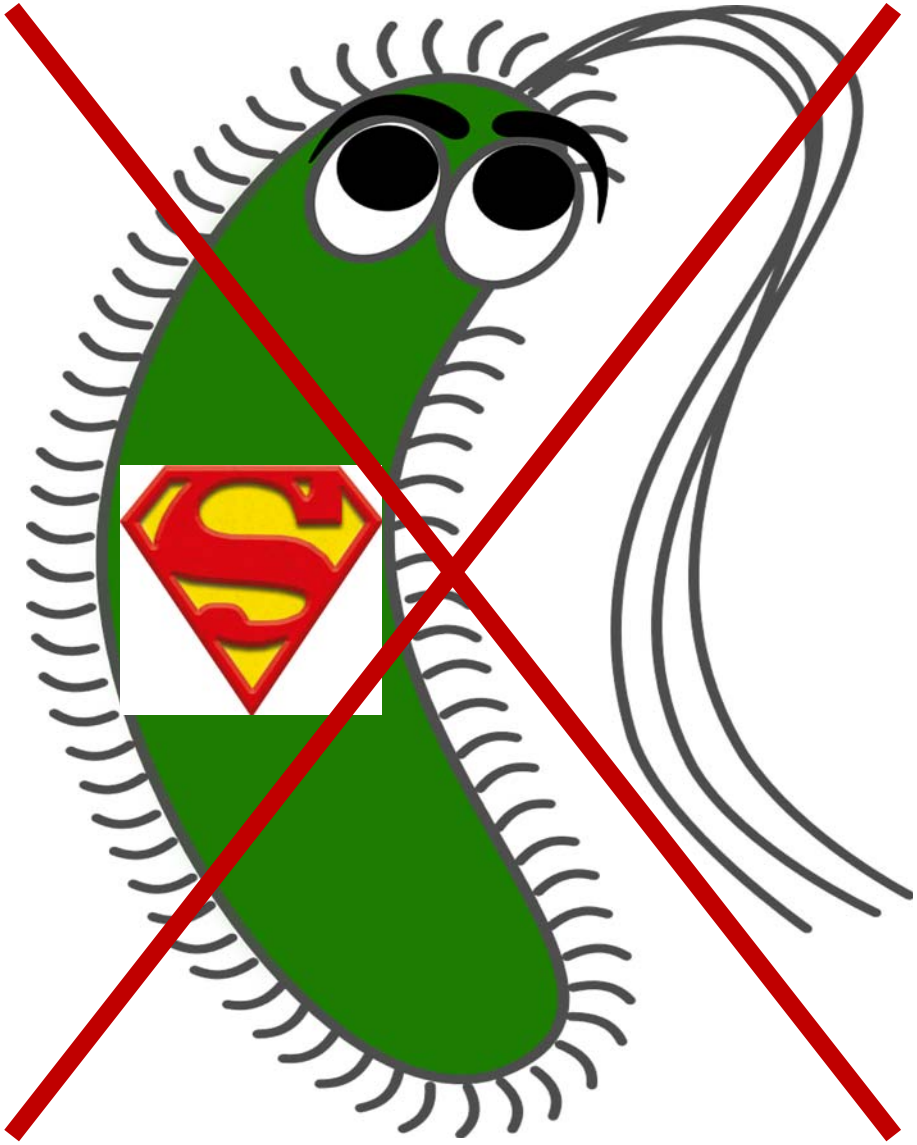
