

LABORATORY ISSUES OF HIV TEST

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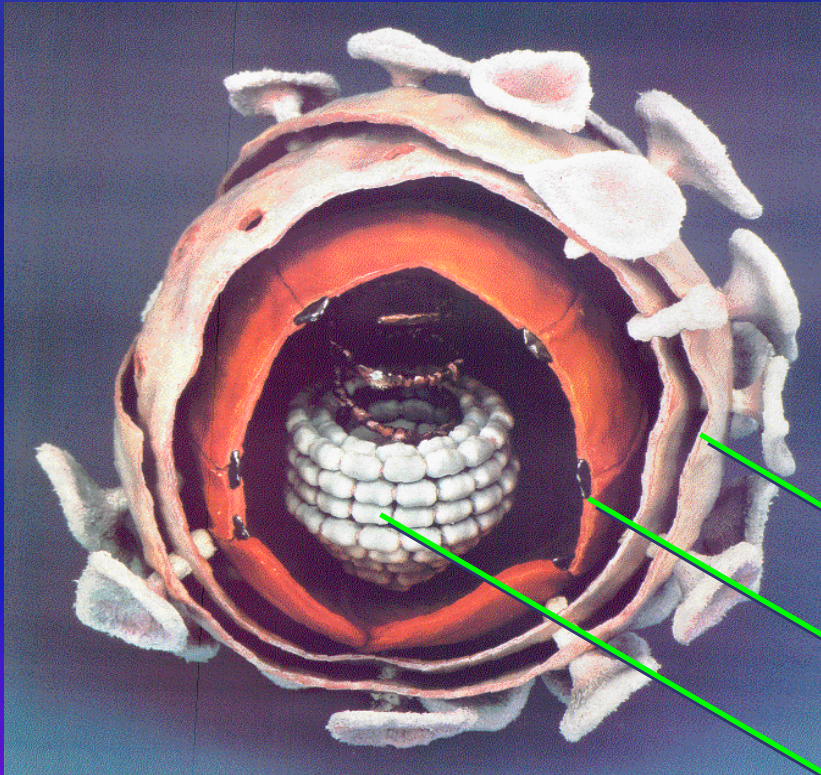
Overview

- ◆ **Test indication**
- ◆ **HIV structure and antigens**
- ◆ **Seroconversion**
- ◆ **Testing strategies**
- ◆ **Choosing test kits**
- ◆ **Important issues in HIV testing**
- ◆ **Problems encountered**

HIV testing indication

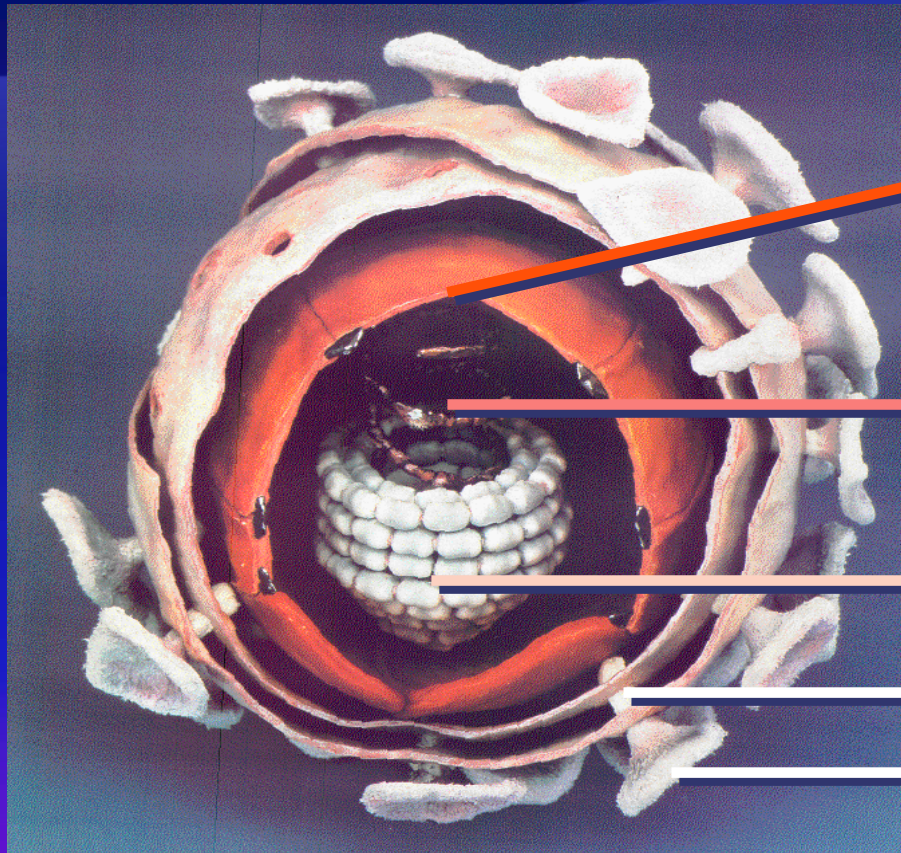
- ◆ **Blood transfusion and organ transplant donor screening**
- ◆ **Surveillance**
- ◆ **Diagnosis**

