

# IS THAT MY BLOOD?

ABO BLOOD TYPES

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- **TYPE OF ENTRY:**

- ❖ Class/Lab Activity
- ❖ Hands-on
- ❖ Group/Cooperative learning
- ❖ Review/reinforcement
- ❖ Problem solving
- ❖ Technology

- **TARGETED STUDENT POPULATION:**

- ❖ High School Biology or Microbiology

- **GRADE LEVEL:**

- ❖ 9<sup>th</sup>-12<sup>th</sup> grades

- **PURPOSE**

- ❖ To develop student skills in scientific investigating using ABO blood typing

- **OBJECTIVE**

- ❖ Determine your ABO and Rh blood type
- ❖ Students will be able to list and explain how each blood type is crossed

- **REAL WORLD CONNECTIONS:**

- ❖ Why is it important to know your blood type?

# NATIONAL CURRICULUM STANDARDS

- NATIONAL SCIENCE EDUCATIONAL STANDARDS
  - ❖ Construction New Scientific Knowledge
  - ❖ Understanding about scientific inquiry
  - ❖ Researching to gain new scientific knowledge
  - ❖ Constructing investigations to test hypothesis
  - ❖ Formulating conclusions based on investigative findings
  - ❖ Using Scientific Knowledge in Physical Science
  - ❖ Understanding how science relates to the real world

# MICHIGAN CURRICULUM STANDARDS

- Strand 1.1. Constructing New Scientific Knowledge
  - ❖ Students will devise questions that can be investigated empirically
  - ❖ Students will design and conduct their own scientific investigation
  - ❖ Students will investigate and obtain information from various sources (internet, books, etc..)
  - ❖ Students will present their findings in a group via presentations.
- C.I. Strand 1.2 Design and conduct scientific investigations
- Strand II.1 Reflecting on Scientific Knowledge
  - ❖ Apply science to real-world situation.

## TEACHER PREPARATION

TIME: 1 Hour

- ❖ Obtain blood extraction equipment, you may use lancets that can be purchased or obtained from your local drug store for accucheck machines, or you may use an accucheck machine that can also be donated to your classroom.
- ❖ PREPARATION Order Kit from: Sargent-Welch
- ❖ Blood typing kit **WL54854** ABO, Lyophilized anti-A and –B and **WL54856** Rh, Lyophilized anti-Rh
- ❖ Listed below is URL address:  
[http://www.sargentwelch.com/product.asp\\_Q\\_pn\\_E\\_WL54842%5FST\\_A\\_Blood+Typing+Kits\\_E](http://www.sargentwelch.com/product.asp_Q_pn_E_WL54842%5FST_A_Blood+Typing+Kits_E)

## CLASS PERIODS

Three ( 55-Minute class periods)

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### CLASS PERIOD ONE

#### **Review/Preview**

❖ Students should have discussed Humoral and Cell mediated Immunity as well as antigen –antibody interactions. After these topics have been thoroughly discussed then each group should complete the following lab safety assignment.

#### **Lab Safety Exercise**

❖ Students will cut out symbol given to them and paste them on cardboard. Underneath each symbol the students will write out the meaning of the symbol. Each team will select which cardboard will be posted near their workspace. A short oral competitive quiz will be given and an additional 5 points will be added to the team who answered the most questions accurately.

*The lab safety activity is the most important portion of this activity because human blood is used students must be made aware of the precautions and lab safety rules must be strictly enforced.*

# FOR THE SQUEAMISH

QuickTime™ and a  
TIFF (uncompressed) decompressor  
are needed to see this picture.





## CLASS PERIOD TWO

- **Technology Exercise**

- ❖ Each group is assigned a computer and the group will complete the assignment below.

1. Type in the following URL address:

- <http://nobelprize.org/medicine/educational/landsteiner/index.html>

## Class Period Three

- **IS THAT MY BLOOD?**
- Your Name, Period, Date, and Lab Partners
- **MATERIALS**
- 60 Welled Slides
- 1 box toothpicks
- Anti-A Serum
- Anti-B Serum
- Anti-D or Rh serum
- 1 box of alcohol swabs
- 1 box of band-aids
- 30 disposable lancets
- Sharps box
- 1 pack of 100 index cards (each group receives 5)
- OR
- **Sargent Welch's Blood typing Kit**
- **PROBLEM**
- How would your doctor know what type of blood is needed in a transfusion for you?
- **HYPOTHESIS** - Blood types varies

## Procedure

- 1. Each person Obtain 3 slides.
- 2. Label slide 1 Anti-A
- 3. Label slide 2 Anti-B
- 4. Label slide 3 Anti-D
- 5. Obtain Lancet, alcohol swab, and band-aid.
- 6. Hold wrist up but hand in downward position.
- 7. Using your opposite writing hand squeeze middle finger with thumb on same hand at tip for 30 seconds.
- 8. While squeezing prick finger.
- 9. Place one drop of blood in each well of slide.
- 10. Wipe finger with alcohol swab and hold for 30 seconds.
- 11. Place band-aid on finger.
- 12. In slide 1 well add 1 drop of Anti-A Serum
- 13. In slide 2 well add 1 drop of Anti-B Serum
- 14. In slide 3 well add 1 drop of Anti-D Serum (Rh)
- 15. Using 1 toothpick for each slide, stir each slide with its own toothpick.
- 16. Spread mixture over entire well.
- 17. Do not place in warm area will cause error.
- 18. Tilt or rotate each slide for 5 minutes
- 19. Examine slide for agglutination.
- 20. Note that the 3<sup>rd</sup> slide will have weaker agglutination than of the other 2 slides.
- 21. Record your results.

# SLIDES



## EVALUATION

- ❖PART 1: Lab safety quiz
- ❖PART 2: Technology quiz
- ❖PART 3: Lab Reports
- ❖PART 4: Oral presentation of results

## EXTENSION OF LESSON

- ❖ Discussion of complications of Rh- blood, Universal Donors, and Recipients

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