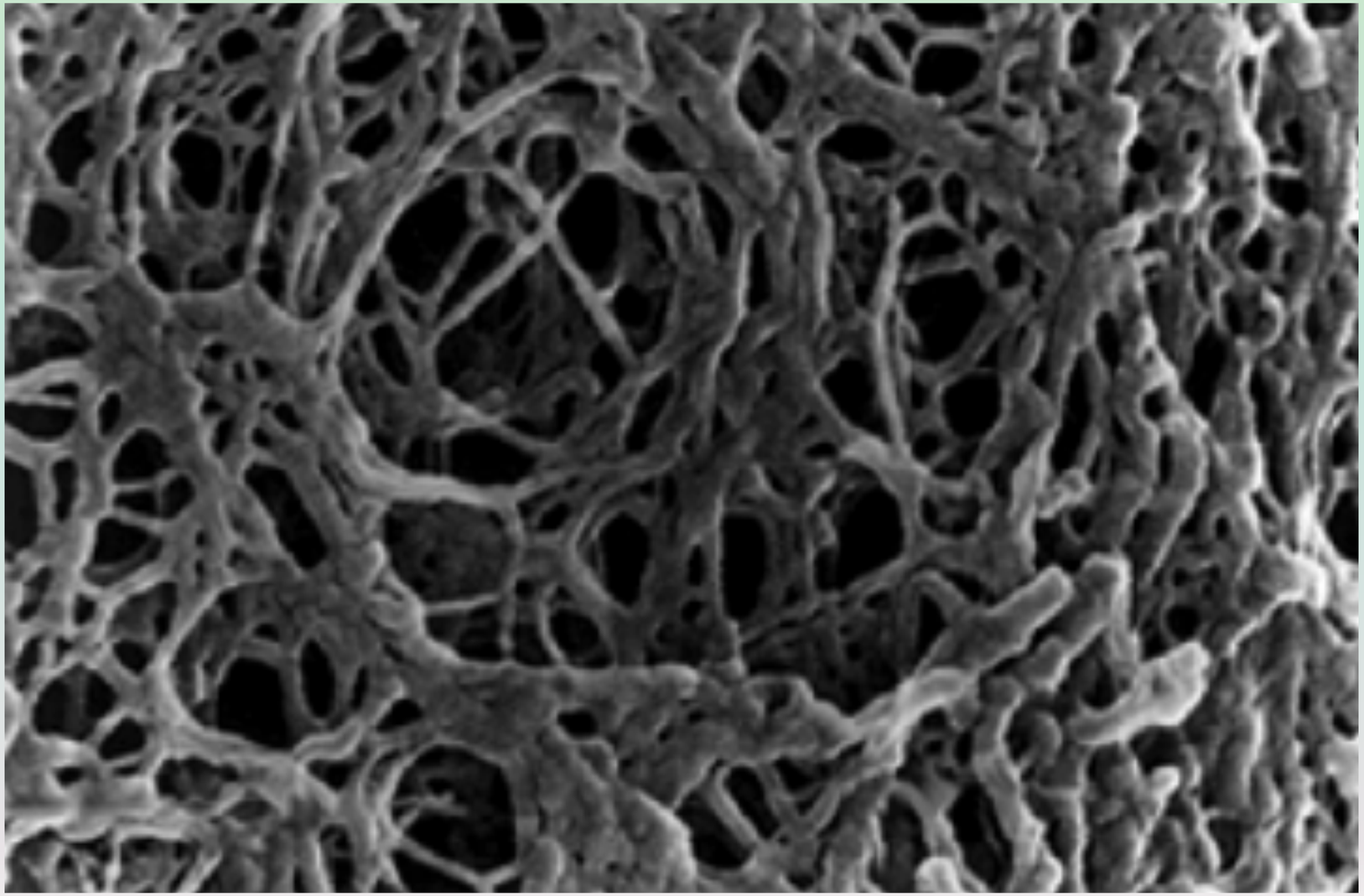
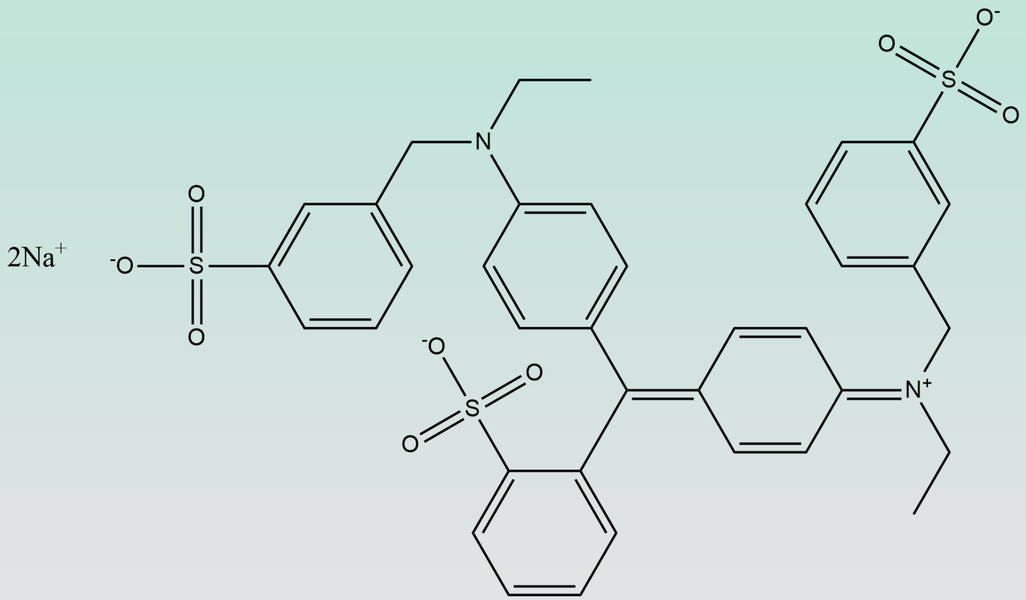
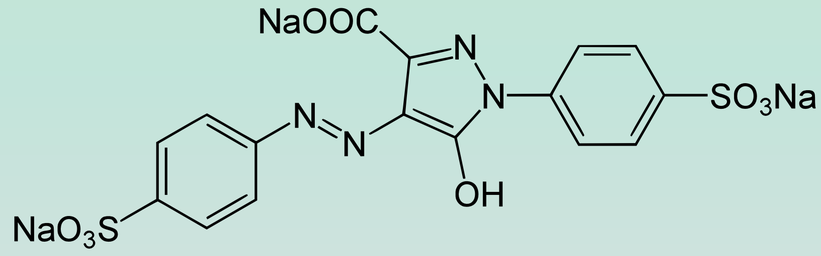


