

You may have previously heard about genes. Draw the parts of a gene, as you understand it



Draw Erase ▾ ✕Reset



Consider these two dogs - what makes them different, their genes or their alleles? explain your logic

On the board: Make a plausible diagram (based on what you know now) of the genetic system responsible for the ability to digest lactose in mammals; include how it is normally regulated over baby to adult time and where mutations could lead to adult lactose tolerance.

Under what conditions would being tolerant as an adult be positively selected for; produce a model for why adult lactose tolerance not a universal trait of mammals?

where does genetic information come from?

is it

pre-determined (a designer)

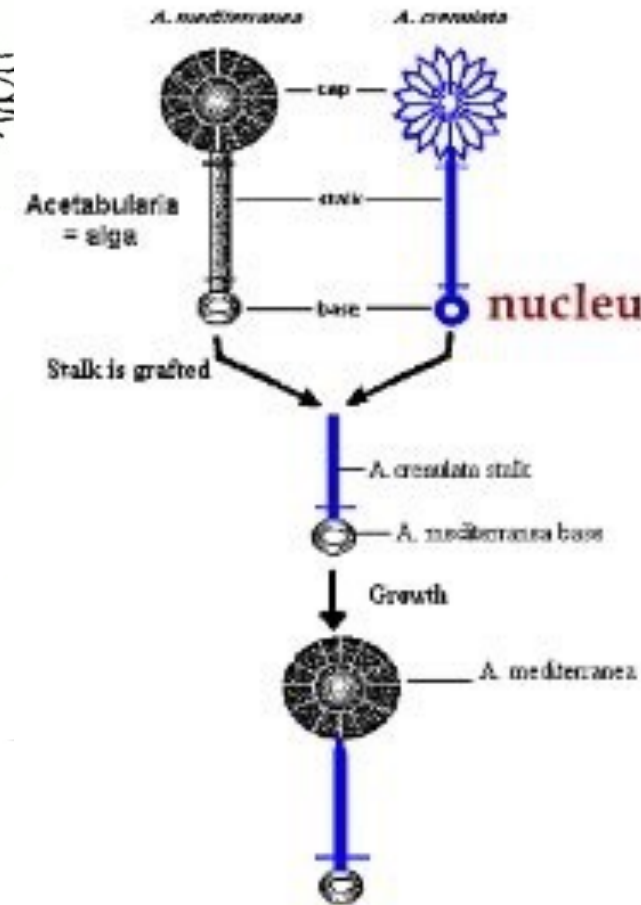
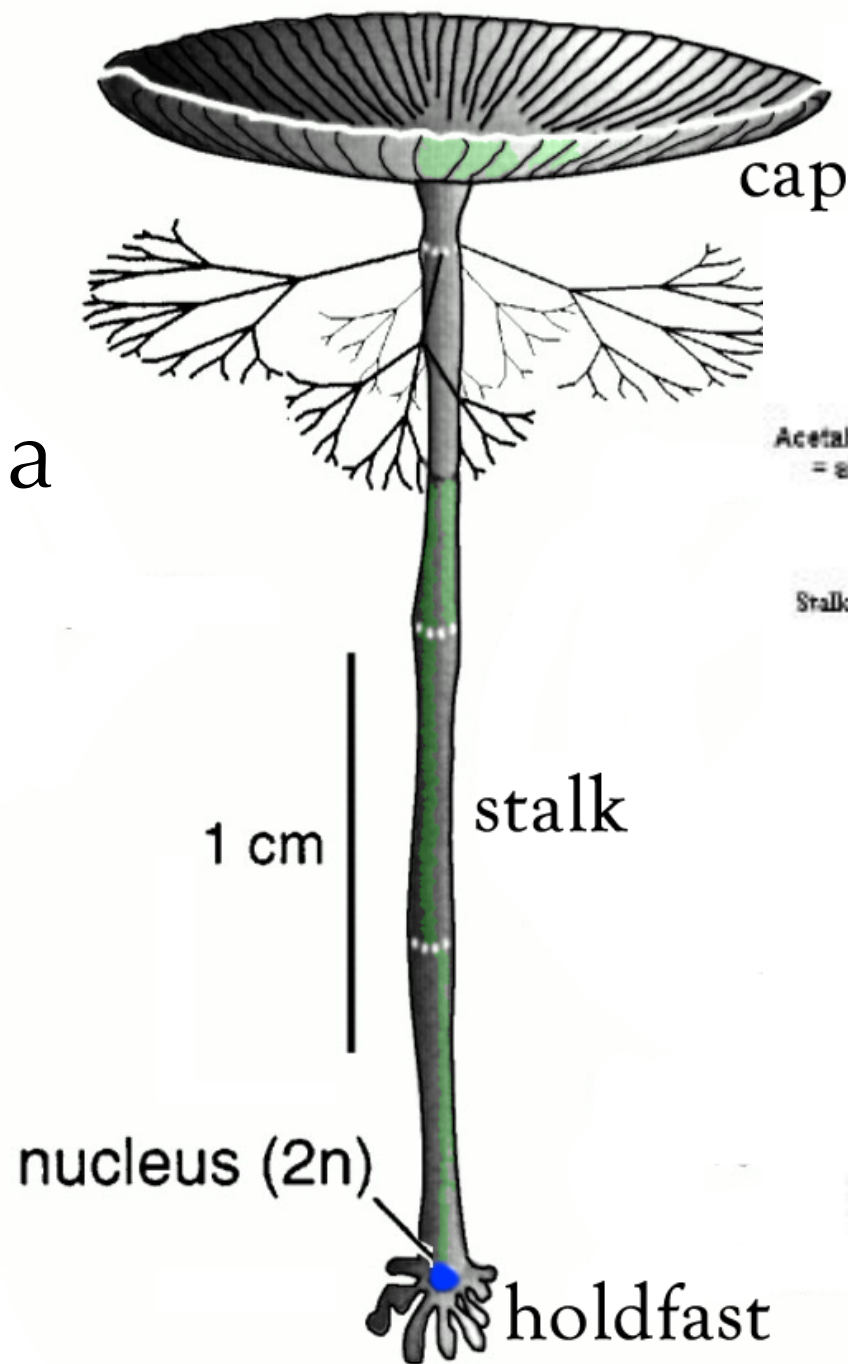
imposed (learned)

