

## ABID CASE #5

1. What is the probable identity of this antibody?

*Anti-Fy<sup>a</sup>*

2. Comment on the varying strength of reactivity of the serum in the initial panel and in the various test systems used.

*The initial panel suggests a dosage effect but it is not consistent; grading the reactions of very weak gel antibodies is subjective. PEG is often a more sensitive technique for warm-reactive IgG antibodies but in this case it misses a single dose Fy<sup>a</sup> cell.*

3. Is any further workup needed to prove it? If additional cells are needed, select them from the following panel to complete the workup.

*PEG is not a very good technique to rule out cold antibodies, so it is prudent to rule anti-N out in gel*

4. What is the probable immunizing stimulus in this case?

*Transfusion 10 months earlier; may have been an anamnestic response.*

5. Does this antibody cause hemolytic transfusion reactions? *Yes* Hemolytic disease of the newborn? *Yes*

6. How would we select compatible RBCs for this patient? What percent of donors is expected to be compatible with this recipient?

*Select group O, Rh positive, Fy<sup>a</sup> negative RBCs, compatible by an antiglobulin crossmatch. 34% of Caucasians and 90% of African-Americans are compatible.*

7. What is the biochemical nature of the antigen? Which cells in the panels above likely come from African-American donors? (Review the relevant blood group system, including disease associations and racial differences in antigen prevalence for this and other antigens.)

*Duffy antigens are carried on a multipass membrane glycoprotein which binds and clears inflammatory cytokines including IL-8/MCP-1, RANTES, etc. This protein also acts as the attachment site for P. vivax, and the Fy<sup>a-b-</sup> confers resistance to infection with this parasite. This phenotype is encoded by a variant of the Fy<sup>b</sup> allele which is not expressed on RBCs but because it is expressed on other cells, Fy<sup>a-b-</sup> individuals do not make anti-Fy<sup>b</sup>. They can, however, make anti-Fy<sup>3</sup> which reacts with all RBCs carrying Fy<sup>a</sup> or Fy<sup>b</sup>. Duffy antigens are destroyed by proteolytic enzymes. Blood groups that are present/absent in AA donors include: Fy<sup>a&b</sup> (absent in 68%), S (31% in AA, 52% in EA), K (2% in AA, 9% in EA) & Js<sup>a</sup> (1% in EA, 20% in AA), Le<sup>b</sup> (72% in EA, 55% in AA), V (30% AA are V+), Ro (45% of AA), & Jk<sup>b</sup> (49% of AA, 74% of EA).*