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Chocolate: The Exhibition

Immerse yourself in a world of chocolate at a new exhibition at the Great Lakes Science Center, opening February 9.

CLEVELAND, October 4, 2007 – For thousands of years, humans have been fascinated with the sweet snack we call “chocolate.” Journey through history to get the complete story behind the tasty treat that we crave in, *Chocolate: The Exhibition* an exciting new exhibition at the Great Lakes Science Center, opening February 9, 2008. The exhibition will run through May 4, 2008.

You’ll explore the plants, the products, the history, and the culture of chocolate through the lenses of botany and ecology, anthropology and economics, conservation and popular culture. You’ll begin in the rainforest with the unique cacao tree whose seeds started it all. Visit the ancient Maya civilization of Central America and discover what chocolate meant nearly 1,500 years ago. Then travel forward in time and northward to the Aztec civilization of 16th-century Mexico, where cacao seeds were so valuable they were used as money. Discover chocolate’s introduction into the upper class of European society and how it changed from a luxury to a mass-produced snack food.

“We are thrilled to bring the unique exhibit to Cleveland,” said Linda Abraham-Silver, president and executive director of the Great Lakes Science Center. “Not only is chocolate (the treat) one of my personal favorites, the exhibit is thought-provoking and steeped in historical facts that will interest the entire family.”

Liquid gold

The ancient Maya of Central America knew it as a frothy, spicy drink, made from the seeds of the cacao tree and used in royal and religious ceremonies.

The history of human consumption is not a recorded event, but Jonathan Haas, MacArthur curator of North American anthropology, attributes the first human consumption to the curiosity of the Mayas to try something new and to seek variety.



The Maya let the seeds ferment, dried them in the sun, roasted them, crushed them, added water and spices...and drank!

While initially, this chocolate drink was consumed by rich and poor, it soon became a valuable article of trade. The seeds served as a form of money, and the drink became a luxury for the elite, served in lavishly decorated vessels.

When the first Europeans reached the Aztec capital, instead of gold they found treasure troves of cacao seeds.

The exhibition explores the commodification of chocolate by Europeans, and the use of forced labor on colonial plantations to meet the insatiable European demand for chocolate and its new soul-mate, sugar. It parallels the stories of gold, diamonds, and bananas...the use of a rare and valuable product becomes stratified; those who produce it can no longer afford to consume it.

Rooted in the rainforest

Another fascinating part of the exhibition concerns the cacao tree itself (*Theobroma cacao*), its lowland rainforest ecology, and how it's grown today. A beautiful tree with delicate flowers, cacao grows only within 20° latitude (about 1,380 miles) of the equator. It's relatively small, no more than 30 or 40 feet high, and grows naturally in the rainforest understory, in the shade of larger, canopy trees.

Its pollinators are midges, tiny flies that thrive in the decaying vegetable matter and other debris at the base of the tree. Midges stay close to the ground. The flowers grow directly on the trunk and lower branches, where the midges can reach them.

Though humans have now taken cacao from its native home in the Americas to grow it in West Africa, Indonesia, and other tropical lands, the plant remains rooted in its ecosystem.

Growers need to be careful when growing out of its natural environment. Many cacao farmers and scientists are working together to find ways to grow cacao profitably without destroying the rainforest habitat and hurting the environment with pesticides.

Global commodity...cultural icon

Sustainable cacao-growing, environmental protections and supporting the genetic diversity of wild cacao are increasingly important topics today, for economic as well as botanical reasons. Thanks to technological advances and mass production – not to mention enormous amounts of advertising – chocolate has become a part of the global



market economy. Cacao seeds are traded on the commodities market (under the name “cocoa”), right along with pork bellies and soy. A futures stock ticker display in the exhibition brings this point home with a live display of current cocoa prices on the world market.