Human Immunodeficiency Virus (HIV)



- **Retrovirus**
- **2 ss-RNA**
- **reverse transcriptase**
- **Structure :**
 - envelope**
 - capsid**
 - core**

HIV antigens



p17

**RNA, reverse transcrip-tase,
endonuclease, protease**

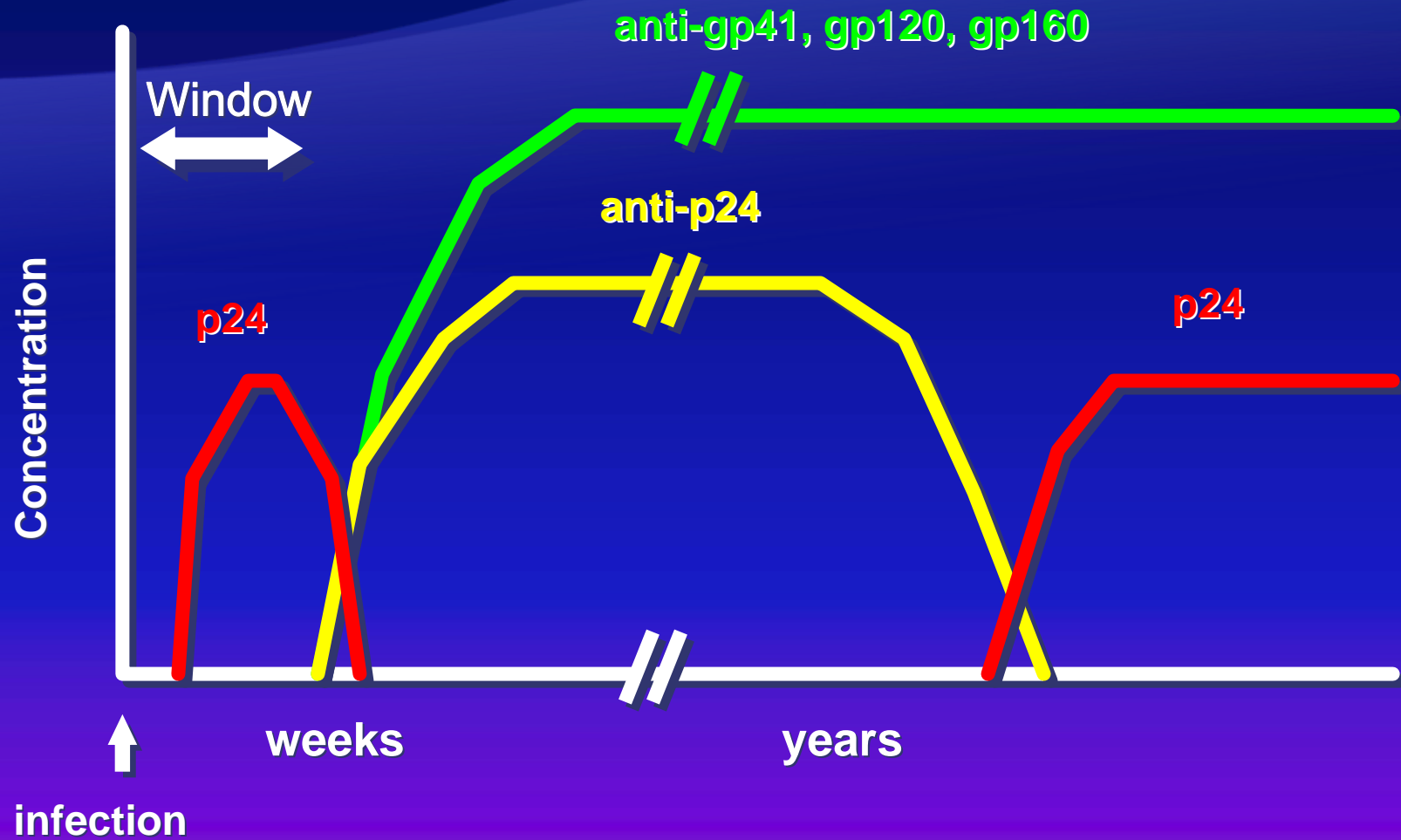
p24

gp41

gp120

gp160

Seroconversion of HIV infection



Laboratory tests for HIV

- **Virus culture**
- **Antigen detection : p24**
- **Nucleic acid detection : DNA provirus / RNA**
- **Antibody detection : screening & confirmatory**

Antibody detection

✿ Screening :

- ✿ EIA,
- ✿ agglutination
- ✿ immunoconcentration/flow-through
- ✿ immunochromatography/lateral flow

