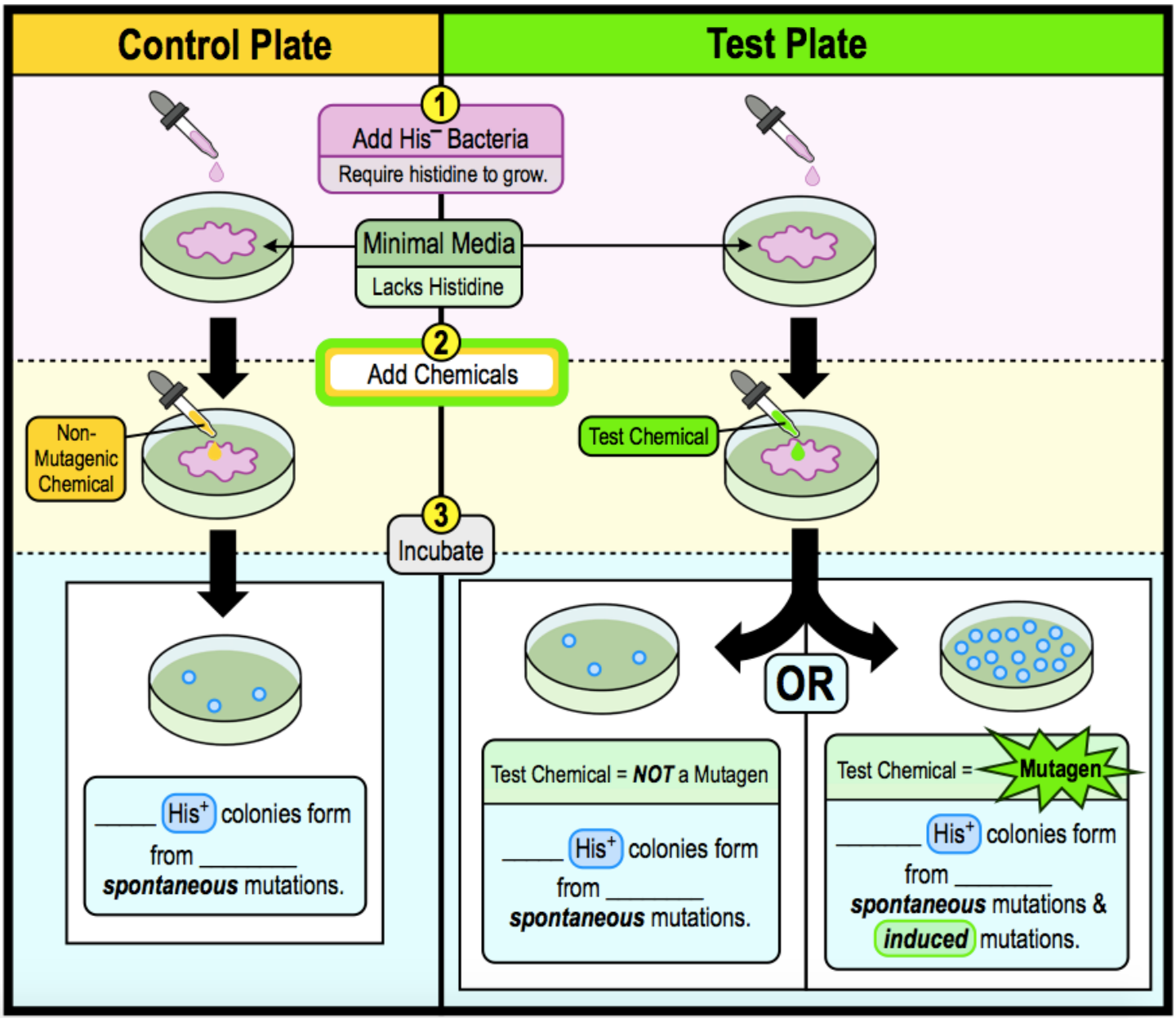
CONCEPT: THE AMES TEST

- **The Ames Test:** scientific *screening* experiment that determines if a chemical is a _____.
  - □ *Minimal media* lacks Histidine, so only Histidine prototrophs (_____) cells can grow.
  - □ Expected mutagen _____ mutation in *His-* cells making them *His+* cells.
  - □ The test chemical is a mutagen if _____ *His+* cells grow; but not a mutagen if little to no *His+* grow.
  - □ The number of colonies formed reflects the mutagenicity (_____ colonies = *greater* mutagenicity).



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PRACTICE: Ames test is a method to:

a) Test error rate in DNA replication.
b) Characterize mutation types.
c) Test mutagenicity of potential hazardous chemicals.
d) Test proofreading capacities of DNA polymerases during replication (or PCR).

PRACTICE: During an Ames test, if the test plate has only a few colonies grown on it like the control plate, this means that:

a) The chemical is a carcinogen.
b) The chemical is a mutagen.
c) The chemical does not cause mutations.
d) The cells are resistant to mutations.
e) None of the above are correct.

PRACTICE: In the Ames test, why do some His+ colonies form even when a mutagenic chemical is not used?

a) Some bacterial cells will have spontaneous mutations which turns them from His- to His+.
b) Some bacterial cells will have induced mutations which turns them from His- to His+.
c) The minimal media induces mutations changing some of the His- bacteria into His+ bacteria.
d) The cells used to start the experiment were not entirely His- cells.