selected (captured) from noise

discovering the nature of genetic information

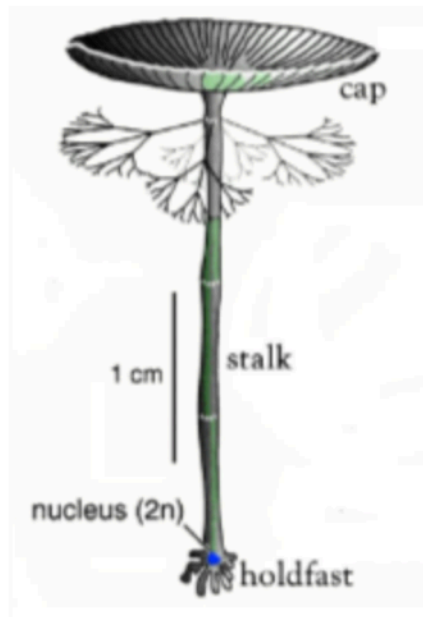
two hints

Acetabularia



HAMMERLING'S ACETABULARIA

You cut the top off this *Acetabularia* - now you culture the holdfast and cap separately, make a diagram of how you expect them to behave over time.



Draw

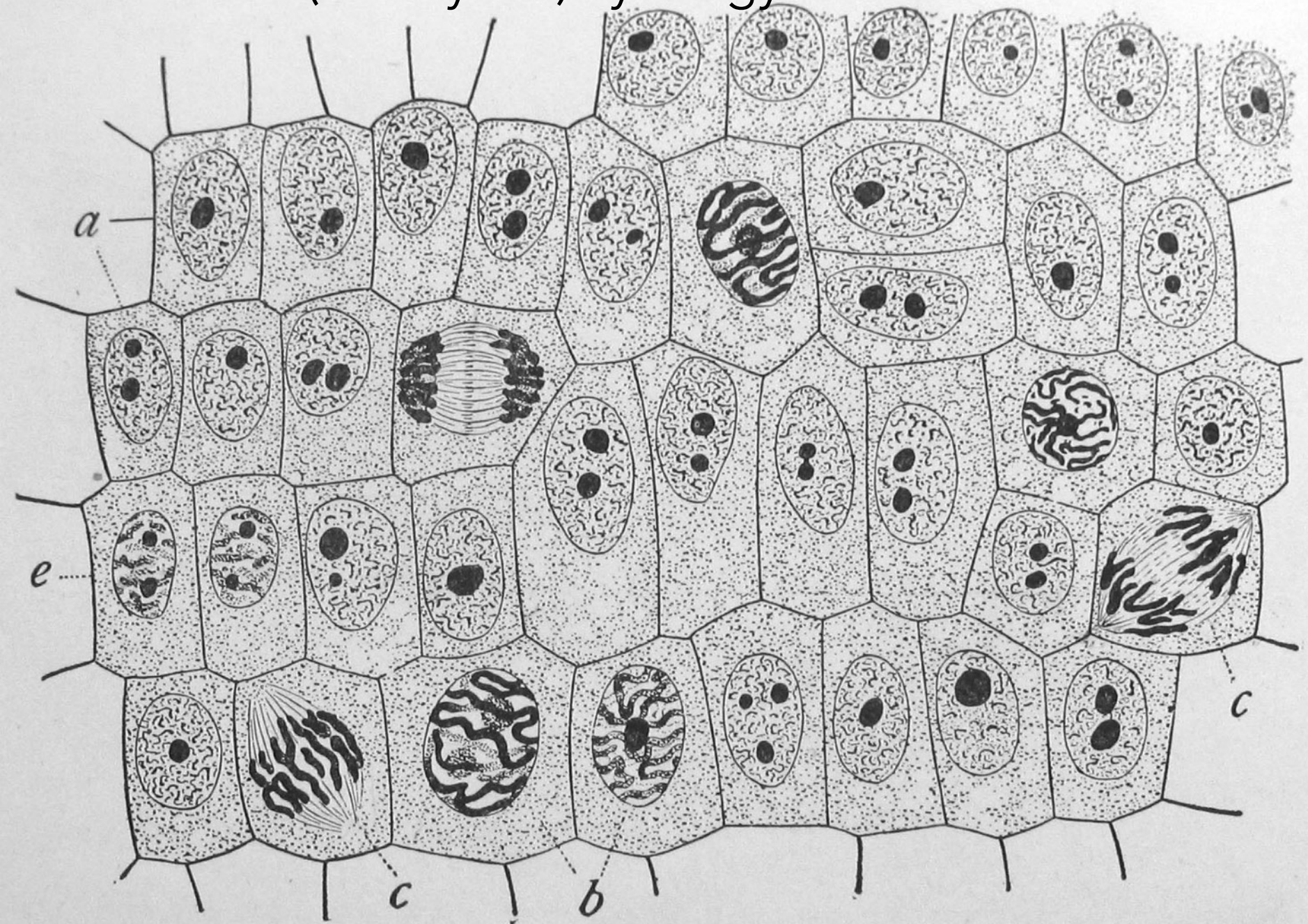
Erase



✖ Reset

How would Hammerling's observations have been different if hereditary information was localized in the cytoplasm?

Second hint: (eukaryotic) cytology





species

chromosome

Ophioglossum reticulatum (a fern)

1260 (630 pairs)

Canis familiaris (dog)

78 (39 pairs)

Cavia cobaya (guinea pig)

60 (30 pairs)

Solanum tuberosum (potato)

48 (24 pairs)

Homo sapiens (humans)

46 (23 pairs)

Macaca mulatta (monkey)

42 (21 pairs)

Mus musculus (mouse)

40 (20 pairs)

Felis domesticus (house cat)

38 (19 pairs)

Saccharomyces cerevisiae (yeast)

32 (16 pairs)