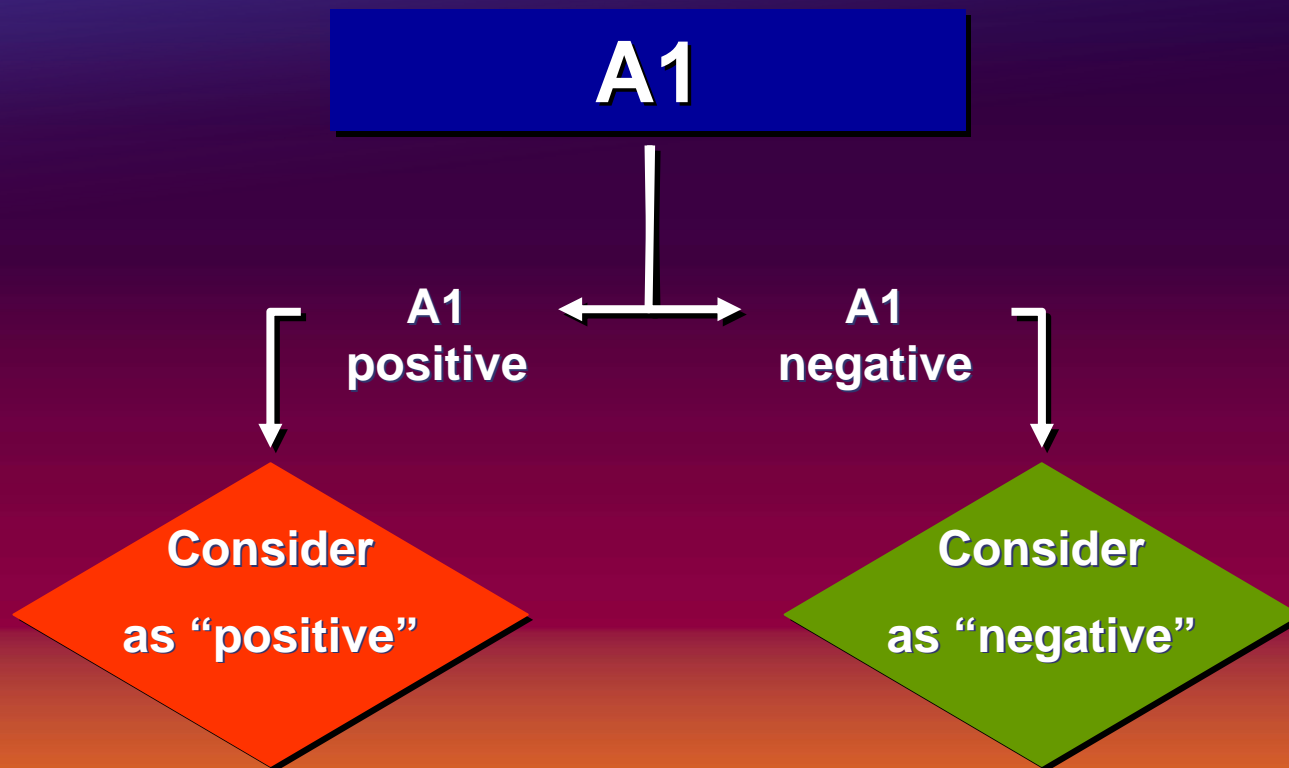
✿ Confirmatory :

- ✿ Western blot
- ✿ Lineimmunoassay
- ✿ Immunofluorescence
- ✿ Radioimmunoprecipitation assay

Screening strategies

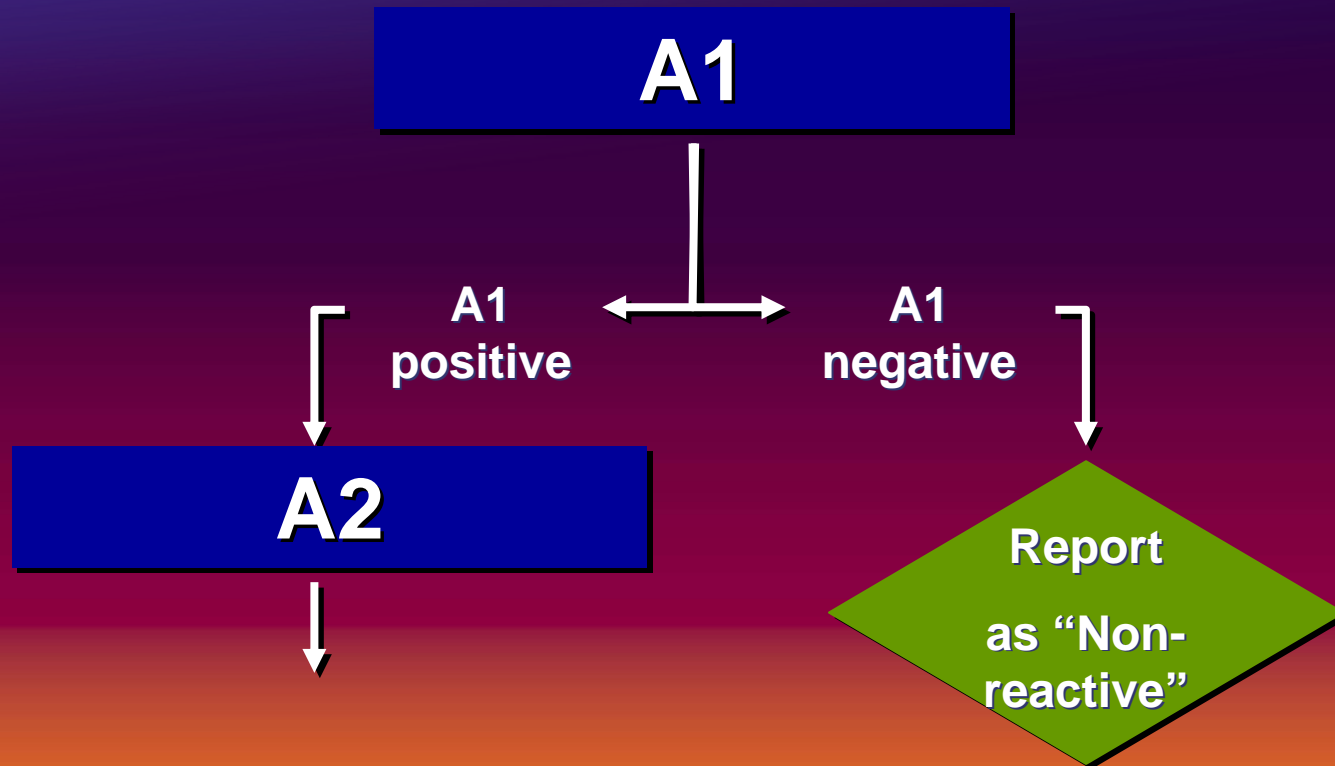
Test aim	Prevalence	Strategy	
Blood donor	All prevalence	I	
Surveillance	> 10 %	I	
	≤ 10 %	II	
Diagnosis	symptomatic	> 30 %	I
		≤ 30 %	II
	asymptomatic	> 10 %	II
		≤ 10 %	III

