

# TESTING FOR DOMINANCE

USHA KELLEYMAHARAJ 1 (/USERS/USHA-KELLEYMAHARAJ-0)

## COURSE:

SBI3U

## PRIOR KNOWLEDGE RECOMMENDED:

The Scientific Method

Basic Mendelian Genetics (Mendel's Law)

Students should be able to Monohybrid crosses

## STRANDS ADDRESSED:

### GENETIC PROCESS UNIT:

- D3. demonstrate an understanding of concepts, processes, and technologies related to the transmission of hereditary characteristics.
- D3.3 explain the concepts of genotype, phenotype, dominance, incomplete dominance, codominance, recessiveness, and sex linkage according to Mendelian laws of inheritance

Scientific Investigation Skills:

- Develop hypotheses
- Observe, and record observations
- Gather, organize, and record relevant information from research
- Think critically and logically
- Evaluate reliability of data and information
- Process and synthesize data
- Evaluate whether data supports or refutes hypotheses/predictions
- Interpret data/information to identify patterns and relationships
- Solve problems
- Draw conclusions
- Justify conclusions
- Use appropriate formats to communicate results (e.g. written paragraphs, data tables)
- Express results accurately and precisely

## DESCRIPTION OF ACTIVITY:

1. Students watch the following video on Stickeback Fish:

<http://www.hhmi.org/biointeractive/making-fittest-evolving-switches-evolving-bodies>

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2. Teacher led discussion on the genetic control of spine development in stickleback fish. Based on discussion students are asked to consider which of the following alleles for spine development is likely dominant (i.e. either growing a spine is dominant OR no spine growth is dominant).

3. Students re-watch the the video on Stickeback Fish but collect data from it that suggests that each of the alleles is the dominant one for the spine gene.

4. Based on the evidence they collected in step 3, students (as individuals) which allele for the spine gene is more likely to be the dominant one.

5. Students evaluate their hypothesis by analysing the photographic results for the F1 and F2 generation from pure breeding spine fish and from pure breeding spineless fish.



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## RESOURCES

- HHMI Activity with images of F1 and F2 generation (<http://www.hhmi.org/biointeractive/using-genetic-crosses-analyze-stickleback-trait>)
- Student Exemplar I ([https://connex.stao.ca/sites/default/files/investigation\\_stickleback\\_fish\\_2017\\_a.docx](https://connex.stao.ca/sites/default/files/investigation_stickleback_fish_2017_a.docx))
- Student Exemplar II ([https://connex.stao.ca/sites/default/files/stickleback\\_fish\\_lab\\_2017b.pdf](https://connex.stao.ca/sites/default/files/stickleback_fish_lab_2017b.pdf))

## ELEMENT

-  Inquiry (/expert-elements/inquiry)



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