

# Classification, Variation and Inheritance: Variation

Year 8

WC 8<sup>th</sup> October 2012

# Variation

**WALT: Describe variation within a species and apply your knowledge of inheritance to selective breeding**

- I must describe some examples of variation and its causes
- I should be able to identify the difference between continuous and selective breeding
- I should be able to apply my knowledge of inheritance to a selective breeding card sort

# What is Variation?

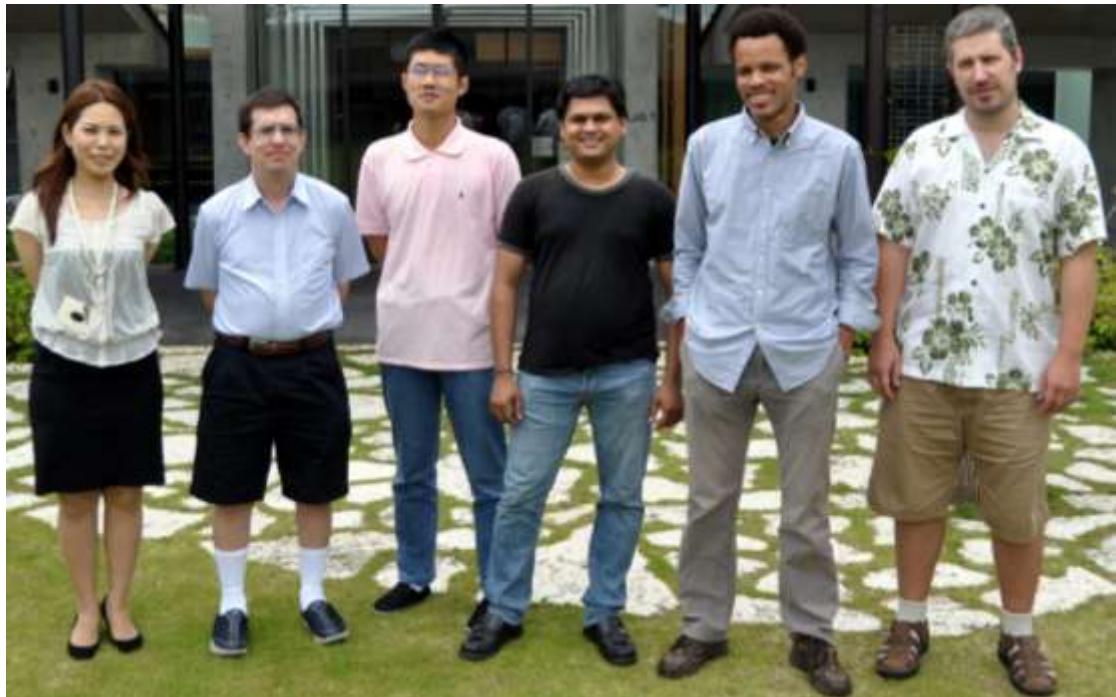
- Look around you at the members of your class.
- They are all members of the human species. There are some really obvious differences between them.
- For example, differences in hair colour, eye colour, height, etc.

# What is Variation?

1. Variation describes the differences between individuals of the same species.
2. Variation can have both genetic or environmental causes and is often caused by both genetic and environmental factors.
3. There are two types of variation in a species;
  - DISCONTINUOUS
  - CONTINUOUS

# Which of these factors are genetic causes and which are environmental causes of variation?

- Having blonde hair
- Being overweight
- Having blue eyes
- Being intelligent
- Having dark skin
- Being tall
- Having a funny personality
- Having a tendency to commit crime





# Continuous and Discontinuous Variation

## Discontinuous variation

With discontinuous variation you either have a certain characteristic or you don't e.g., in humans earlobes are either attached or unattached.

Can you roll your tongue? You either can or can't.

This is inherited from your parents.

There are many more examples in other species. These include flower colour in foxgloves or black and brown coat colours in mice.