Strategy I

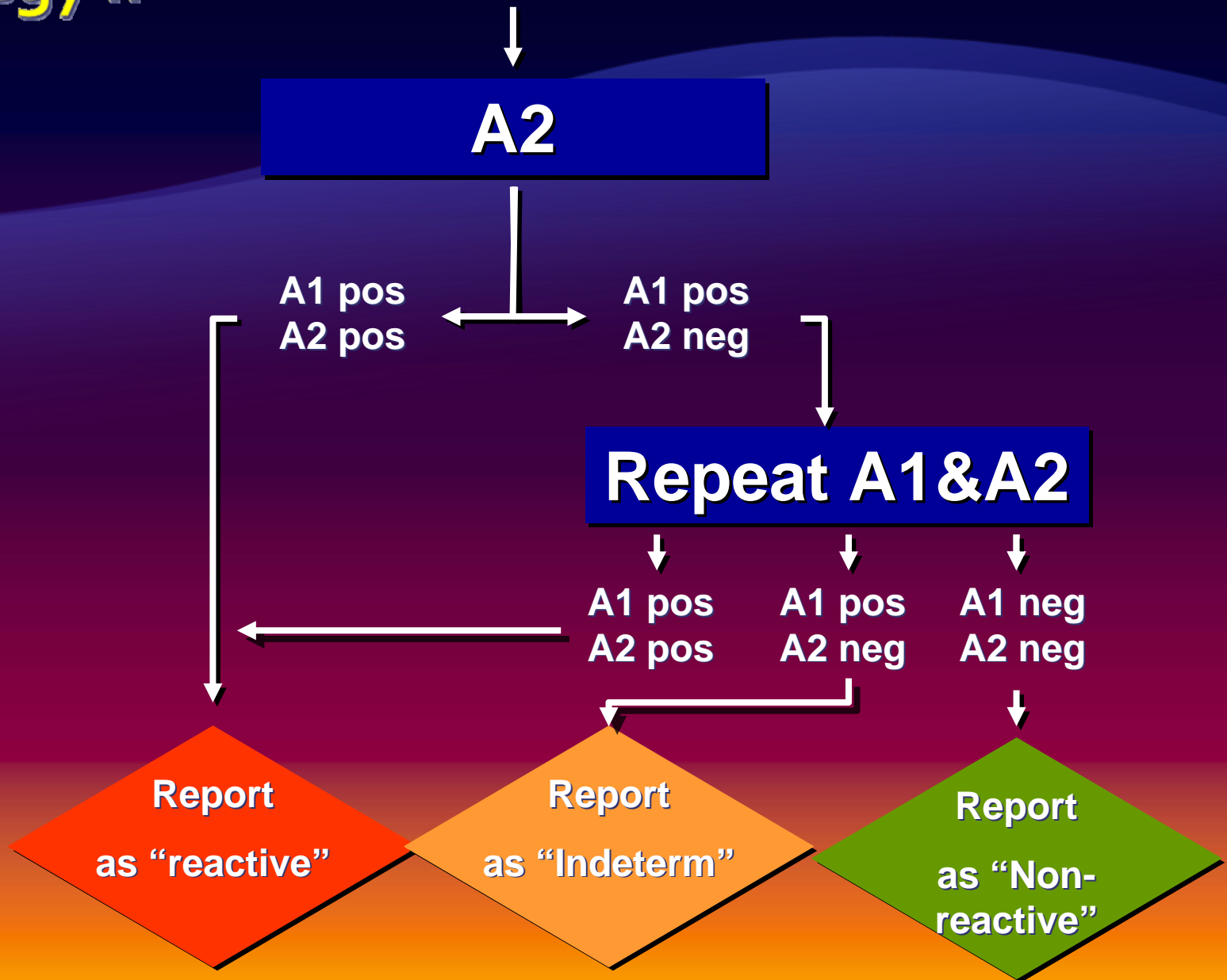


Do not use !!