Drosophila melanogaster (fruit fly)

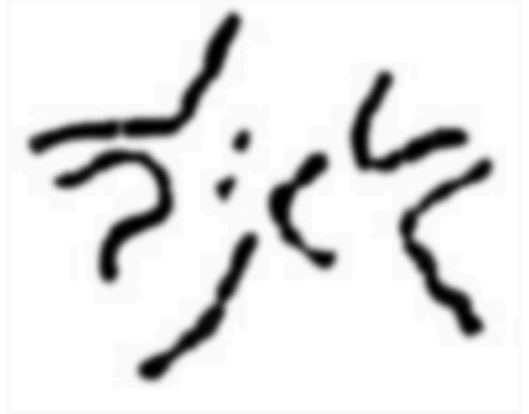
8 (4 pairs)

Myrmecia pilosula (ant)

2 (1 pair)



What is it about the behavior of chromosomes that led cytologists (students of cells) to conclude that genes are located on chromosomes.



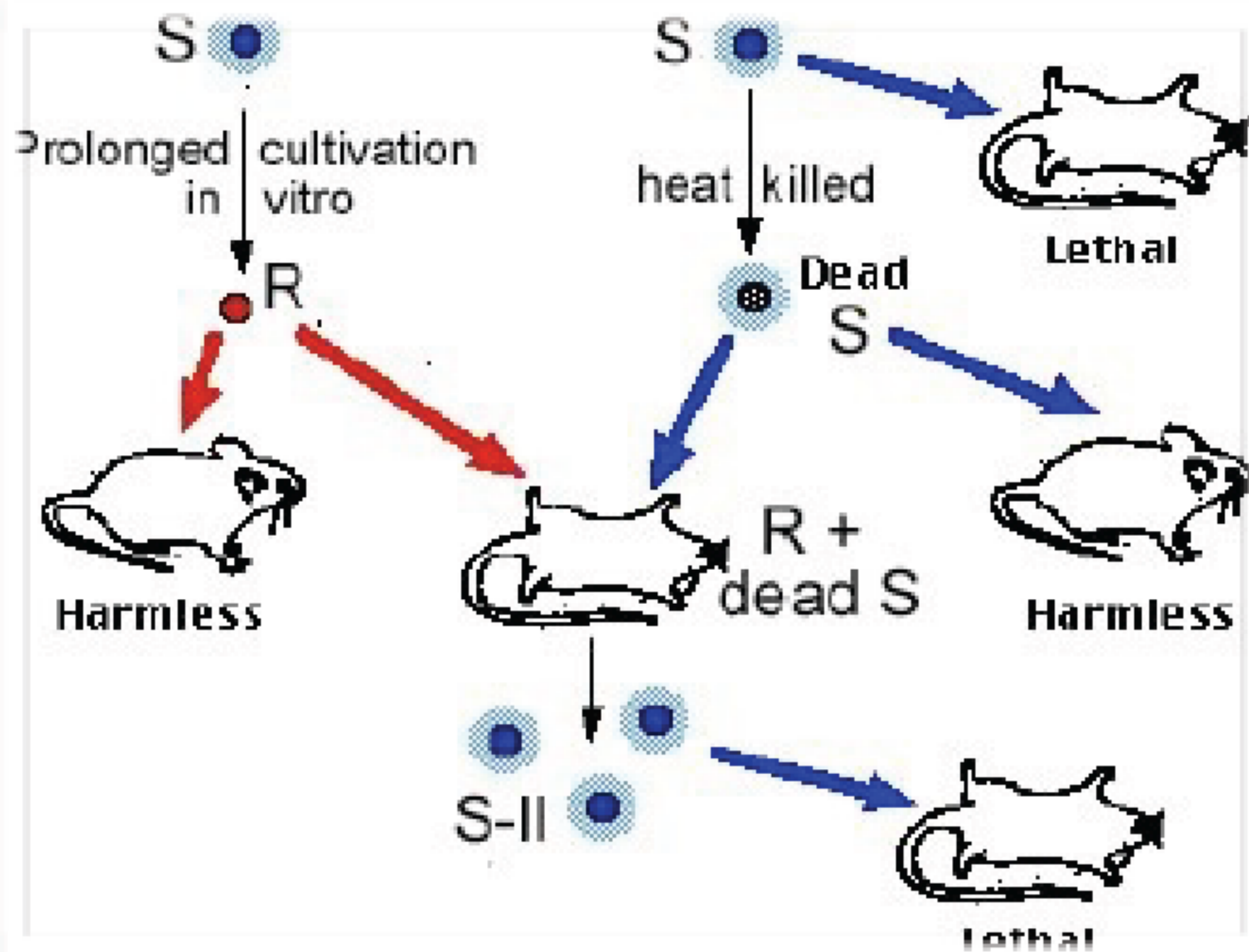
How is the number of chromosomes linked to the complexity of an organism?