# Discontinuous variation.



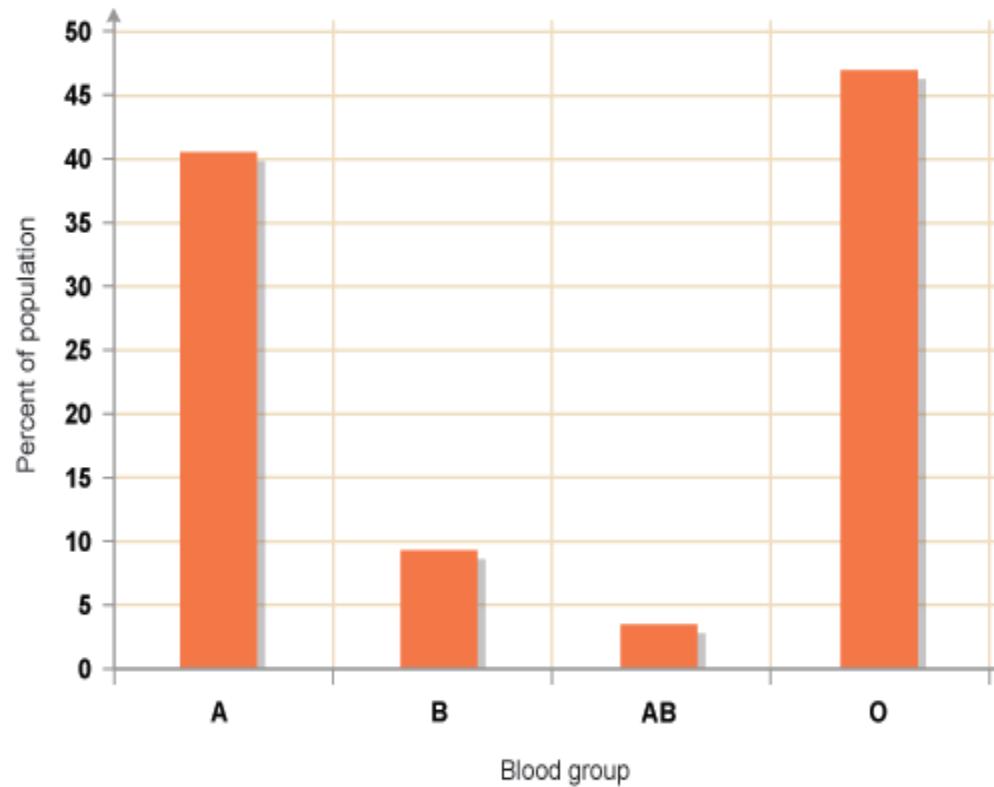
In discontinuous variation, there are distinct groups with no values in between.

"Either/ or"

# Discontinuous variation-Graphs

Discontinuous variation is represented as a Bar Graph.

Example: Blood groups (A, B, AB or O)



# Continuous and Discontinuous Variation

## Continuous variation

With continuous variation you have a wide range of a certain characteristic.

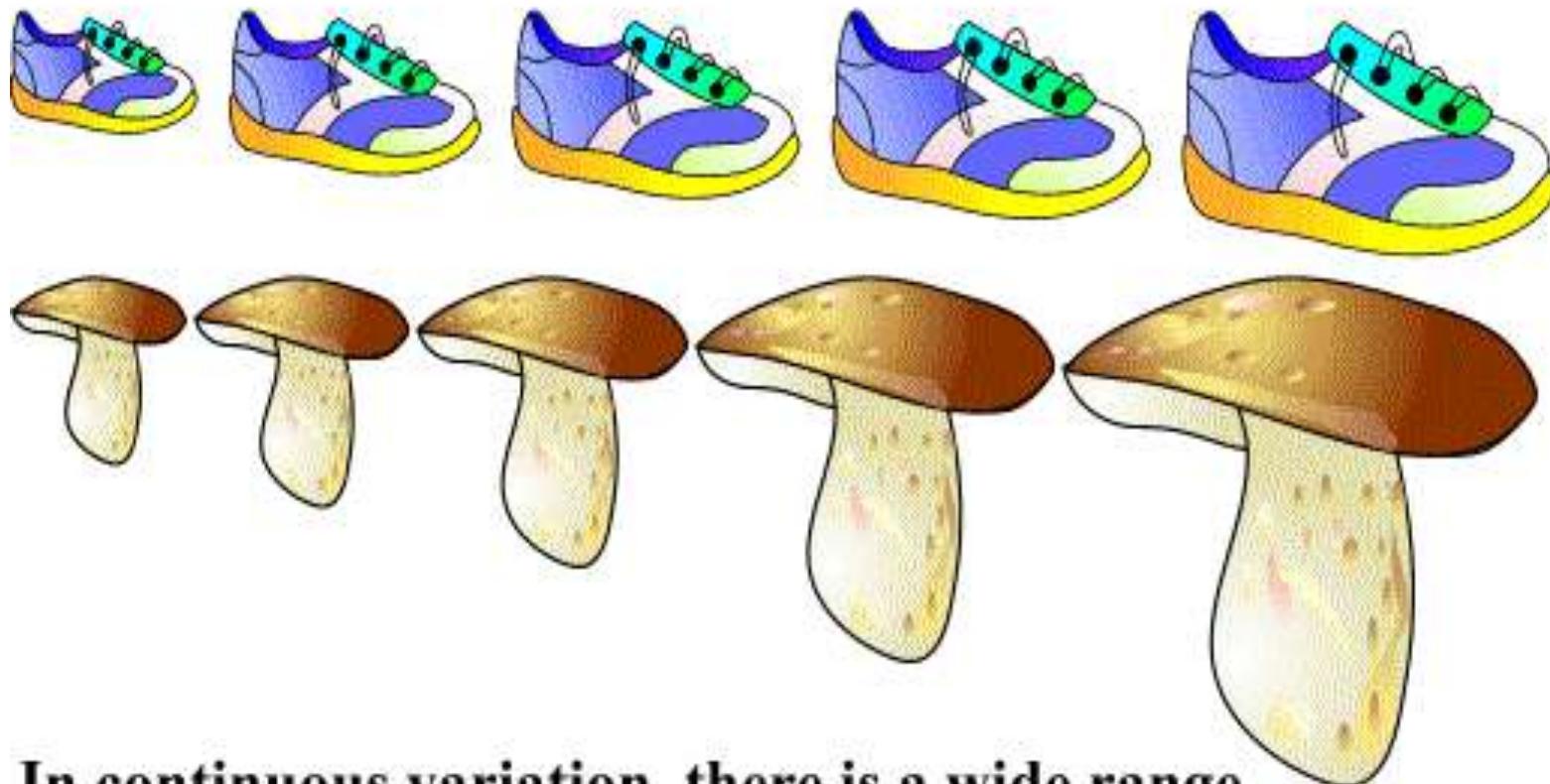
Look at how tall your classmates are.

