

# RSID-Blood

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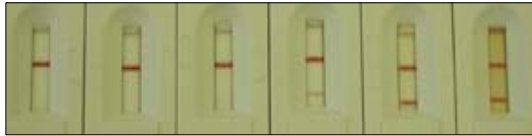


## Introduction

RSID-Blood utilizes two anti-glycophorin A monoclonal antibodies in a lateral flow immuno-chromatographic strip test format to detect human blood. Glycophorin A is expressed abundantly in red blood cell membranes. We present evidence demonstrating that this test is accurate, reproducible, easy to use, and highly specific for human blood. In addition, the test can detect blood from a variety of forensic exhibits prior to processing for DNA-STR analysis. Importantly, RSID-Blood exhibits no high dose Hook effect. Also, we describe studies on the sensitivity, body fluid specificity, and species specificity of RSID-Blood.

## Sensitivity

RSID-Blood detects less than 1  $\mu$ l of human blood.



Extract ( $\mu$ l):	0	0.2	1	5	20	100
Blood ( $\mu$ l):	0	0.01	0.05	0.25	1.0	5.0

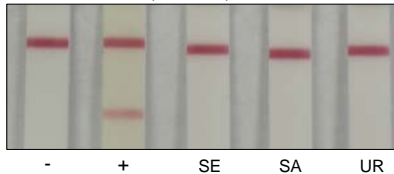
RSID-Blood exhibits no high dose Hook effect.



100	100*	100**
5.0	10.0	25.0

## Specificity

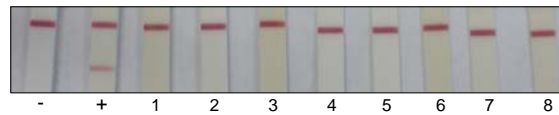
RSID-Blood does not cross-react with human semen, saliva, or urine.



Other body fluids tested that do not cross-react (not shown): breast milk, amniotic fluid

The volume tested for each body fluid is equivalent to 5  $\mu$ l.

RSID-Blood does not cross-react with animal blood.

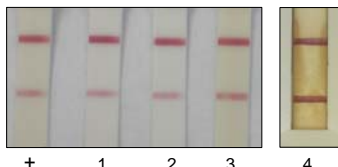


Animal blood tested (5  $\mu$ l, shown): ferret (1), skunk (2), dog (3), cat(4), cow (5), horse (6), chicken (7), pig (8)

Other animal blood that does not cross-react (5  $\mu$ l, not shown): goat, turtle, elk, orangutan, gorilla, spider monkey, bonobo, mule deer, tiger, alpaca, baboon

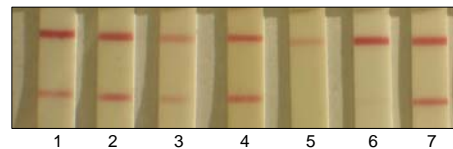
## Forensic Exhibits

RSID-Blood detects blood from various stains.



Samples shown: blood stained sheet (1), body fluid mix (blood, semen, saliva, and urine) stained sheet (2), blood stained gauze (3), dried blood stain sponged with water moistened swab (4)

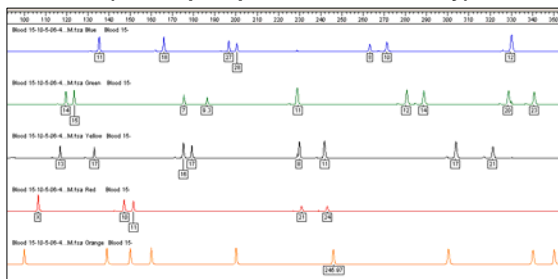
Most common household cleaners do not interfere with blood detection by RSID-Blood.



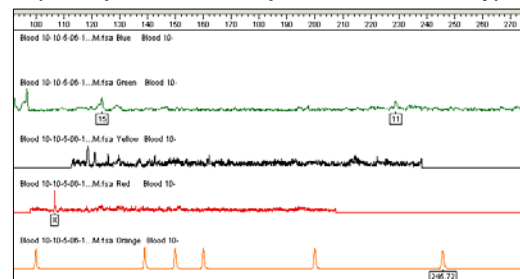
Samples shown: blood stained cotton shirt cleaned with Pine-Sol (1), Lysol (2), anti-bacterial soap (3), rubbing alcohol (4), laundry detergent (5, negative), bleach (6, weak positive), hydrogen peroxide (7)

## DNA Integration

STR profile from strong positive RSID-Blood extract (see 20  $\mu$ l / 1  $\mu$ l blood in Sensitivity)



STR profile from weak positive RSID-Blood extract (see 1  $\mu$ l extract / 0.05  $\mu$ l blood in Sensitivity)



## Conclusion

RSID-Blood is an effective and useful tool for blood detection that reduces cost and labor for forensic labs, and should become an essential tool to aid forensic scientists in crime scene investigations.