ELISA explained

Step-by-step

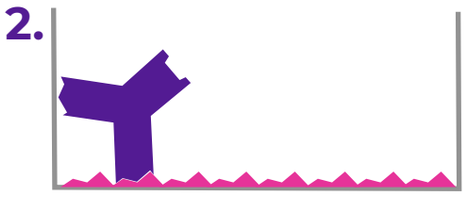
Enzyme-Linked ImmunoSorbent Assay: This is a test (assay) that detects an adsorbed (sorbent) substance using detection similar to one's immune system (immuno) and is detected by these immune system molecules—antibodies—being bound to an enzyme that makes a substance change color and thus can be seen with our eyes.

How an ELISA actually works:

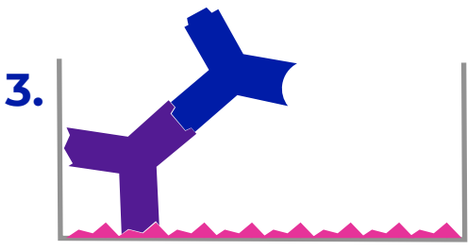
Step 1: A plastic well (usually the size of your pinky nail or smaller) is coated with the molecule you want to study (e.g.). Proteins often stick to plastic, it turns out.

Step 1b: Use a boring protein that we have a lot of to stick to all of the rest of the plastic.

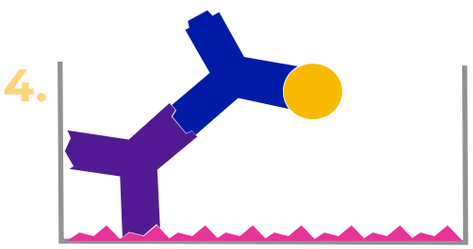
Step 2: Add an antibody that will specifically recognize and bind to the molecule you're interested in. If it's there, they bind and the antibody stays stuck in the well. If they don't bind, it will get washed away in the next wash steps.



Step 3: Add another antibody that is bound to an enzyme that can specifically make a molecule change color. This antibody should recognize the general class of antibodies you used in Step 2 (often this is based off of the species of animal used to make the antibody—they're not just in people!).



Step 4: Add the color-changing substance. If the right molecules are present, the enzyme will cause a color change and give you a positive result. No color change means the molecule was not present.



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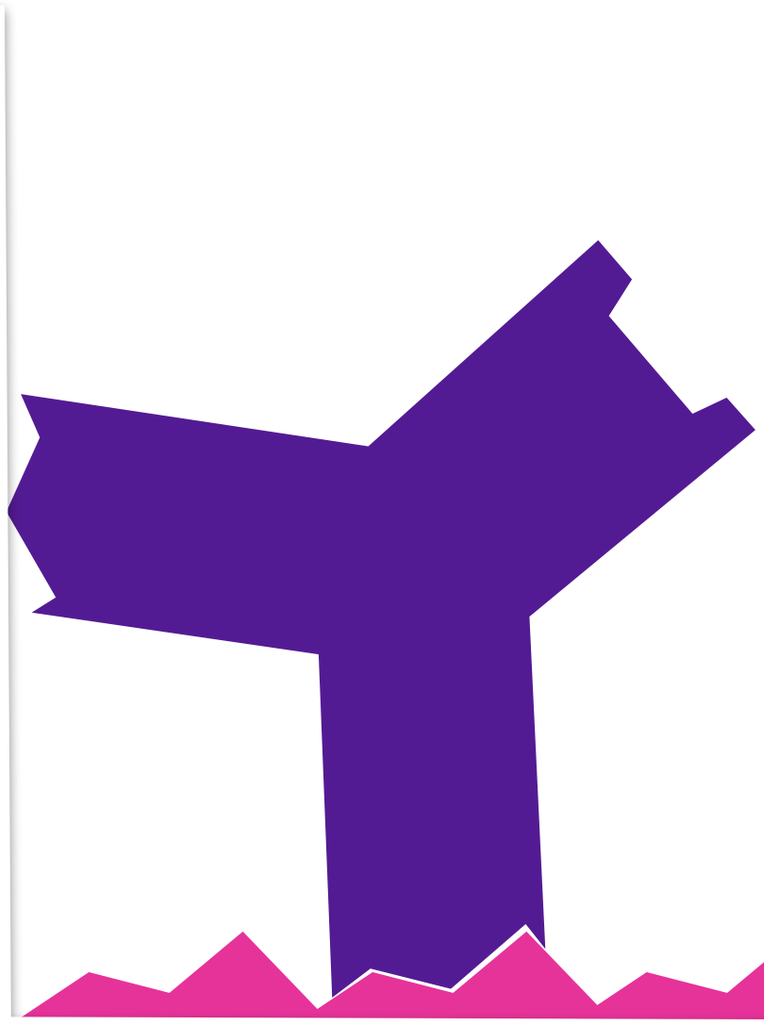

