

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COMMENTS
These direct immunofluorescence findings are consistent with pemphigoid and pemphigoid variants, including epidermolysis bullosa acquisita, based on linear IgG, including IgG4, basement membrane zone antibody reactivity and linear C3 basement membrane zone localization. Apparent eosinophil infiltration also is present in the skin biopsy tissue (Specimen A) as often observed in pemphigoid. Shaggy fibrinogen basement membrane zone deposition and cytoid bodies in the mucosal biopsy tissue (Specimen B) further are features of a lichenoid reaction as found in lichen planus pemphigoides.

Pemphigoid, epidermolysis bullosa acquisita, and other pemphigoid variants cannot be distinguished by direct immunofluorescence; however, if circulating antibodies are present, these diseases can be distinguished by indirect immunofluorescence based on the localization pattern of serum basement membrane zone antibodies with human split skin substrate (also known as salt split skin). In addition, IgG BP180 and IgG BP230 antibody levels, as determined by enzyme-linked immunosorbent assays (ELISA), are diagnostic markers for pemphigoid, and the IgG type VII collagen antibody level, as determined by ELISA, is a diagnostic marker for epidermolysis bullosa acquisita. Serum basement membrane zone antibodies are detected in up to 80 percent of patients with these disorders, and antibody levels by

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ELISAs may be useful in monitoring disease activity and response to therapy.

Correlation with clinical presentation is needed. To further define the diagnostic immunopathological expression profile and for monitoring disease activity, correlation with serum basement membrane zone antibody testing is recommended and may be accomplished by submitting a serum specimen through ARUP Laboratories with request for the Basement Membrane Zone Antibody Panel (ARUP test number 3001410); contact ARUP Client Services, 1-800-242-2787, option 2, for assistance, if needed.

Lichenoid reactions characteristically are found in lichen planus, and also may be found in association with epithelial malignancies or premalignancy, and in lupus erythematosus, drug reactions, erythema multiforme, and other mucocutaneous disorders including lichen planus pemphigoides and paraneoplastic pemphigus. Direct immunofluorescence is not useful for diagnosis of malignancies involving the skin or mucous membranes. Lichenoid reactions in mucosa most commonly indicate lichen planus, and, in this case, lichen planus pemphigoides. Correlation with histopathological examination of formalin-fixed tissue is needed.

High resolution, color digital images of representative direct immunofluorescence findings are available for this testing (see images in the Enhanced Electronic Report/EELR). If you would like a hard copy or an electronic file of the images and/or if it would be helpful to discuss the patient case with this report, contact ARUP Client Services at 1-800-242-2787, option 2, and ask to speak with the Immunodermatology Laboratory at the University of Utah regarding patient results.

TESTING METHODS

The tissue specimens from perilesional left arm skin (Specimen A) and right buccal oral mucosa (Specimen B) received in Michel transport medium, are each washed, cryoembedded into blocks, cryosectioned, and reacted with fluorescein isothiocyanate (FITC)-conjugated antibodies to IgG, IgG4, IgM, IgA, C3, and fibrinogen. IgG4 subclass staining is performed because IgG4 reactivity may be more sensitive than IgG in some immune-mediated diseases. The stained tissue sections are examined by fluorescence microscopy to identify patterns of positive reactivity that aid in the diagnosis of immune-mediated diseases. Positive findings are graded on a visual analog scale of 0-3+ (weak - detected; 1+ - definite, but relatively slightly, positive; 2+ - moderately positive intensity; 3+ - strongly positive). Negative control serial sections exposed to bovine serum albumin (BSA) without antibody and a technically adequate hematoxylin and eosin (H and E)-stained slide are prepared and also examined for comparison to specific staining and for morphological orientation and features. This direct immunofluorescence (DIF) testing was developed, and its performance characteristics determined by the Immunodermatology Laboratory at the University of Utah. It has not been cleared or approved by the FDA (US Food and Drug Administration). FDA clearance or approval currently is not required for this testing performed in a CLIA-certified laboratory (Clinical Laboratory Improvement Amendments) and intended for clinical use.

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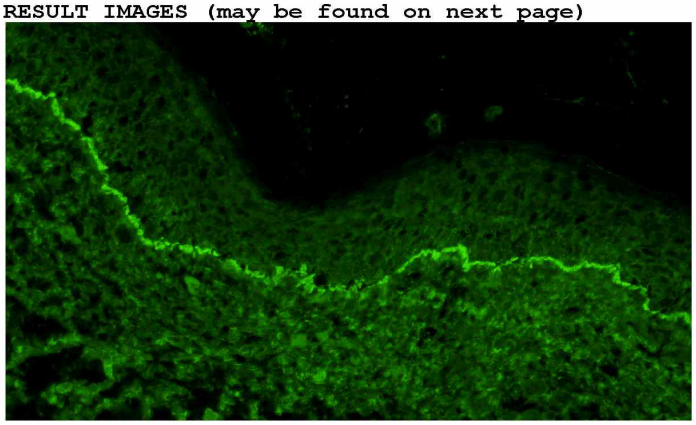
PCP: Unspecified

RESULT IMAGES (may be found on next page)