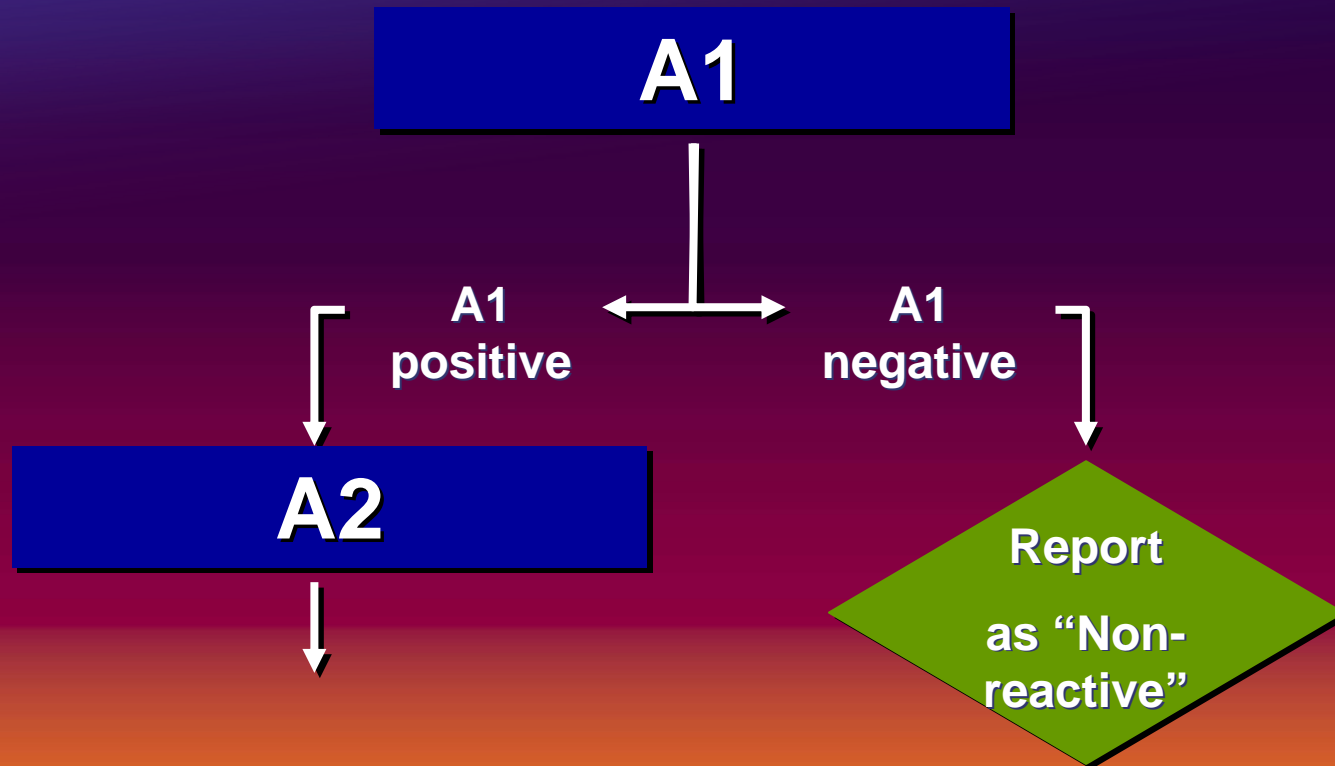
Strategy II



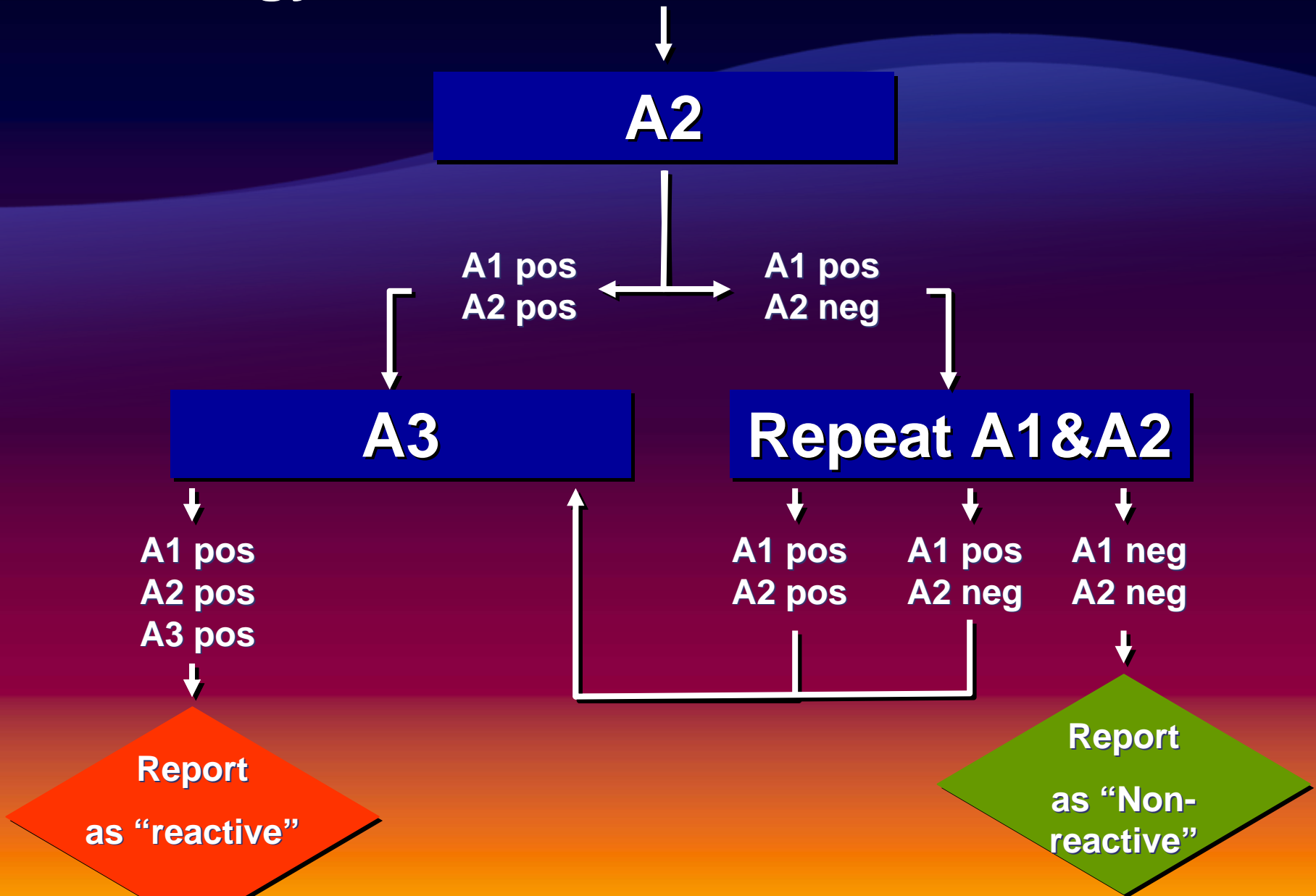
Strategy II



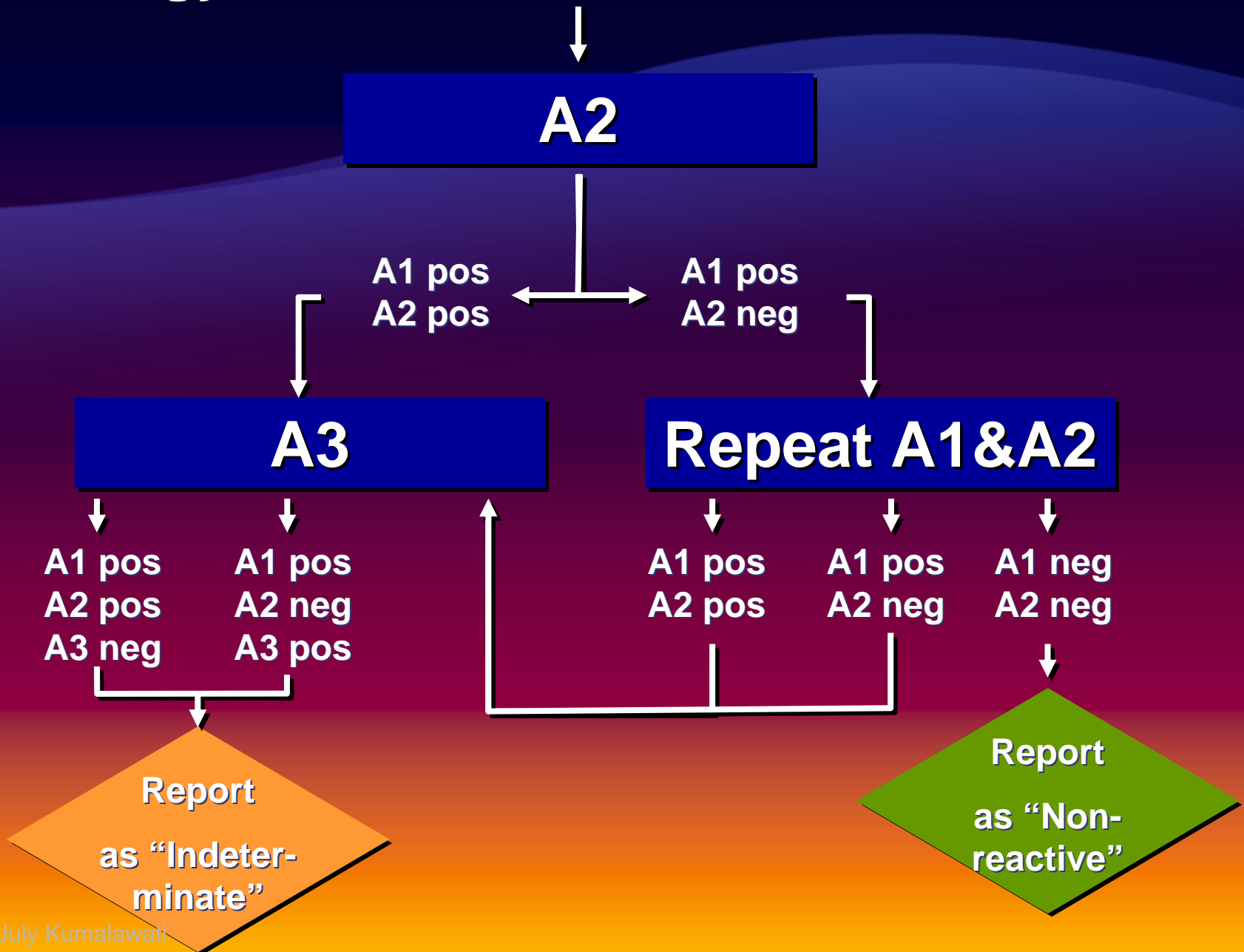
Strategy III



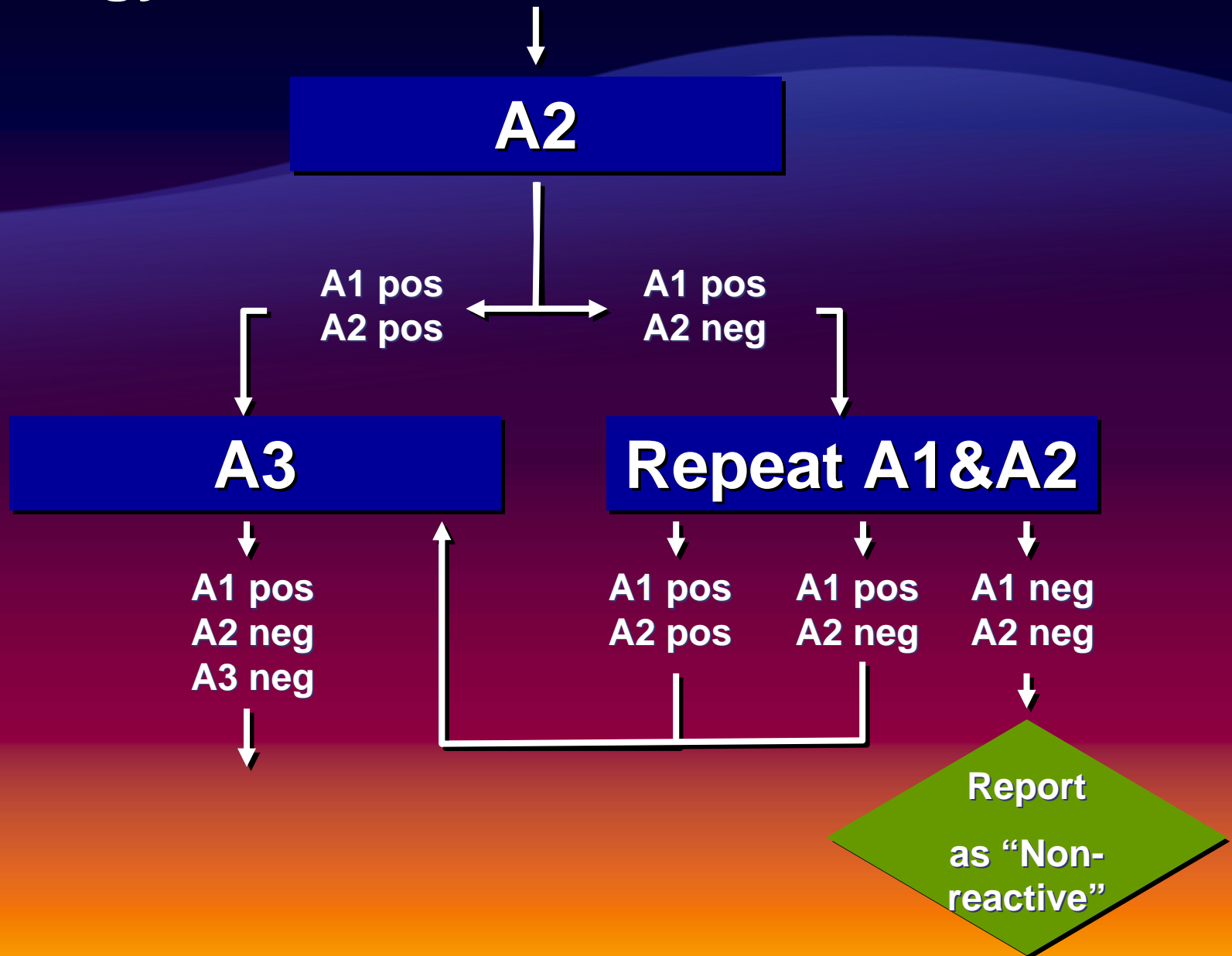
Strategy III



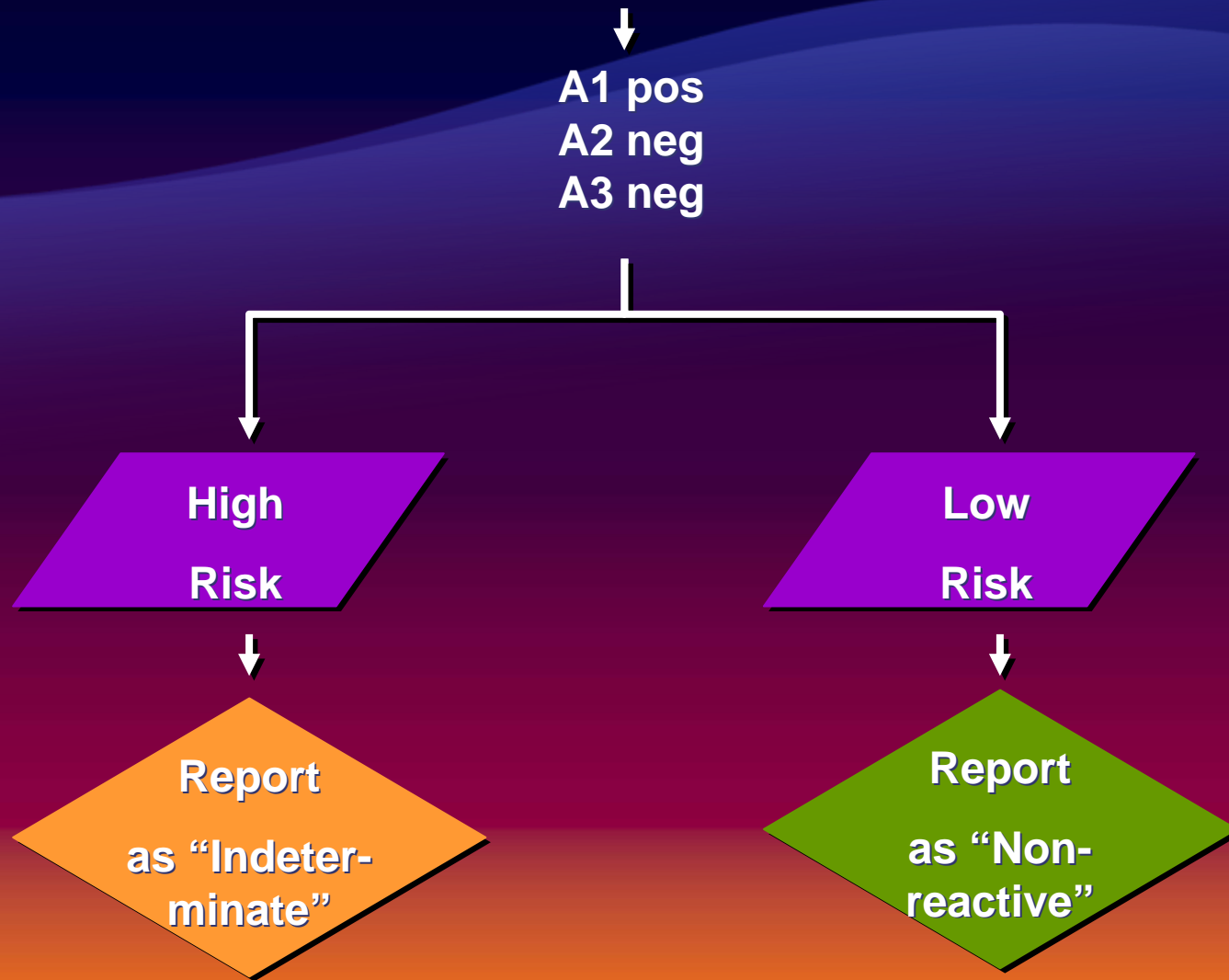
Strategy III



Strategy III



Strategy III



Choosing test kits

- **Transfusion/transplant safety (strategy I) :**
 - Highest sensitivity, preferably $\geq 99\%$