Yet, chocolate holds a sacred place in some ceremonial history. Mexicans today use it as an offering on the Day of the Dead, in the form of beans or prepared as mole. Foil-wrapped chocolate coins are given to children as “Chanukah gelt.” And in the U.S., of course, chocolate has a place in nearly every holiday celebration: Valentine’s Day, Easter, Halloween, and other traditions.

The value of chocolate can be measured in sales – \$13 billion a year in the U.S.

Chocolate and its national tour were developed by The Field Museum, Chicago. This project was supported, in part, by the National Science Foundation. *Chocolate: The Exhibition* is sponsored locally by the Cuyahoga County Board of Commissioners.

Admission to the exhibition is free to Great Lakes Science Center members. Exhibition entry is \$12.50 for adult non-members and \$8.50 for children, and includes admission to Great Lakes Science Center signature exhibits. Call (216) 694-2000 for ticket details.

Special rates are available for tour operators and groups. Call Act 2 Productions at (440) 248-4528.

The Great Lakes Science Center is one of the nation’s leading science and technology centers, featuring more than 400 signature hands-on exhibits, themed traveling exhibitions, daily demonstrations and the awe-inspiring OMNIMAX® Theater. Great Lakes Science Center is open daily 9:30AM to 5:30PM with discounted parking for guests in the attached 500-car garage. For more information, contact the Great Lakes Science Center at 216 694-2000 or visit www.GreatScience.com

HIGHLIGHTS FROM THE HISTORY OF CHOCOLATE

Born in the Ancient World

Most likely, cacao was first domesticated by the Olmec, in the humid lowlands of the Mexican Gulf Coast, between about **1800 and 300 BCE**.

The first conclusive evidence we have of chocolate consumption dates from the Classic Period of the Ancient Maya of Mexico and Central America (**200-900 CE**). The Maya made it into a spicy drink that they used in ceremonies and traded to people who couldn't grow their own.

The Aztec, between the **13th and 16th centuries**, were among those who had to trade for cacao. To them, chocolate was a luxury, a drink for warriors and nobility, used in rituals and ceremonies. They also used cacao seeds as money; in fact, the seeds were so valuable that dishonest merchants are believed to have made counterfeits.

Some scholars think the Aztec called their chocolate *chocolatl*. But others think that was a Spanish invention, based on the Aztec word *cacahuatl* ("bitter water") or the Mayan *chocol haa* ("hot water").

Chocolate meets European culture

In the **16th century**, the Spanish, searching for gold in the New World, instead found cacao. Finding the drink bitter, they mixed it with sugar and kept their discovery secret from the rest of Europe for nearly a century.

The first English chocolate house opened in **1657**. Before long, the English, Dutch, and French were so enamored of chocolate, they set out to colonize cacao-growing lands of their own. The chocolate trade was thus built on a system of forced labor and slavery of Meso-American and African people.

By **1700**, there were nearly 2,000 chocolate houses (like today's coffee shops) in London alone. They soon evolved into men's social clubs, hotbeds of gambling and political activity.

In **18th-century** Italy, chocolate was the preferred drink of the Cardinals; they even had it brought in while they were electing a new Pope. Chocolate was also rumored to have disguised a poison that killed Pope Clement XIV in 1774.

While the Aztec – and the Europeans, at first – used chocolate only as a drink, in the **late 17th and 18th centuries** the adventurous Italians pushed it to new culinary heights. They began experimenting with chocolate as a flavoring in everything from soup to polenta; they even dipped liver in chocolate and then fried it.

Mass-produced in the industrial world

The technology of processing cacao scarcely changed from the Maya to the late 18th century. Then new inventions made it possible to produce chocolate for the masses:

1776 A Frenchman named Doret invents a hydraulic machine to grind cacao seeds into a paste. Not long afterwards, it is replaced by the steam engine, making it even easier to produce large amounts of chocolate.

1828 A Dutch chemist, Coenraad Van Houten, invents the cocoa press, which extracts cocoa butter from chocolate, leaving the powder we call cocoa. This makes chocolate both more consistent and cheaper to produce.