Why was prokaryotic cytology not useful (for identifying chromosomes?

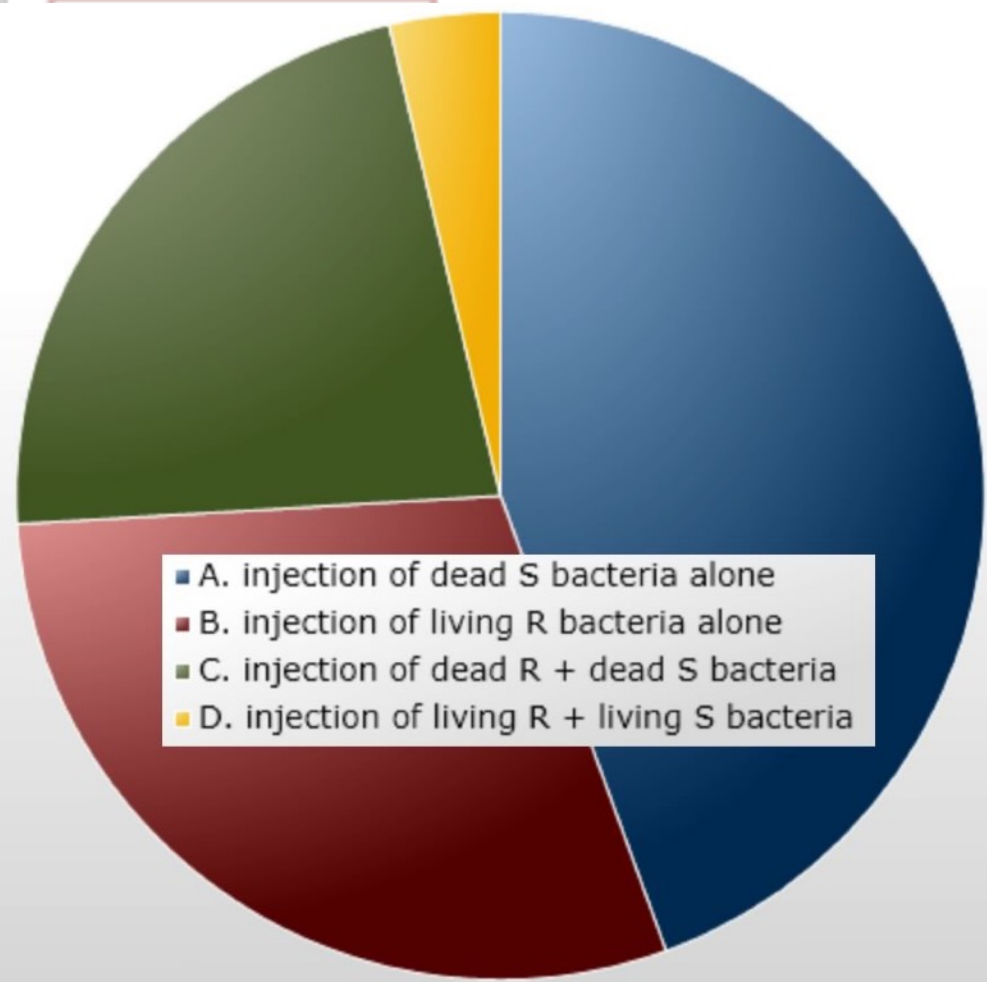


How is genetic information stored?