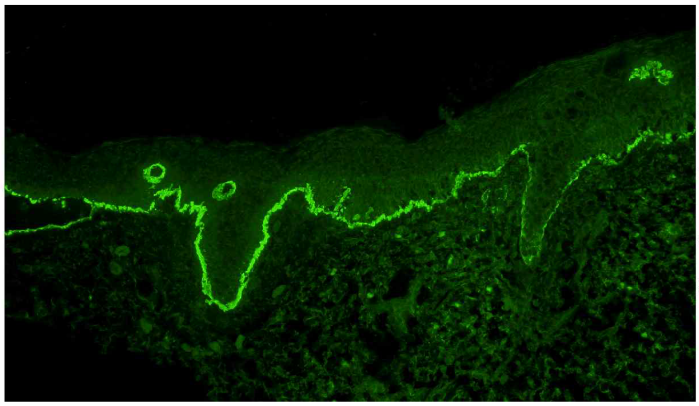


Left arm
skin

Specimen A

IgG

400x



Left arm
skin

Specimen A

C3

200x

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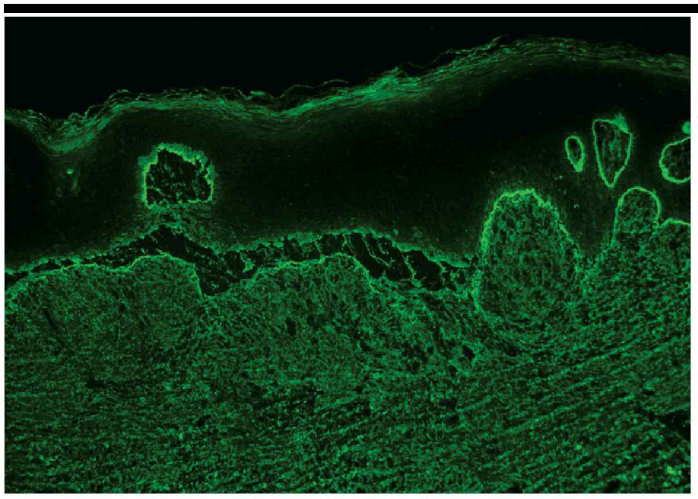
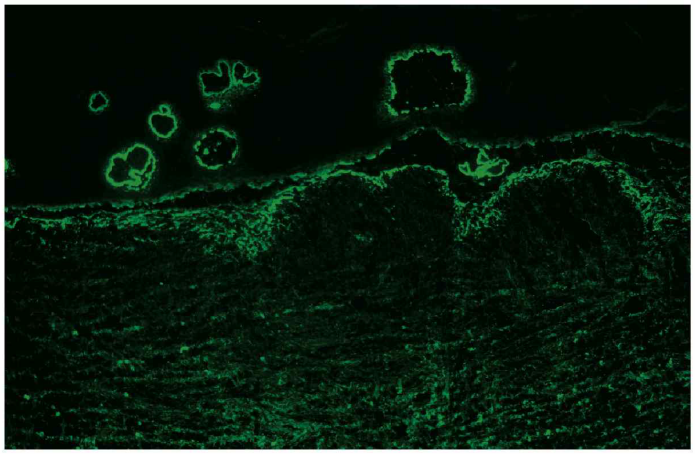


Oral mucosa

Specimen B

IgG

100x



Oral mucosa

Specimen B

IgG4

100x

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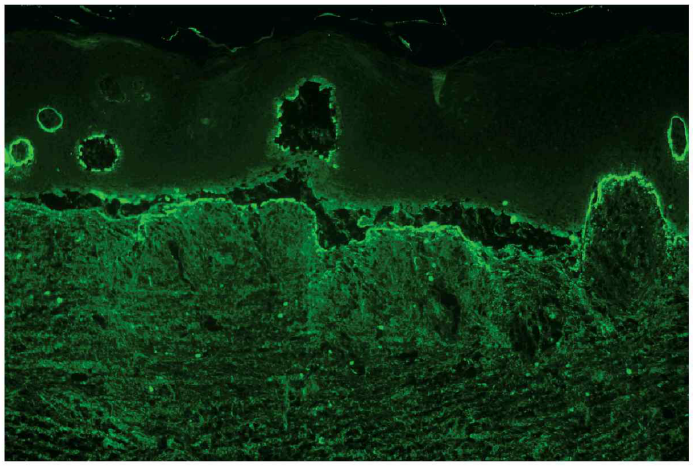
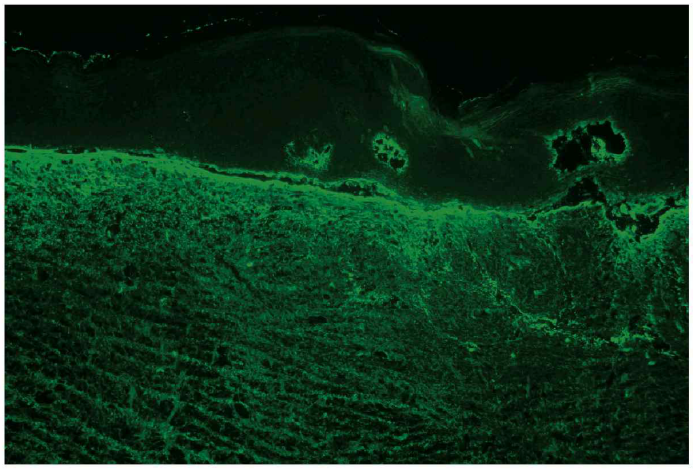


Oral mucosa

Specimen B

C3

100x



Oral mucosa

Specimen B

Fibrinogen

100x

Resulting Laboratory

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