1847 Fry and Sons Company of Bristol, England, introduces the first solid eating chocolate. The family – who, like several of the early chocolate dynasties, were Quakers – also boycotted cacao from parts of the world where working conditions resembled slavery.

1868 Richard Cadbury introduces the first box of chocolates – and later, the first Valentine’s Day candy box.

1870’s In Switzerland, Daniel Peter and Henri Nestlé develop the world’s first milk chocolate bar, using Nestlé’s creation, powdered milk. That same year, Rodolphe Lindt invents a machine that churns the paste squeezed from cacao seeds into a smooth blend, giving chocolate a new, mellow texture.

1893 Pennsylvania confectioner Milton S. Hershey discovers chocolate processing equipment at the World’s Columbian Exposition in Chicago (where The Field Museum also got its start!). He buys the machinery, builds a chocolate factory and town in the hills of southern Pennsylvania, and soon becomes “the Henry Ford of chocolate makers.”

Refined and carried wherever humankind may travel

1926-27 The New York Cocoa Exchange, Inc. is established.

By **1930**, there are nearly 40,000 different kinds of chocolate in the U.S.

During World War II, nearly all the chocolate produced in the U.S. is earmarked for the military. After the war, Hershey’s received the Army-Navy E award for civilian contribution to victory. Today, U.S. Army D-rations include three 4-ounce chocolate bars.

1982 Chocolate goes into space on the U.S. space shuttle Columbia.



FASCINATING FACTS

And a Quiz for Those Who Think They Know Their Chocolate

Did You Know?

About the cacao tree

The seed pods of the cacao tree grow not on its branches but directly on the trunk.

Each pod is about the size of a pineapple and holds thirty to fifty seeds – enough to make about seven milk chocolate or two dark chocolate bars.

Cacao flowers are pollinated by midges, tiny flies that live in the rotting leaves and other debris that fall to the forest floor at the base of the tree. Those midges have the fastest wingbeats in the world: 1,000 times per second!

Cacao trees today are endangered by natural threats, such as the witch's broom fungus and other diseases and pests. Along with the rest of the rainforest, they're also threatened by lumber companies, which harvest the taller trees that shelter the cacao and help maintain the population of midges.

Cacao seeds are *not* sweet. They contain the chemicals caffeine and theobromine, which give them a bitter taste.

The scientific name of the cacao tree, *Theobroma*, means "food of the gods."

Cacao is *not* related to the coconut palm or to the coca plant, the source of cocaine.

Africa is now the source of more than half the world's cacao, while Mexico today provides only 1.5 percent.

Chocolate as food and medicine

It takes 4 cacao seeds to make 1 ounce of milk chocolate, and 12 seeds to make 1 ounce of dark chocolate.

Although we tend to think of chocolate as a solid today, for 90% of its history it was consumed in liquid form.

Some of the earliest European cocoa-makers were apothecaries seeking medicinal uses of the plant.

Cacao seeds contain significant amounts of naturally occurring flavonoids, substances also found in red wine, green tea, and fruits and vegetables; flavonoids are connected with a reduced risk of cardiovascular disease and some cancers.

On the other hand, chocolate carries a heavy load of saturated fats and calories; there are much healthier ways to get the same benefits.

Chocolate contains two stimulants also found in coffee – caffeine and theobromine – but in relatively small amounts. Fifty M&Ms, for example, have about as much caffeine as a cup of *decaffeinated* coffee.

Who eats chocolate?

Not Africans. A great deal of chocolate is grown in Africa, but mostly for export.

Not a lot of Asians. Although chocolate's popularity is growing in China and Japan, there's still comparatively little chocolate culture in Asia. The Chinese, for example, eat only one bar of chocolate for every 1,000 eaten by the British.

Mexicans consume chocolate more as a traditional drink and a spice than as a candy. They use it to make the wonderful sauce called mole, and offer chocolate drinks at wedding ceremonies and birthday parties.