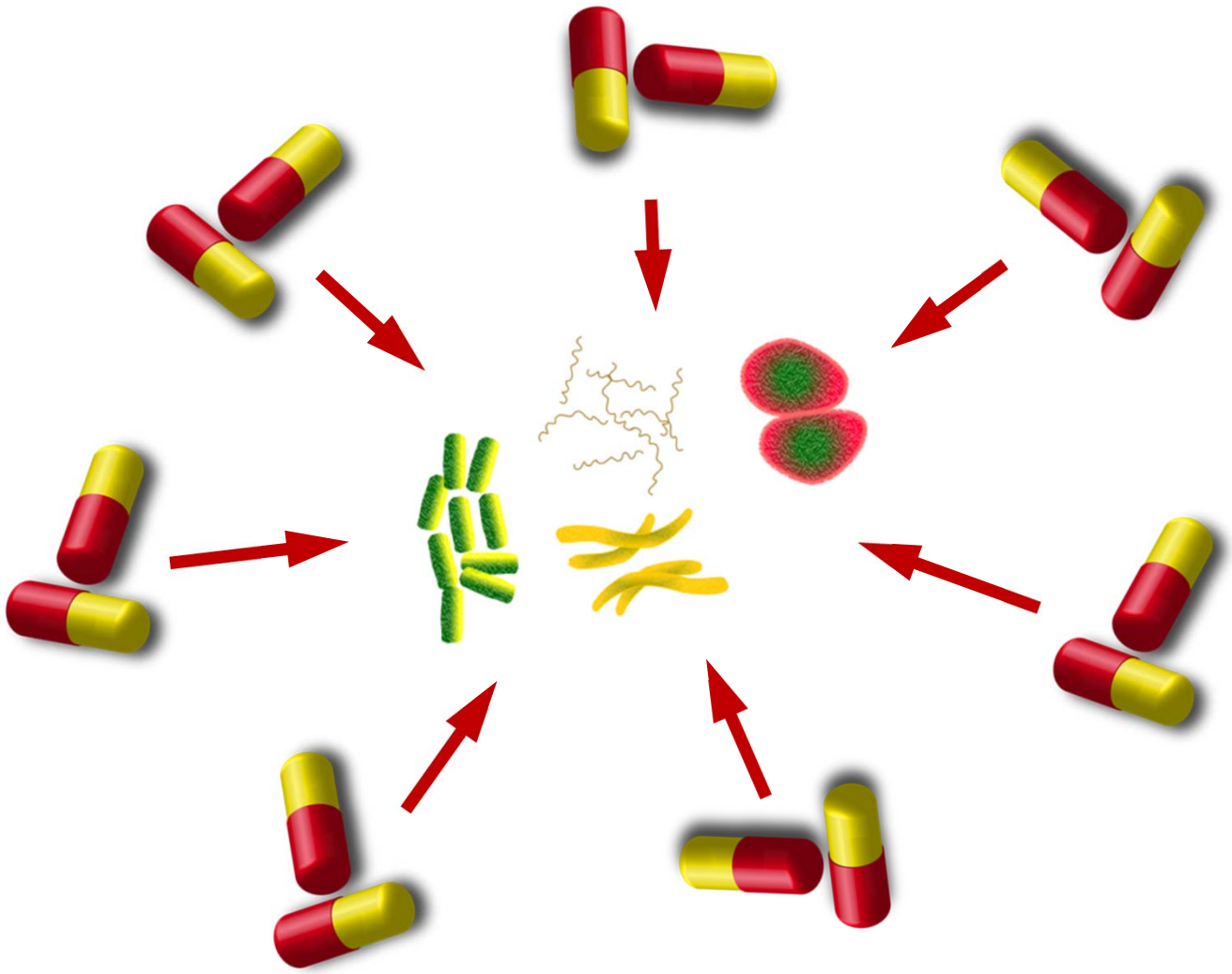