- 1) within the living state of the cell or organisms
- OR
- 2) in a stable chemical form



In Griffith's transformation experiment, what was the negative control?



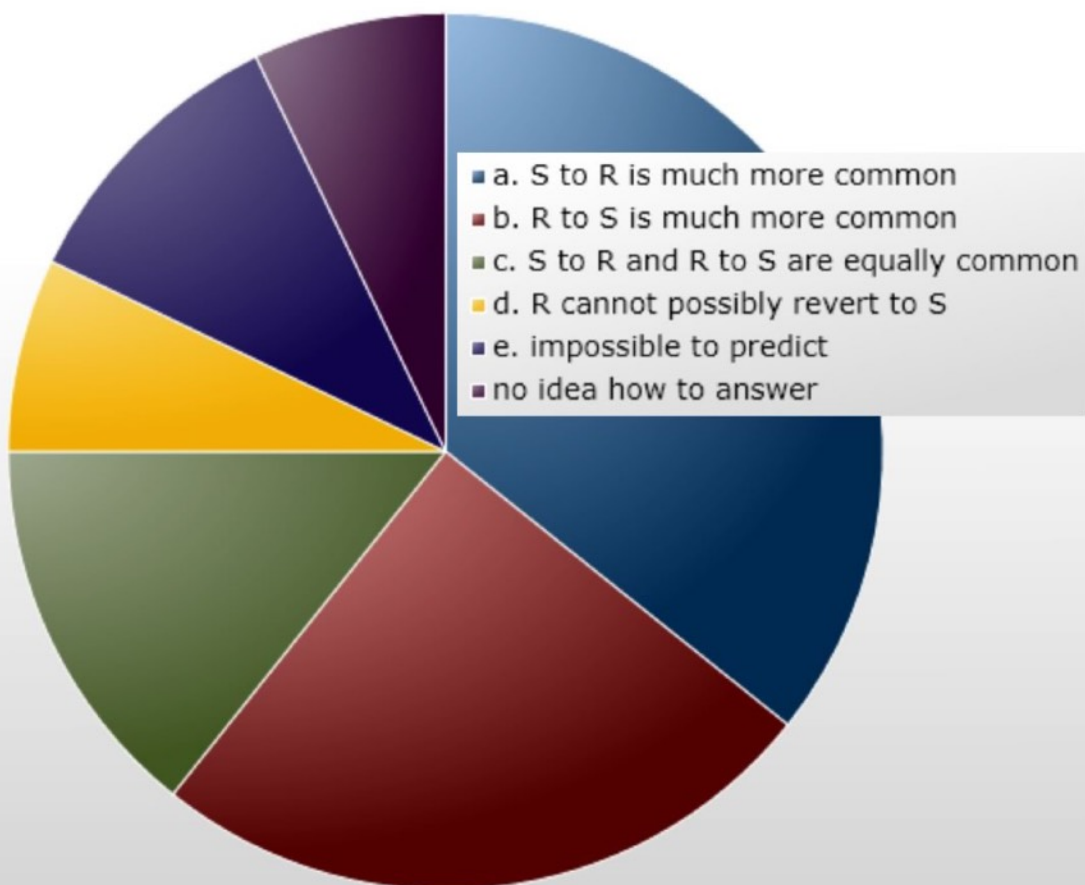
- ☐ A. injection of dead S bacteria alone
- ☐ B. injection of living R bacteria alone
- ☐ C. injection of dead R + dead S bacteria
- ☐ D. injection of living R + living S bacteria

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What positive control for Griffith's studies?

Predict the relative frequency of the mutation(s) responsible for S to R strain conversion.

- ☐ a. S to R is much more common
- b. R to S is much more common
- c. S to R and R to S are equally common
- d. R cannot possibly revert to S
- e. impossible to predict



How did Avery et al come to the conclusion that the transforming substance" was a nucleic acid?

How did Avery et al come to the conclusion that the “transforming substance” was a nucleic acid?