Americans for sure...an average of 12 pounds per person per year. In 1998, that came to a total of 3.3 billion pounds. (Americans spend \$13 billion a year on chocolate.)

Definitely Europeans! As far back as the late 1700s, the people of Madrid, Spain consumed nearly 12 million pounds of chocolate a year. Today, 15 of the 16 leading per-capita chocolate-consuming countries are in Europe, with Switzerland leading the pack. (The U.S., as of 1998, was #9.)

For the love of chocolate...the chocolate of love

Does chocolate stimulate the libido? Chemists can't prove it, but popular culture is reluctant to give up the belief...

- As far back as the 1000 CE, frothy chocolate drinks were exchanged at weddings in Mesoamerica (southern Mexico and parts of Central America).
- Casanova is said to have eaten chocolate to enhance his love-making.
- The Marquis de Sade also was passionate about chocolate, and had his wife send it to him in prison.
- Why else do Americans exchange chocolate on Valentine's Day?

How well do you know your chocolate?

- Q. Cacao grows best:
- Under the shade of taller trees
 - In cleared areas, in plenty of sun
 - On hillsides
- A. Under the shade of taller, canopy trees.
- Q. Which country *grows* the most cacao today?
- Mexico
 - Indonesia
 - Ivory Coast
- A. Ivory Coast – about 1.1 million tons in 1999. In fact, the country’s government estimates that the livelihood of half the country’s 14 million people is directly or indirectly tied to cacao production.
- Q. Which country *processes* the most cacao?
- Switzerland
 - The Netherlands
 - Belgium
- A. The Netherlands. But they consume a bit less, per capita, than the U.S.
- Q. Which country *consumes* the most chocolate per capita?
- The U.S.
 - Switzerland
 - Mexico
- A. The Swiss – more than 24 pounds per person per year.
- Q. Who was the Baby Ruth candy bar named for?
- President Grover Cleveland’s daughter
 - The granddaughter of the company’s president
 - The baseball player
- A. All three answers have been suggested, but the fact is, no one knows for sure.
- Q. What fictional character said, “Life is like a box of chocolates...”?
- Willy Wonka
 - Forrest Gump
 - Pollyanna
- A. Forrest Gump
- Q. For which holiday do Americans spend the most on candy?
- Valentine’s Day
 - Easter
 - Mother’s Day
- A. Valentine’s Day – about \$1 billion!



- Q. Theobromine, a substance found in cacao, is used to treat what medical problem?
- a. headaches
 - b. constipation
 - c. high blood pressure
- A. High blood pressure; it dilates the arteries.
- Q. Cacao seeds traded on the world market today are called
- a. cacao
 - b. cocoa
 - c. coca
- A. Cocoa



EAT, DRINK, AND BE CHOCOLATE! **Chocolate Recipes from around the World**

Drink of the Maya

To make the spicy chocolate drink enjoyed by the Maya some 1500 years ago, you really should start from scratch:

1. Scoop cacao seeds out of their fleshy pods.
2. Pile the seeds in baskets or under leaves and let them ferment for about a week.
3. Clean the seeds, then lay them in the sun to dry.
4. Roast the seeds over an open fire.
5. Remove the shells and crush the meaty seed on a stone table to create a soft paste.
6. Add water, cornmeal, honey, or chili peppers.
7. Pour back and forth between two vessels to create a foam. Then enjoy!

Hot Mocha from West Africa

Reprinted with permission from Omanhene Cocoa Bean Company

Forget those powdered mixes. This is the real thing – rich and smooth, chocolate at its best.

6 ounces dark milk chocolate, finely chopped	1 Tablespoon granulated sugar (or to taste)
1 1/3 cup milk	2 teaspoons instant coffee
2/3 cup heavy cream	1 Tablespoon pure vanilla

Melt chocolate in a medium, heatproof bowl over hot water. Stir often, until almost smooth. Then remove from heat and whisk until completely smooth.