Stopping Superbugs!

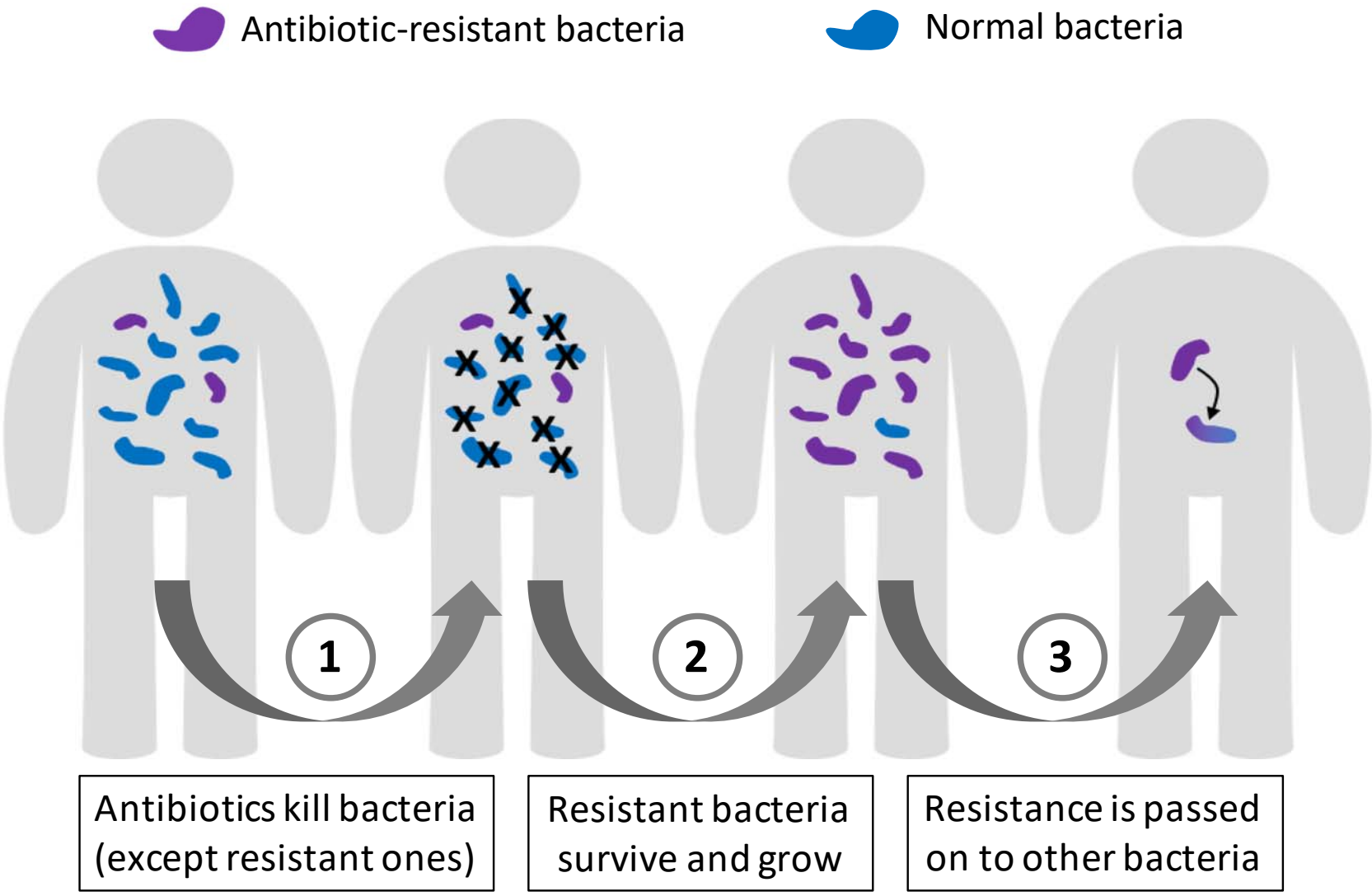
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Bacterial infections can be treated with antibiotics