2% agarose gel

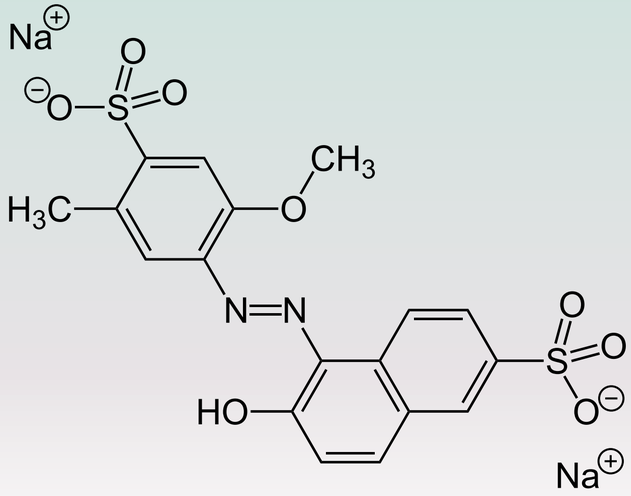
Which of these would you expect to travel the fastest?
Where do you predict that color's band would be on the gel?
How do your results compare with your predictions?



BLUE #1



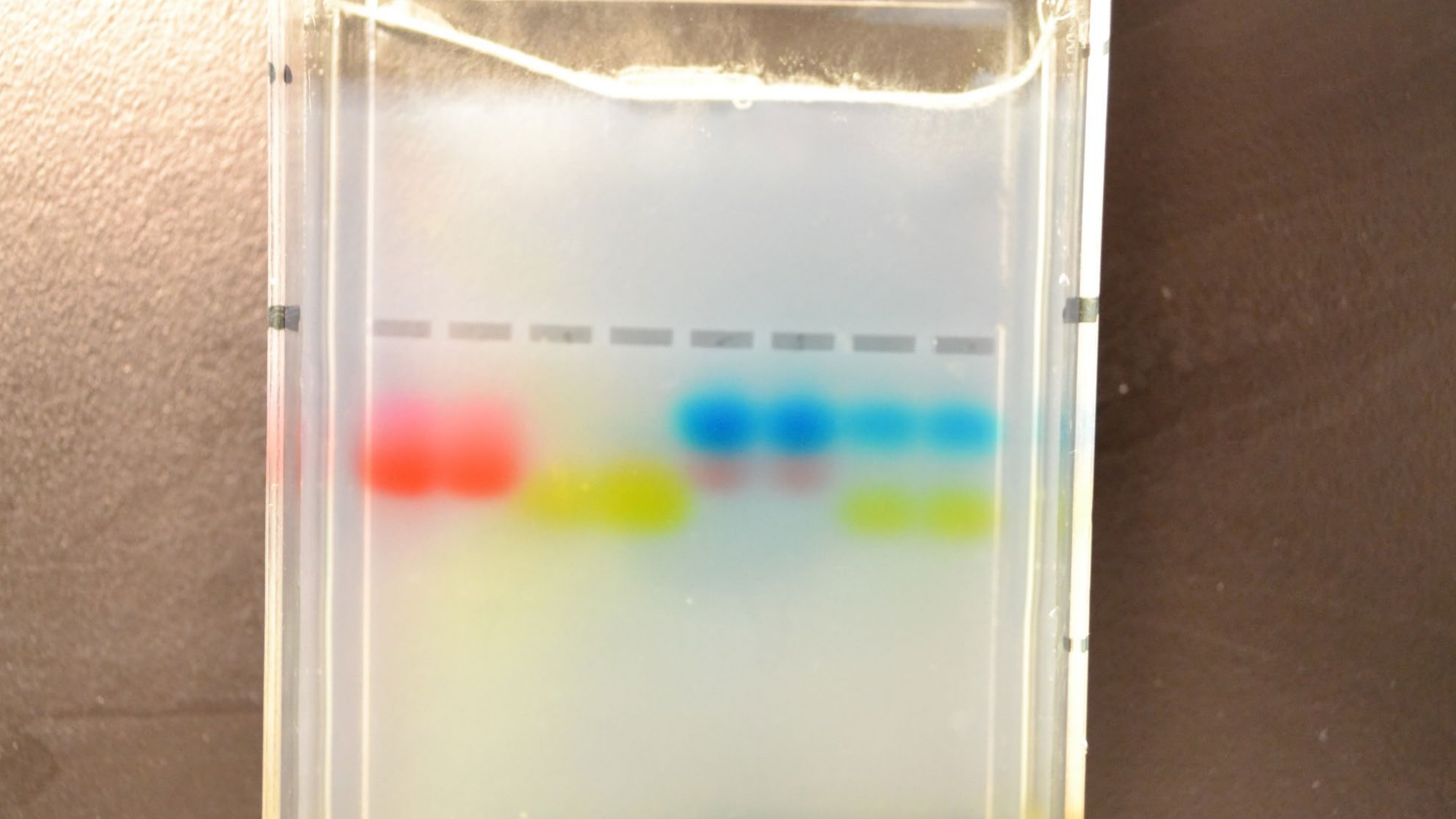
YELLOW #5



RED #40

What color(s) did the manufacturer use in these products?

How does this information compare to your results?



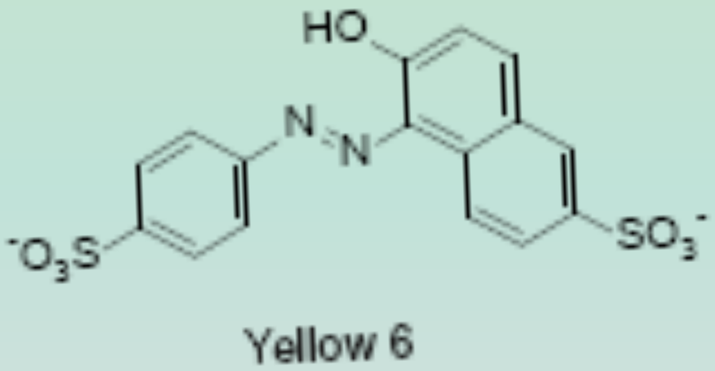
Food dye regulation

- In the US, there was no control or regulation of food dyes until the early 1900s
- Food and Drug Administration (1902)
  - Due to public outcry over adulterated foods
  - Upton Sinclair, *The Jungle* (1906)
  - Elixir sulfanilamide Poisoning, 100 dead (1937)

- Food Drug and Cosmetics Act (1938)
  - **Synthetic dyes:** Seven approved for use
  - **Natural dyes** (derived from plants or animals):
    Can also be used and are not regulated

FD&C synthetic dyes

- FD&C Red 40 or FD&C Red 40 Lake
- FD&C Yellow 6 or FD&C Yellow 6 Lake
- FD&C Yellow 5 or FD&C Yellow 5 Lake
- FD&C Blue 1 or FD&C Blue 1 Lake
- FD&C Blue 2 or FD&C Blue 2 Lake
- FD&C Red 3 or FD&C Red 3 Lake
- FD&C Green 3 or FD&C Green 3 Lake



Yellow 6

Natural dyes

- Beetroot red or betanin (from beets)
- Curcumin (from tumeric)
- Caramel coloring (from sugar)
- Annatto (seeds of achiote trees)
- Carminic acid, carmine, or cochineal (from ground-up beetle abdomens)
- Lycopene (from tomatoes

What food dyes make up this color?

Dyes with positive charge

- Methylene blue
- Crystal violet
- Methyl green
- Toulidine blue
- Safranin
- Basic fuschin