

# NASA TECH BRIEF

## *Langley Research Center*

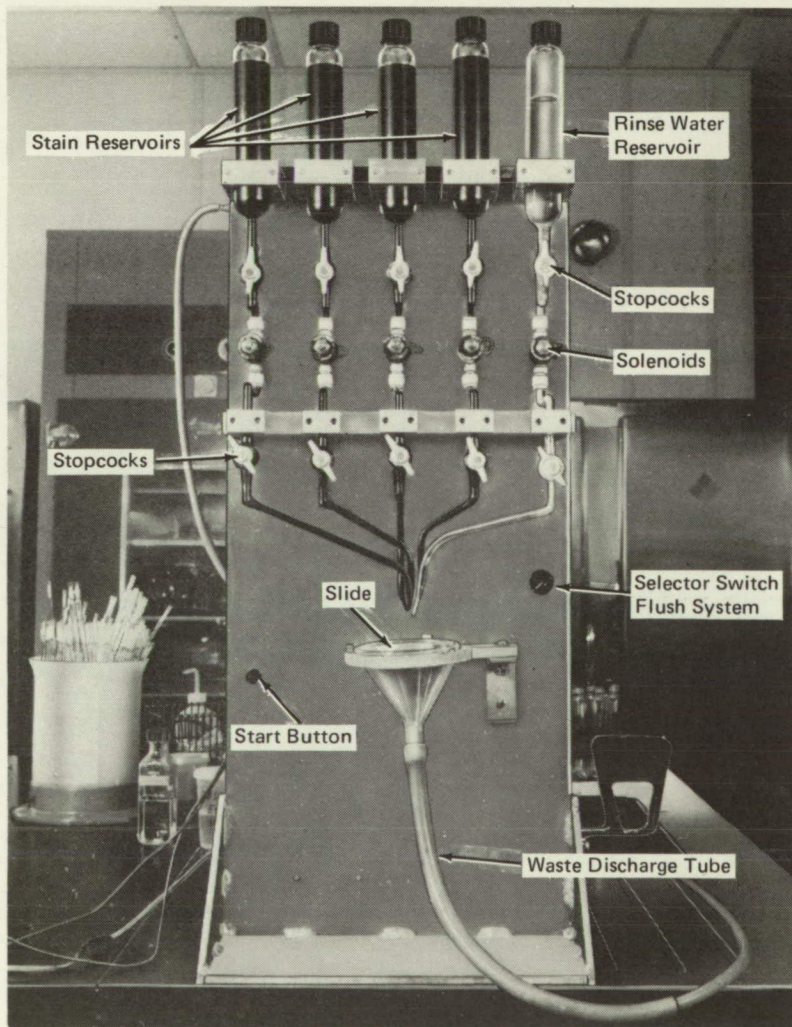


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### Automated Single-Slide Staining System

An apparatus developed at the Langley Research Center laboratory to Gram-stain single slides automatically is flexible enough to accommodate other types of staining procedures. This method of slide staining frees the operator for other laboratory work and eliminates the necessity for subjective evaluations as to length of staining or decolorizing time.

Observations over a 30-day period of both single and mixed cultures indicate no differences in the quality of the smears stained by the automatic versus the manual method. This procedure ensures the uniform and repeatable staining of smears while eliminating the possibility of cross-contamination from other slides, which is a possibility with batch-type systems. This equipment



Automated Single-Slide Staining System

(continued overleaf)

could be used in any laboratory where the Gram stain is performed, and it should be especially useful to the practicing clinician requiring a rapid and easily-obtainable Gram stain of a specimen to aid in the diagnosis of a suspected infection.

A front view of the automatic staining device is shown in the illustration. Four glass containers (reservoirs) which are coated with black enamel to prevent stain deterioration by light contain stains and reagents as follows:

1. Gentian Violet (Weigert No. 1),
2. Gram's iodine solution,
3. Decolorizer, two parts 95-percent ethyl alcohol and one part acetone, and
4. 1 percent aqueous safranin.

The fifth reservoir is a plain glass container that holds distilled water for rinse cycles. Solenoid valves located directly below each glass container control the dispensing of tube contents in proper sequence and for the required time to achieve optimum staining. Five cams attached to a timing motor shaft actuate microswitches for the control of each of the five valves and thus permit the adjustment of staining time.

Stopcocks located directly above and below each of the solenoid valves control the flow rate of stains and reagents. Glass tubing from each lower stopcock is configured to a position over a glass slide retained in

a funnel, and tubing from the funnel permits the disposal of used stains and reagents. A selector switch provides the means for manually flushing the entire system. A complete staining cycle is initiated by holding the start button in position for 30 seconds.

**Note:**

Requests for further information may be directed to:  
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Reference: B74-10188

**Patent status:**

Inquiries concerning rights for the commercial use of this invention should be addressed to:

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