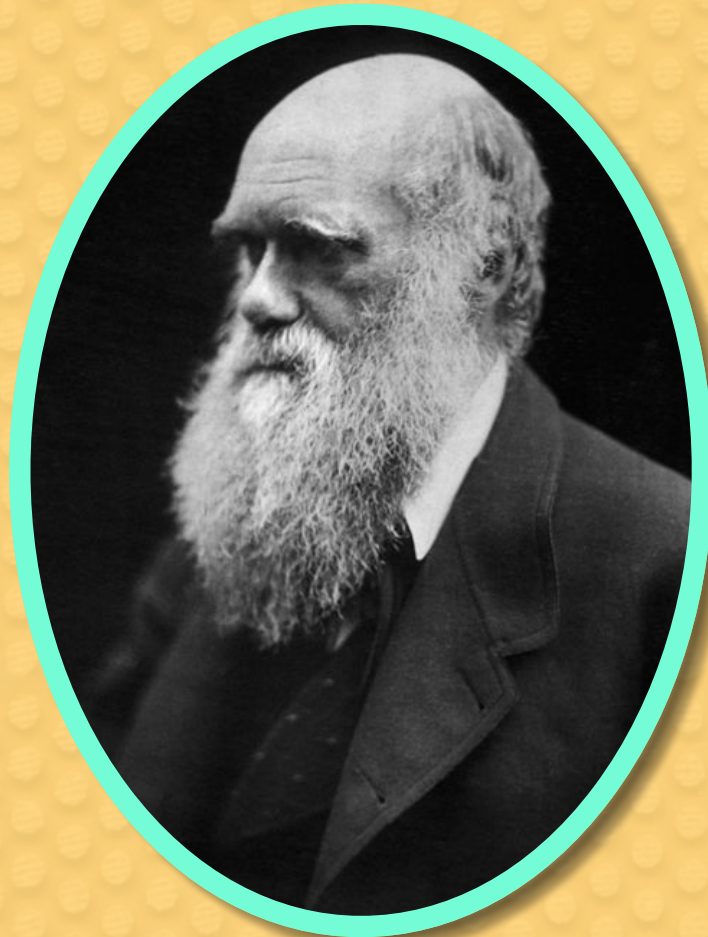# Happy Birthday, Charles Darwin

February 12, 1809

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Patterns of Evolution

Today you will be simulating mechanisms of natural selection. Working in your lab groups (4 people), you will be representing predators. Each person will have a different adaptation that will allow for food capture. Pom poms (small, medium and large) will represent your prey. Use your adaptations at each habitat during each round to remove prey and place into your cup.

You will be rotating to 3 different habitats. At each habitat, 4 generations will take place (each consisting of a 30-second round) At the start of each new habitat simulation, you will begin with 20 of each type of pom pom in your habitat. After each generation, the remaining pom poms will "reproduce" (double the number remaining in that habitat for the next round). Be sure to record the number of prey consumed each round by each different adaptation.

Materials:
  -Pom poms (at least 50 small, 50 medium and 50 large at each habitat)
  -Sand tray(s), water tray(s), plain paper to represent the 3 habitats
  -Tweezers, spoons, chopsticks and forks (1 adaptation per student)
  -Plastic cups (1 per student)
  -You may also simulate this activity using colored candies (on a paper plate habitat or in a bowl) to
   determine the "best" adaptation

Rules:
     You must use only your adaptation to gather prey.
     You must only "eat" one prey species at a time.
     Record the number of prey consumed by each adaptation during each generation.
     Begin with 20 of each pom pom at each station for the first generation.
     For each successive generation, double the remaining number (up to 50 - carrying capacity).

Adaptations:
Assign an adaptation to each person in your group.

-Fork: _____   -Spoon: _____

-Chopsticks: _____   -Tweezers: _____

Summarize Charles Darwin's theory of natural selection and explain at least two examples from nature in which it can be observed.

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Patterns of Evolution

Habitat 1: Terrestrial (plain paper)

-Generation 1: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

-Generation 2: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

-Generation 3: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

-Generation 4: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

    Average: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

-Number of remaining prey after 4 generations: small: _____ medium: _____ large: _____

Habitat 2: Aquatic (water tray)

-Generation 1: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

-Generation 2: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

-Generation 3: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

-Generation 4: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

    Average: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

-Number of remaining prey after 4 generations: small: _____ medium: _____ large: _____

Habitat 3: Desert/Beach (sand tray)

-Generation 1: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

-Generation 2: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

-Generation 3: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

-Generation 4: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

    Average: Fork: _____ Spoon: _____ Chopsticks: _____ Tweezers: _____

-Number of remaining prey after 4 generations: small: _____ medium: _____ large: _____

Which is the best predator adaptation for each habitat?

    Terrestrial: _____

    Aquatic: _____

    Desert/Beach: _____

Which is the best prey adaptation for each habitat?

    Terrestrial: _____

    Aquatic: _____

    Desert/Beach: _____

What variables contribute to patterns of evolution and how do those patterns of evolution impact the change of a species over time?

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