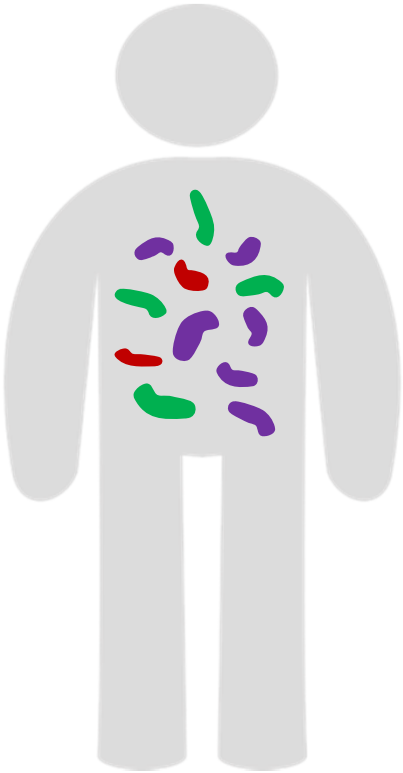


How “Superbugs” (antibiotic resistance) can develop



The antibiotic treatment model

Infected patient



Color code = genetic traits

normal bacteria

moderately resistant bacteria

super-resistant bacteria

One die = One bacteria



Mixture of different bacteria → **Mixture of different dice**

Materials you need



- Six-sided dice (100 total)
  - 70 of one color
  - 25 of a 2nd color
  - 5 of a 3rd color
- Pot with lid, box, or sealable plastic bag
- Large, flat surface
- Pencil or pen

The antibiotic treatment model

Rolling the dice  =  One dose of antibiotics

Rules

Dice description	Represents	Bacteria *survive* if roll	Bacteria *die* if roll
Purple dice	Normal bacteria	6	1, 2, 3, 4, or 5
Green dice	Moderately resistant bacteria	4, 5, or 6	1, 2, or 3
Red dice	Super-resistant bacteria	2, 3, 4, 5, or 6	1

Start the experiment

Initial number of dice:

- 70 purple
- 25 green
- 5 red

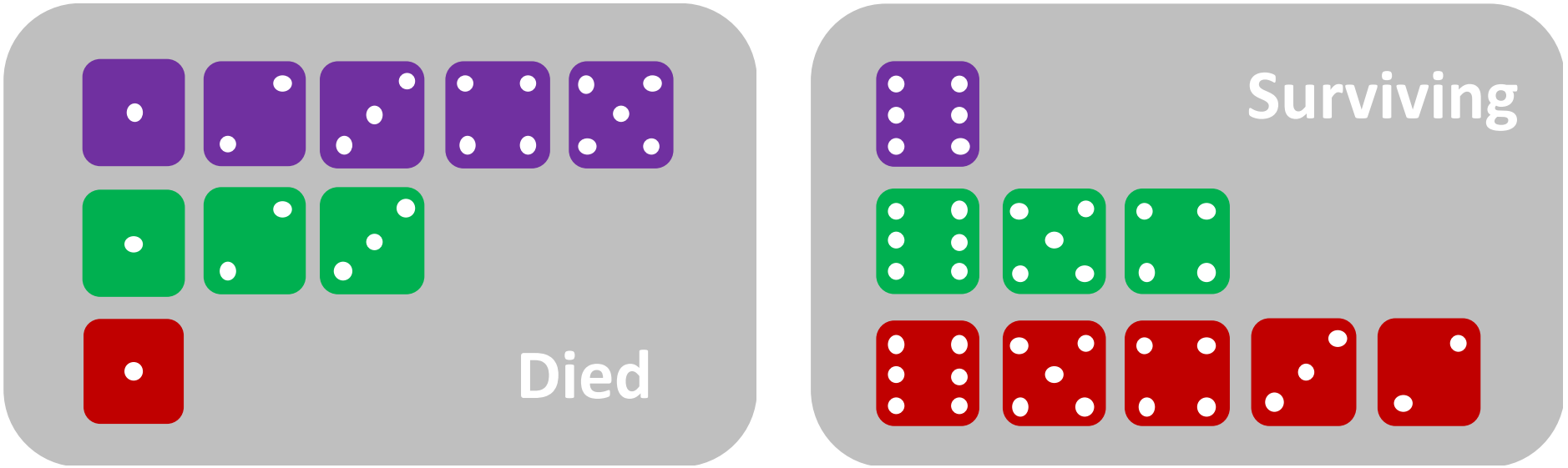


Roll the dice onto a flat surface



Make a “died” and “surviving” pile

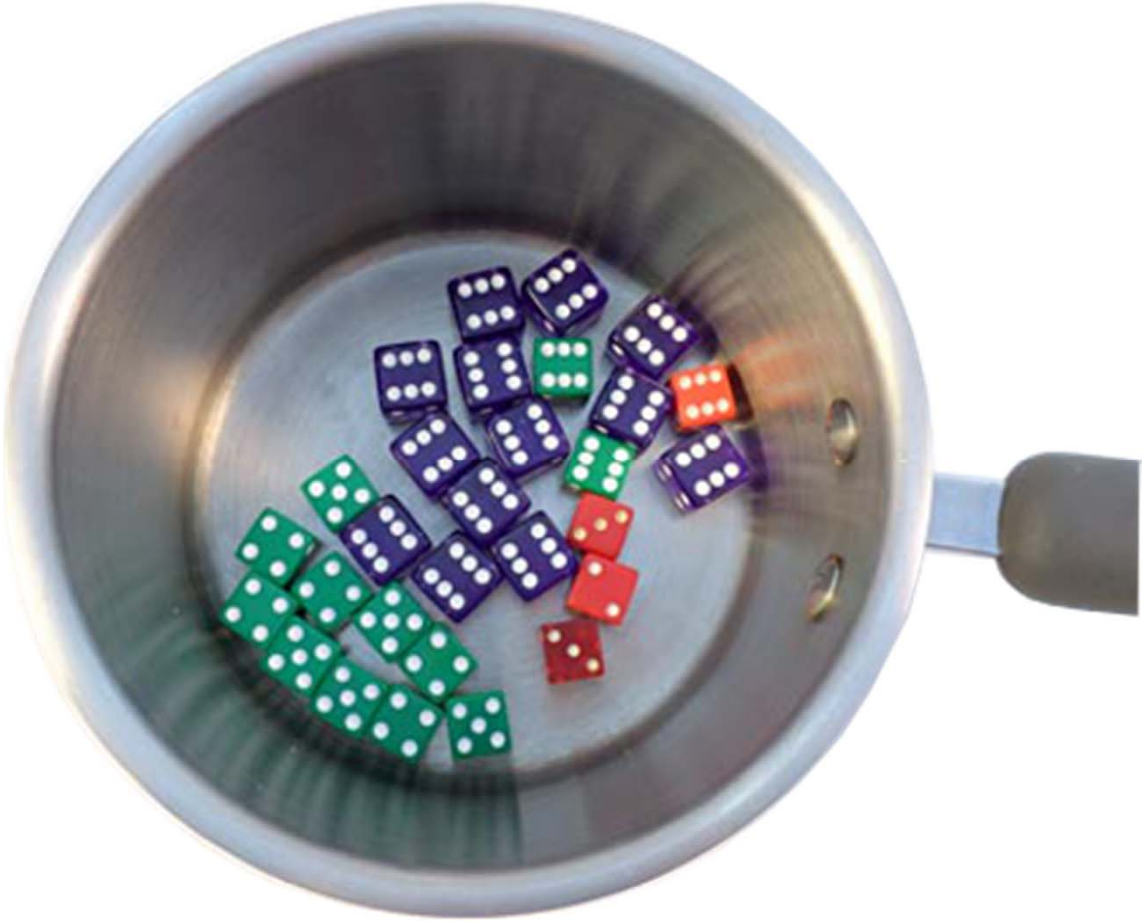
(according to your rules in the table)



Count and record the number of *surviving* bacteria

Type of Bacteria	Number of Antibiotic Doses								
	0	1	2	3	…	9	10	11	12
Normal									
Moderately resistant									
Super-resistant									

Select for the surviving bacteria and put these dice back into the pot



Continue rolling the dice until you complete 12 doses

