

# Science Tour



## Teacher Packet



Spines



Vines



Carnivorous Plants



Big Leaves

## **Main Concepts**

The Science tour focuses on 3 science concepts:

- Living things adapt to their environment. (Adaptation)
- Plants need certain environmental conditions in order to grow. (Biomes)
- People use many things that are derived from plants all over the world. (Ethno botany)

## **Michigan Benchmarks**

Strand II Reflecting on Scientific Knowledge – R.II.1

4. Develop an awareness of and sensitivity to the natural world.

Key Concepts: Appreciation of the balance of nature and the effects organisms have on each other, including the effects humans have on the natural world.

Strand III Ecosystems – LEC.III.5

2. Describe the basic requirements for all living things to maintain their existence.

Key Concepts: Needs of life – food, habitat, water, shelter, air, light, minerals

4. Describe positive and negative effects of humans on the environment.

Key Concepts: Human effects on the environment – habitat destruction

Strand V Atmosphere and Weather – EAW.V.3

2. Describe seasonal changes in Michigan's weather.

Key Concepts: Seasons and types of weather. Fall – cool nights and warm days; winter – snowy and constantly cold; spring – warmer days and often rainy with thunderstorms; summer – hot days and warm nights

## **Description of the Tour**

The Science Tour focuses on three of the indoor gardens and conservatories at Frederik Meijer Gardens & Sculpture Park. These areas include the arid garden, the carnivorous plant house, and the tropical conservatory. Docents will tailor the tour to focus on the main ideas and themes of the tour, but may use different activities and points of interest to convey those ideas. No two tours are the same, but each of the students will be able to grasp the main concepts of the tour. These themes and ideas are listed by location.

### **Arid Garden**

**Main Idea** – The harsh environmental conditions of the desert require living things to adapt ways to protect themselves and to conserve water.

**Items of Interest** – cacti, spines, and succulents

**Activities:**

1. Hands on look at spines
2. See prickly pear candy
3. See where aloe vera gel comes from
4. True/False cacti card questions
5. “Which animal lives in this habitat” cards

### **Carnivorous Plant House**

**Main Idea** – Although all plants produce their own food, these plants compensate for nutritionally deficient soil by attracting, trapping, and then digesting insects or other small animals.

**Items of Interest** – methods of trapping, Venus flytraps, sundews, and pitcher plants

**Activities:**

1. Use glue like a sundew
2. Inside close-up of a pitcher plant
3. Demonstrate how a Venus flytrap works.

## **Tropical Conservatory**

**Main Idea** – Tropical rainforest biomes create 2 big problems for plants to overcome by adaptation; too much water, and lack of sunlight in the understory.

**Items of Interest** – big leaves, vines, epiphytes, drip tips, orchids, edible plants, tropical birds

### **Activities:**

1. Measure the rainfall
2. Test the size of a big leaf
3. Smell the orchids
4. Smell and see products of the Allspice tree
5. Observe and listen to tropical birds

### **Other ideas that may be conveyed on the tour:**

- Compare the types of plants and biomes observed with our Michigan environment.
- Uses of plants by humans
- How humans impact the tropical and desert biomes
- What kinds of animals live in the tropical and desert biomes

## **Vocabulary:**

These terms are offered to refresh understanding of the main ideas in the tour.

1. *Adaptation* – a process by which living things will change to survive in their environment.
2. *Arid* – very dry
3. *Biome* – a region with specific climate conditions such as temperature and rainfall, and the plants and animals that live in those conditions.
4. *Carnivorous* – meat-eating organism
5. *Ecosystem* – a system of living things interacting with their environment.
6. *Habitat* – the place where a living thing lives.
7. *Temperate* – moderate in respect to temperature and climate.
8. *Tropical* – pertaining to a very wet and humid biome

## **Post Classroom Activities:**

- Discuss how humans, plants, and animals adapt to the changes in our Michigan seasons. Students can make a list of things or draw pictures of what they would wear or see in each season. (Fall – leaves falling, Winter – wearing warm clothes, Spring – plants grow and animals have babies, Summer – wear summer clothes, etc.)
- Make a rain gauge – use a permanent marker to mark intervals (inches or centimeters) on a plastic cup. Attach it to a wooden skewer and stick in the ground at home or school to keep track of the rainfall received over a period of time. Why do different biomes receive different amounts of rain?
- Where are the biomes? – On a map of the world, mark the location where tropical rainforests and deserts are found on the earth. Remind students the types of living conditions to be found in these regions. What can be done to protect the tropical rainforests?

Where does my food come from? Make a list of items with students of the food they had for breakfast and/or lunch. Break the items down to the raw food item. Discuss areas where these food items are grown. Post these areas on a world map, including locally grown items. Identify where non-food items like cotton, rubber and bamboo products are grown.

### **Tour Add-on/Classroom Activity –**

An addition available with the Science Tour is a classroom activity that focuses on plant parts. The activity, conducted by a docent or staff member, utilizes various objects to compare functions of the different parts of plants. It also reinforces the plant adaptations observed on the tour. Be sure to request the availability of this add-on activity when you schedule your next Science Tour.