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## **ALBUMIN SMEAR FOR SMUDGE CELLS**

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### **Principle**

When smudge cells on a differential are 10% or greater, the differential results may be erroneous. A repeat differential count on an albumin slide is necessary. (Smudge cells may represent fragile lymphocytes of CLL/Lymphoma, atypical lymphocytes, blasts or even neutrophils from lipemic specimens.) Albumin protects the fragile cells from rupturing when the smear is being made.

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### **Specimen Collection and Handling**

Type:

Whole blood collected in a vacutainer. This is the preferred sample.

OR

Capillary blood collected in a microtainer.

Anticoagulant:

K<sub>2</sub>EDTA

Amount:

Whole blood

- Minimum sample size is 2.0 mL

- Optimum sample size is 4.0 mL

Capillary blood

- Minimum sample size is 300 mcL

- Optimum sample size is 500 mcL

Special Handling:

Specimen must be well mixed for minimum of two minutes before being analyzed.

Timing:

Albumin smears made from EDTA blood should be prepared within 2-3 hours after collection and storage at room temperature.

Criteria for Unacceptable Specimens:

Anticoagulated specimens containing clots are unacceptable and must be redrawn.

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### **Equipment**

1. 10 x 75 mm test tube
  2. Microscope slides
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### Reagents

**22% Bovine Albumin** – Purchased from Sigma. No manufacturer's expiration date listed. Per known stability and frequency of use, reagent expiration is 12 months from opening or until expected performance is not achieved (i.e. cloudiness, color change, etc.). If expected performance is not achieved, discard and open new vial of reagent.

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### Quality Control

Differential / staining QC is performed daily and documented on the appropriate log.

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### Procedure

1. In a small test tube, gently mix 1 drop of 22% Bovine albumin with 4-6 drops of blood.
  2. Remake smear and stain in usual manner.
  3. Repeat differential.
  4. Evaluate RBC and Platelet morphology from original smear. (Morphology will be distorted on the albumin smear.)
  5. If the albumin smear differential was performed to correct for smudged **lymphocytes** typical of chronic lymphocytic leukemia (CLL), select Smudge cells in WAM, then add "Present". Do Not add "Present" if the albumin smear was made to correct for smudged neutrophils or lymphocytes in cases not suspected to be CLL related.
  6. Internal WAM comment, "Differential performed on albumin smear." should be added if the albumin smear was used to correct for other fragile smudged cells in cases not suspected to be CLL related. If sent for pathologist review indicate albumin smear differential was performed.
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### References

Dutcher TF. Personal communication.

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### Authorized Reviewers

Medical Director, Hematology

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### Document Control

**Location of Master:** Hematology Procedure Manual

**Master electronic file stored on the Beaumont Laboratory server:**

S:\HEMACOAG\Document Control\Hematology\Procedure\Master Documents\Albumin Smear.doc

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### Document History

Signature	Date	Revision #		Related Documents Reviewed/ Updated
Prepared by: Nancy Ramirez, MT(ASCP)SH	10/1988			
Approved by: Joan C. Mattson, MD	02/19/1990			
Reviewed by: (Signature)	Date	Revision #	Modification	Related Documents Reviewed/ Updated
Joan C. Mattson, MD	01/29/1992		No change	
Nancy Ramirez, MT(ASCP)SH	12/28/1992		Added step 5; retyped review page	
Joan C. Mattson, MD	12/30/1992		Above changes reviewed	
Joan C. Mattson, MD	12/27/1993		No change	
Joan C. Mattson, MD	12/12/1994		OK	
Joan C. Mattson, MD	12/22/1995		No change	
Joan C. Mattson, MD	02/07/1997		Updated min vol. requirement	
Noelle Procopio, MT(ASCP)SH	01/05/1998		No change	
Noelle Procopio, MT(ASCP)SH	01/04/1999		No change	
Joan C. Mattson, MD	01/24/2000		No change	
Joan C. Mattson, MD	01/28/2000		Clarified glass slides as microscope slides, pg. 1; retyped	
Noelle Procopio, MT(ASCP)SH	12/04/2001		No change	
Noelle Procopio, MT(ASCP)SH	12/30/2002		No change	
Joan C. Mattson, MD	12/29/2003		Updated K <sub>2</sub> EDTA, Pg. 1	
Noelle Procopio, MT(ASCP)SH	12/12/2004		No change	
Joan C. Mattson, MD	02/19/2005	00	Standardized procedure format	
Noelle Procopio, MT(ASCP)SH	10/24/2006		No change	
Ann Marie Blenc, MD	05/04/2007		No change; new director	
Ann Marie Blenc, MD	02/26/2008		No change	
Ann Marie Blenc, MD	02/23/2009		No change	
Ann Marie Blenc, MD	02/15/2010		No change	
Ann Marie Blenc, MD	03/16/2011	01	Updated uL to mcL.	NA

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