Can you fit them into a range between the tallest and smallest?

If you can then you have just shown continuous variation. This can be inherited from your parents or because of your environment or both.

Another example of continuous variation in humans is the length of the index finger.

# **Continuous variation.**



**In continuous variation, there is a wide range of values between 2 extremes e.g. gradual change from small to large.**

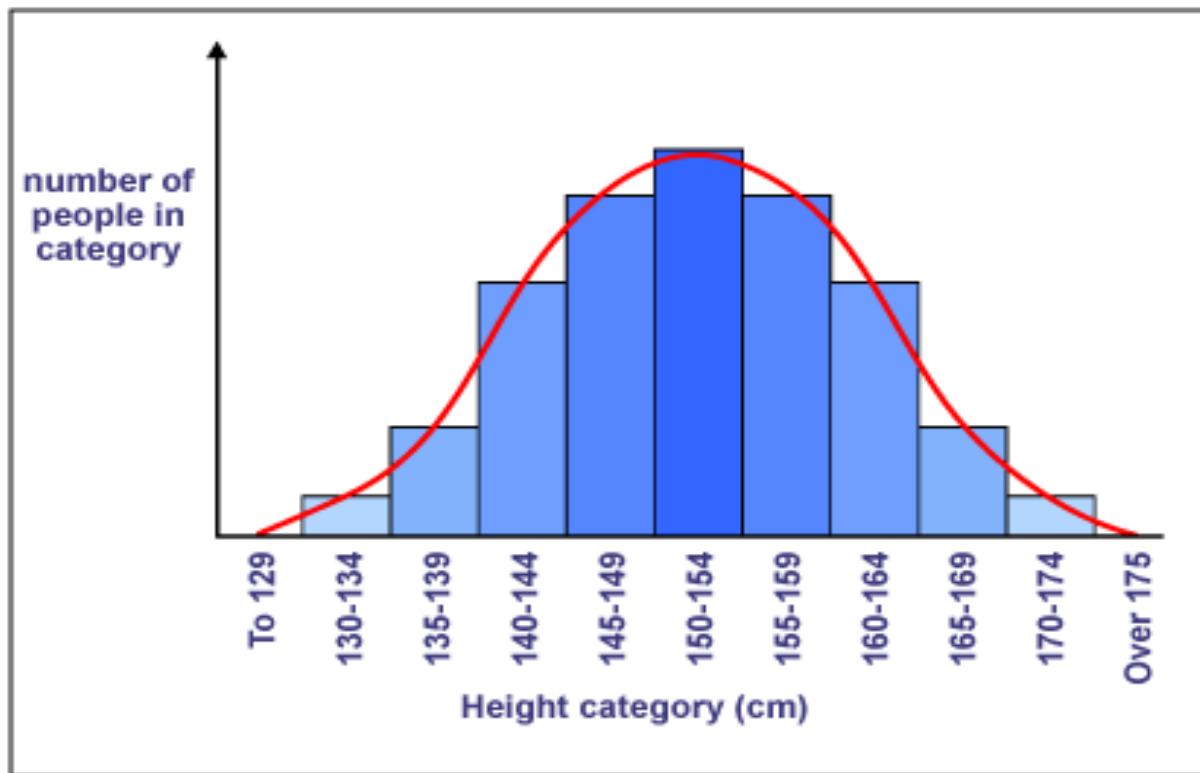
You have some shells collected on a beach in Zanzibar. Measure the length and tally up the number

