

CAN YOU SPOT

RESEARCH MISCONDUCT?

INVESTIGATING IMAGE MANIPULATION

**OBJECTIVE**  
See if you can detect the research misconduct in this sample results section.

**METHODS**  
Thoroughly review the images below to determine what was falsified or fabricated.

**RESULTS**  
Check your findings with the explanations in the discussion section.

FIGURE 1. COMET ASSAY

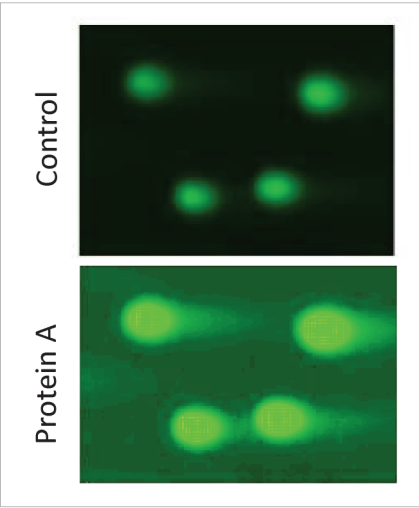


FIGURE 2. IMMUNOFLUORESCENCE COLOCALIZATION ASSAY

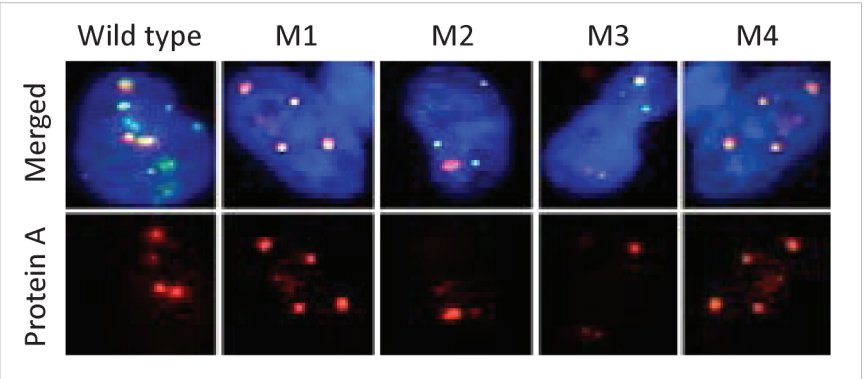


FIGURE 3. WESTERN BLOT

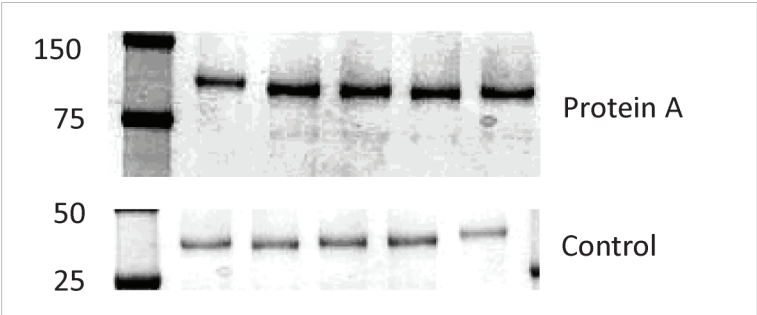
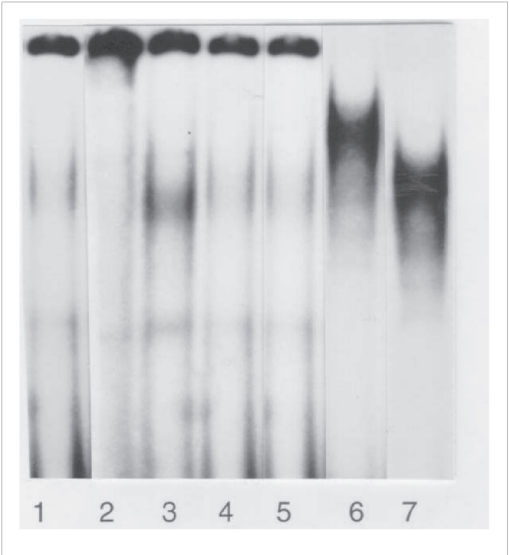
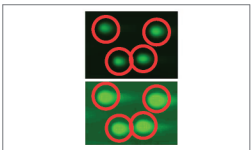


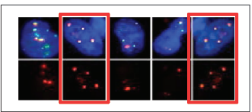
FIGURE 4. GEL SHIFT ASSAY



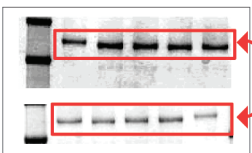
DISCUSSION



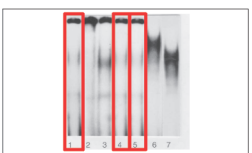
**FIGURE 1. COMET ASSAY**  
The control image was cropped and relabeled as the image for Protein A. It was also intentionally lightened to make the “tails” appear longer.



**FIGURE 2. IMMUNOFLUORESCENCE COLOCALIZATION ASSAY**  
M1 and M4 are the same image but flipped vertically.



**FIGURE 3. WESTERN BLOT**  
The top panel and bottom panel of Figure 3 are from the same source image. The Protein A blot image has been flipped horizontally and represented as the control blot image.



**FIGURE 4. GEL SHIFT ASSAY**  
Lanes 1, 4, and 5 are from the same image source and were relabeled and reused to represent different experimental conditions.

CONCLUSION

Readers play an important role in detecting image manipulations. If you think you see research misconduct, make your concerns known to your institutional Research Integrity Officer.

DID YOU SPOT IT?

Learn more about image processing at: <http://ori.hhs.gov/ImageProcessing>