- **Surveillance (strategy I) :**
 - Specificity $\geq 95\%$
- **Diagnosis (strategies II & III) :**
 - First : Highest sensitivity (preferably $\geq 99\%$)
 - Supplemental (2nd & 3rd) : higher specificity than the first
 - Different antigen source or preparation

Test procedure

- ◆ **Follow the package insert's instruction**
- ◆ **Testing strategies II and III can be executed in:**
 - ◆ **Serial sequence**
 - ◆ **Paralel**

Confirmatory test

- ◆ Only for “indeterminate” and “reactive” specimens
- ◆ Confirmatory test report:
 - ◆ Positive,
 - ◆ Negative, or
 - ◆ Indeterminate

Important issues in HIV test

- ◆ Pre-test counseling
 - ◆ Informed consent
 - ◆ Post-test counseling
 - ◆ Confidentiality
-
- ◆ Standard precautions

When is the test requested?

- ◆ **Voluntary:**
 - ◆ **VCT (Voluntary counseling and testing)**
- ◆ **Provider initiated:**
 - ◆ **PICT (Provider initiated counseling and testing) with 'opt-out' option**

Problems encountered during HIV test

- ◆ The laboratory does not have the information on the availability of an informed consent
- ◆ In VCT setting:
 - ◆ Serial testing: client may not come back to get the result
 - ◆ Testing may not be done by a laboratory technician

THANK YOU