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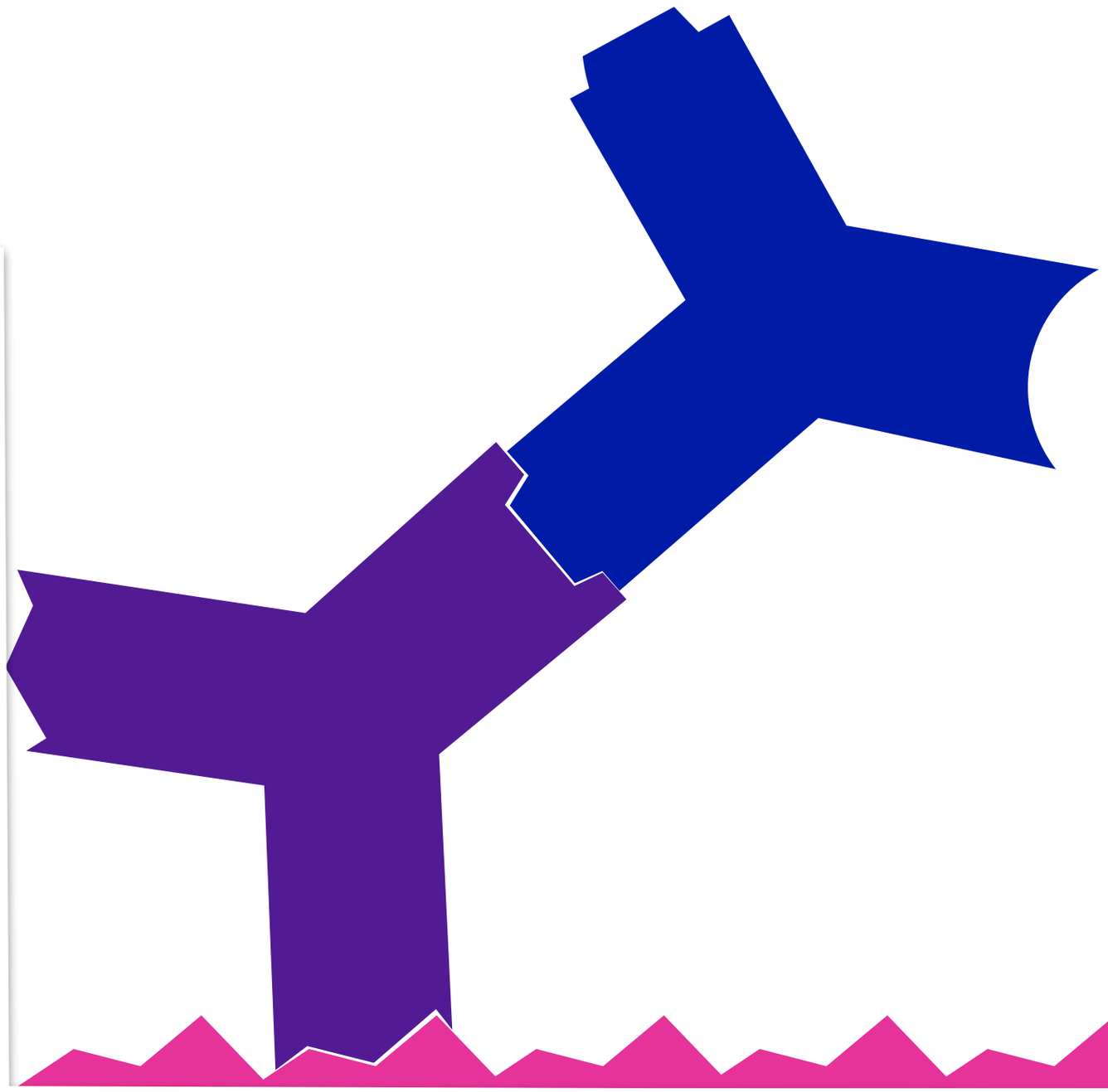

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