Length of shell (cm)	Number of shells
0-1	
1.1-2	
2.1-3	
3.1-4	
4.1-5	
5.1-6	
6.1-7	

# Continuous variation-Graphs

Continuous variation is represented as a line graph or histogram.

Example: Height



For each of the characteristics that the teacher will read out. Mark down if it shows continuous or discontinuous variation

# Continuous and Discontinuous Variation

Continuous Variation	Discontinuous variation
Human body mass	Human fingerprint types
Human hand span	Attached or unattached earlobes in humans
Human heart rate	Human blood group types
Human neck size	Ability or inability to roll tongue
Human shoe size	Eye colour
Human height	Smooth or wrinkled seed coats in a pea seed
Body length in a specific species of fish	White or red eye in a fruit fly
Number of leaves on a specific species of tree	Green or variegated leaf in a spider plant
Number of petals on a daisy	White or coloured flower in a pea plant
Bean seed mass	
Number of fruits on an apple tree	

# The Mr Men Match.



11 Mr  
Uppity



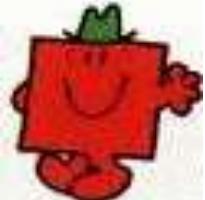
4 Mr  
Nosey



2 Mr  
Greedy



12 Mr  
Small



26 Mr  
Strong



5 Mr  
Sneeze



5 Little Miss  
Tiny



4 Little Miss  
Sunshine



30 Little Miss  
Sporty



13 Little Miss  
Chatterbox



26 Little Miss  
Stubborn



19 Little Miss  
Busy

## Meet our Mr Men



11 Mr  
Uppity



4 Mr  
Nosey



2 Mr  
Greedy



12 Mr  
Small



26 Mr  
Strong



5 Mr  
Sneeze

## And our Little Misses



5 Little Miss  
Tiny



4 Little Miss  
Sunshine



30 Little Miss  
Sporty



13 Little Miss  
Chatterbox



26 Little Miss  
Stubborn



19 Little Miss  
Busy

Now lets meet their children!



11 Mr  
Uppity



4 Mr  
Nosey



2 Mr  
Greedy



5 Little Miss  
Tiny



4 Little Miss  
Sunshine



30 Little Miss  
Sporty



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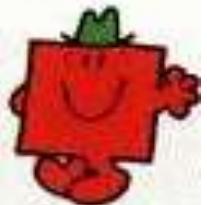
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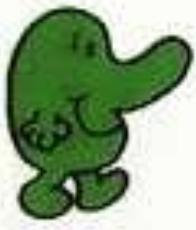
19 Little Miss  
Busy

Who do you think  
are his parents?  
Write the answers in  
your book.





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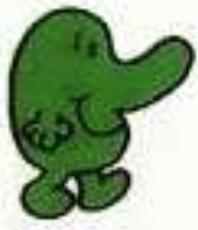
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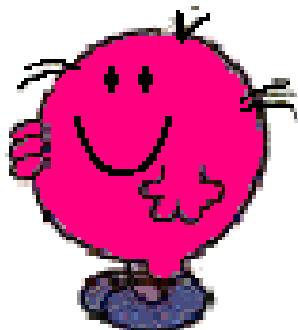


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Stubborn



19 Little Miss  
Busy

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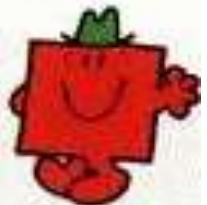
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# What did we learn from this?



- Children inherit features from their parents
- If two parents have a certain characteristic then their child may show it even more (e.g. Mr Small + Little Miss Tiny = Mr Very Small!)
- Some things such as glasses, scars and muscles we get from our environment, they are not inherited.