In a small, heavy-bottomed saucepan, combine milk, cream, and sugar. Warm over low heat, stirring often, just to simmer. Quickly stir in coffee to dissolve, and remove from heat.

Add a small amount of the hot liquid to the melted chocolate, whisking in well until smooth. (If the chocolate “seizes” and refuses to smooth out, try adding a bit more liquid.) Very gradually add the remaining hot liquid, whisking until smooth after each addition. Scrape the bowl occasionally with a rubber spatula.

If necessary, return to pot and reheat over low heat, stirring often, until very hot. Stir in vanilla and serve at once.

Makes 2 to 3 servings.

Turkey Mole

There are probably as many recipes for mole (pronounced MOH-lay) as there are Mexicans. But however you make it, it's hard to go wrong. Here's a simple version.

1 turkey breast and wing	
1 ½ teaspoons salt	1 small dried hot red chili, seeded and chopped
2 medium onions, chopped	1 cup ground nuts (almonds, walnuts, peanuts or cashews)
Bacon fat or oil	1 ounce bitter chocolate
2 cloves garlic	
2 Tablespoons chili powder	

Cut the turkey into several pieces. Place in a large pot, add water to cover, and bring to a boil. Add the salt, and simmer for 30 minutes.

While the turkey is simmering, brown the onion in bacon fat or oil. Add to the pot, along with garlic, chili powder, dried chili, nuts, and chocolate. Cover and simmer until turkey is tender and the sauce is well blended and thickened.

Correct seasoning to taste. Serve with rice or polenta and a cucumber salad.

Serves 4.

French Chocolate Truffles

Adapted from Chocolate, Chocolate, Chocolate, by Barbara Myers; Penguin Books, 1984

Ahhh... who knows chocolate better than the French?

1 cup sweet (unsalted) butter
8 ounces semisweet chocolate, coarsely chopped
½ cup brandy
Unsweetened cocoa powder



In a heavy saucepan, cut the butter into pieces and melt over medium-low heat. Turn heat to medium, and when butter bubbles, stir to mix well. When bubbling turns to foam, remove the butter from the heat.

Let it settle for 5 minutes, then skim any remaining foam from the top. Carefully pour the clear liquid into a cup, leaving the light brown sediment in the pan. Wipe pan clean with a paper towel.

Return the clarified butter to the clean saucepan. Add the chopped chocolate. Stir over very low heat until chocolate is melted and smoothly blended with the butter. Remove the pan from heat and cool slightly. Stir in the brandy.

Refrigerate for several hours or overnight, until the mixture is firm enough to handle. (Stir it occasionally to prevent the butter from separating.)

Shape the chilled mixture into irregular balls, about 1 to 1 ¼ inches in diameter.

Sprinkle the cocoa on a sheet of wax paper, and roll the truffles in it to coat them. Place on a cookie sheet in a single layer and refrigerate until firm. Then store between sheets of wax paper in a tightly covered container in the refrigerator. (They'll keep well for several weeks.) Serve chilled.

Makes 3 to 3 ½ dozen truffles.

Chocolate Chip Cookies

As American as baseball, apple pie, and ...

2 ¼ cups all-purpose flour
1 teaspoon baking soda
1 teaspoon salt
1 cup (2 sticks) butter, softened
¾ cup granulated sugar
¾ cup packed brown sugar
1 teaspoon vanilla extract
2 large eggs
2 cups (12-ounce package) chocolate chips
1 cup chopped nuts

Preheat oven to 375° F.

Combine flour, baking soda, and salt in a small bowl.



In a larger bowl, beat the butter, granulated sugar, brown sugar, and vanilla extract until creamy. Add eggs one at a time, beating well after each addition. Gradually beat in the flour mixture. Stir in morsels and nuts.

Drop by rounded tablespoon onto ungreased baking sheets. Bake for 9 to 11 minutes or until golden brown.

Cool on baking sheets for 2 minutes. Then remove to wire racks and cool completely.

Makes about 5 dozen cookies.