

From Last Time:

Louis Camille Maillard
(1878-1936)

Melanin

$$\begin{matrix} \text{H}-\text{C}=\text{O} \\ | \\ \text{R} \end{matrix} + \text{H}_2\text{N}-\text{R}' \rightarrow$$

D-Glucose

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Making Chocolate

Theobroma cacao

image: <http://www.plantmanagementnetwork.org/pub/philp/review/cacao/>
image: <http://askville.amazon.com/grow-cocoa-chocolate-plants/AnswerViewer.do?requestId=1267051>

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Cacao Pods Content

image: <http://www.fairchildgarden.org/livingcollections/tropicalfruitprogram/jackfruit/cacao/>

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Cacao Growing

Requires specific climate
Within ~20° of the equator

Image: <http://www.sfu.ca/geog351fall03/groups-webpages/gsl/prod/prod.html>

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Cacao Growing

Requires specific climate, within ~20° of the equator

| | | | | | |
|--------------|-----------------------|----------------|---------------|---------------------|--------------------|
| ● Mexico | ● Haiti | ● Columbia | ● Ivory Coast | ● Equatorial Guinea | ● Malaysia |
| ● Costa Rica | ● Dominican Republic | ● Ecuador | ● Ghana | ● Gabon | ● Indonesia |
| ● Panama | ● Grenada | ● Peru | ● Togo | ● São Tomé | ● Philippines |
| ● Jamaica | ● Trinidad and Tobago | ● Brazil | ● Nigeria | ● Congo | ● Papua New Guinea |
| ● Cuba | ● Venezuela | ● Sierra Leone | ● Cameroon | ● Sri Lanka | |

Image: <http://www.barry-callebaut.com/1997>

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Cacao

“Beans” removed
Very bitter
Fermented
Sugars → acids
Flavor develops
Dried (sun) ~1 week
Bagged & shipped

Image: <http://hnrwright-blog.com/2011/12/12/la-comunidad-cofan-part-ii/>

Image: http://article.wn.com/view/2010/06/15/Lindts_NH_chocolate_plant_grows_to_process_cocoa/

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Beans to Chocolate

<http://www.youtube.com/watch?v=cPAn4flcvBI>

Crushing/winningg
Roasting
Grinding/"conching"
Mixing/pressing



Image: <http://librarythinkquest.org/088sq/01181/cacao.html>



Image: <http://www.cacao-beans.com/>



Image: <http://madrelablog.com/2012/09/15/cocoa-beans-overview-study-says-chocolate-wont-fatten-you-up/>

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Chocolate Composition

Proteins (10+%)
Fiber (10+%)
Cacao Butter (50+%)
Sugars (1%)



Image: <http://joyemandoctrine.blogspot.com/2011/06/tsokolat-ni.html>

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Types of Chocolate

Plant types:

- Criollo
Delicate flavors, floral
- Forastero
More robust
- Trinitario
Hybrid of Criollo & Forastero



Image: <http://www.yourdictionary.com/chocolate>

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Types of Chocolate

Products, legal definitions

Unsweetened

Bittersweet

Sweet (dark)

Milk

White

{p.704, McGee}



Image: <http://en.wikipedia.org/wiki/Chocolate>

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Cocoa Powder

Residue after butter is removed

“Dutched” = Treated w/base to make more water soluble



Image: <http://cocoaandfig.blogspot.com/2009/02/cocoa-powder.html>

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Storing Chocolate

Temperature is critical! Below 70°F

Tempering {p.702, McGee}

Gives chocolate proper texture

“Bloom”

Fat melting out of chocolate

Crystallizes on surface

Looks dusty

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Cooking with Chocolate

Melting
Careful heating
"breaking" or "seizing"

Savory dishes






image: <http://www.marketsplace.org/topics/business/british-chocolate-maker-offers-sweet-deal>
<http://www.poorgirlatewell.com/2010/10/project-food-blog-3-for-love-of.html>

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Tasting Chocolate

Let it melt in your mouth
Brings out flavors/aromas
Feel the fats melt
Smooth/Gritty texture



image: <http://abcnews.go.com/blogs/lifestyle/2011/10/its-national-chocolate-day/>

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Chocolate flavors



image: http://www.alichocolate.com/enjoying/intro_to_chocolate/chocolate_notes.aspx

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Tasting Questions

How does the chocolate feel on the tongue?

Is it smooth, thin, creamy, uniform, grainy, uneven?

Does it melt evenly?

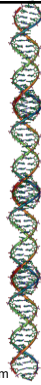
How complex are the flavors?

Initial? Develop? Lingering?

How intense/strong are the flavors?

Are there multiple flavors?

How bitter/astringent are the flavors?



www.allchocolate.com
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