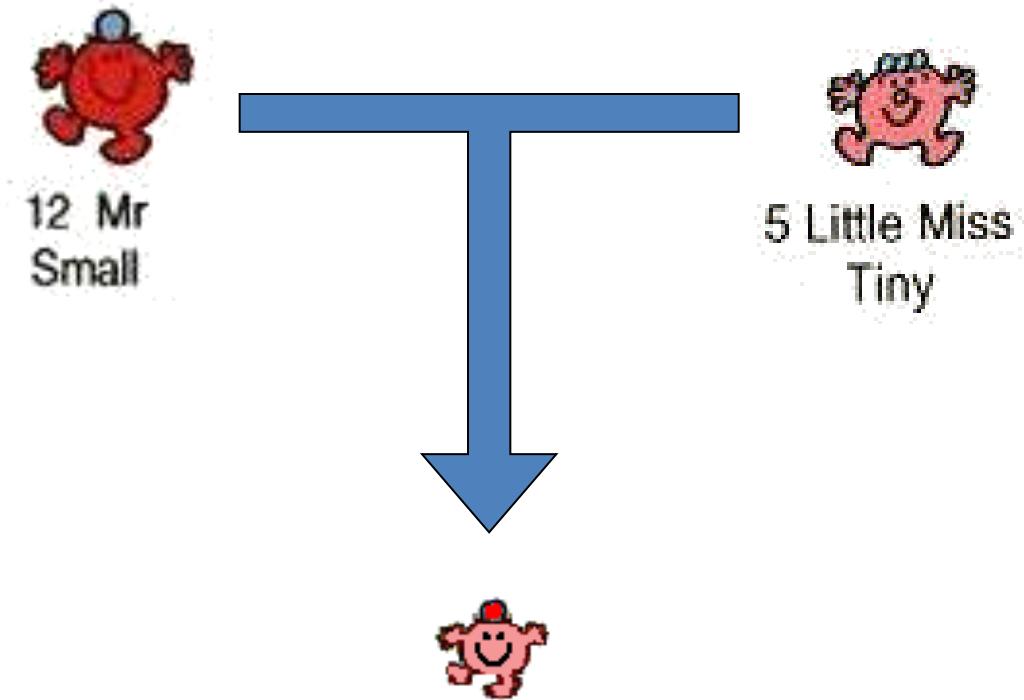


# Genetic information



- The instructions that make up a plant or animal comes from their **parents**.
- $\frac{1}{2}$  comes from the **sperm** and  $\frac{1}{2}$  from the **egg**
- These instructions are found in the **nucleus** of the cells.
- The instructions for each characteristic are called **GENES**.

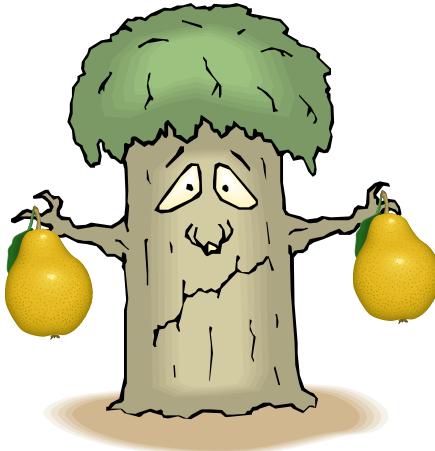
We saw that when Mr Small and Little Miss Tiny produced a child it was even smaller.



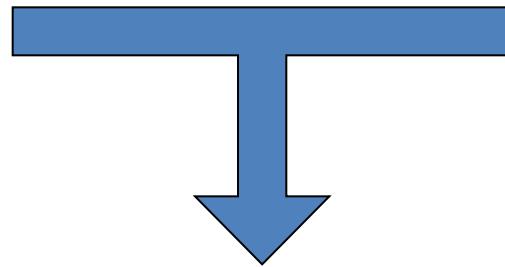
What would happen if Mr Very Small had a child with Little Miss Miniscule??



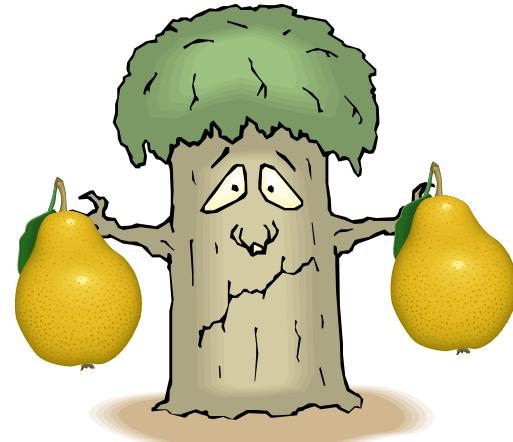
This is called selective breeding and can be used to make larger animals and crops that produce more fruit



Large fruited Dad



Large fruited Mum



Very large fruited child!

We will carry out some exercises on  
selective breeding next lesson

# Plenary

- In pairs – Number 1s describe continuous and Number 2s describe discontinuous variation:
  - Give examples
  - Explain the graphs you would get if you represented the features