Curation and Interpretation in Medicinal Gardens

Caleb Leech – MET Cloisters
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Clinton Morse – University of Connecticut
Chelsea McKinley – United States Botanic Gardens
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Hortus Conclusus: The Medieval Garden
How The Cloisters Came to be
The gardens set the tone and cultivate a deeper understanding of medieval art.

Visit
THE CLOISTERS
IN FORT TRYON PARK—The Highest Point of Manhattan Island
A Branch of THE METROPOLITAN MUSEUM OF ART

Great Art of the Middle Ages in a Garden Setting

OPEN WEEKDAYS 10-5, SUNDAYS 1-6

ADMISSION FREE EXCEPT MONDAY and FRIDAY, THEN 25c (plus 3c tax)

Washington Heights Train "A", Ind. Div. to 190th-Overlook Terrace Station. Exit by Elevator
The Cloister Garden

- To create the appropriate setting for the contemplative life
- A place of retreat (simplicity and decorum)
- A medieval pleasure garden
Topic of slide

Main points

Main points
Paradise Enclosed:
The Medieval Imagination

- Millfleur Cloister
- The Unicorn in Captivity
The Medieval Teaching Garden

- 400 +/- species
- Sources: St. Gall, Capitulare, Hortulus
- Cloisters’ Objects
- Medieval works
Organization

- Medicine
- Household
- Vegetables
- Magic and ritual
- Craft plants
- Brewing plants

No single use, virtually all used in medicine
Examples from the Medieval Plants collection
Bitters and Brews

- Audience engagement
Interpretation

- Didactic talks, publications and blogs
- (In Season, Now at the Met, The Medieval Garden Enclosed)
- Plant records and labels
Global Middle Ages

- Connectivity & accessibility
- European Middle Ages resonance with traditional cultures around the world
- Galenic medical traditions & trad. healing systems i.e. Ayurvedic or Chinese
- Medieval cuisine (elevation of spice) a la Middle Eastern & Indian cuisines
Boyce Tankersley
Chicago Botanic Garden

Medicinal Plants Hiding in Plain Sight
Chicago Botanic Garden
Living Plant Collections

- No medicinal garden
- “best adapted plants to the upper Midwest”
- “national collections of conservation importance”
CBG Overview Continued

- *Baptisia, Geranium, Quercus, Salix, Spiraea, Viburnum.*
- Regional and international wild collected plants.
- Small tropical, subtropical and arid conservatories.
- Display gardens use many seasonal plants.
Data sources and recording

Overview Information

Foxglove is a plant. Although the parts of the plant that grow above the ground can be used for medicine, foxglove is unsafe for self-medication. All parts of the plant are poisonous.

Chemicals taken from foxglove are used to make a prescription drug called digoxin. Digitalis lanata is the major source of digoxin in the US.

Foxglove is most commonly used for congestive heart failure (CHF) and relieving associated fluid retention irregular heartbeat. It is not safe to use.

How does it work?

Foxglove contains chemicals from which the prescription medication digoxin (Lanoxin) is made. These chemicals can increase the strength of heart muscle contractions, change heart rate, and increase heart blood output.
Plant Names Table

- 49,018 taxa recorded since 1972 (includes annuals)
- 21,072 taxa had one or more medicinal properties
  - Formal pharmacopeia
  - Botanical literature
  - Online data from a number of sources, WebMD, etc.
Living Plant Collection

- Entire Collection:
  - 13,500 taxa currently living
  - 2.7 million plants

- Medicinal plants:
  - 6,217 taxa (46%)
  - 113 plant families
  - 744 distinct locations
  - 637,307 plants
Discussion

- 46% of living plants and
- 42% of all of the plants ever grown
- Reputed to have one or more medicinal properties.
- Have (latitude and longitude) so a map could be produced, if needed.
Garden Guide for Visitors

Digitalis purpurea 'Dalmation Mixture'

Dalmation Mix Foxglove

Description:
Heavily flowered spikes of purple, lavender, pink, and apricot are produced on one year plants above the mounded, dark green foliage. Most foxgloves are biennial, meaning they have to grow one season and experience cool winter temperatures before they produce flowers. This series cuts the production time in half. Plant them in fertile, moderately moist, well-drained soils and in partially shaded conditions. Deadhead the first year to prevent seed set and encourage a following season of flower. Allow the second year plants to produce and scatter their seeds to ensure future generations in your garden. All parts of the plant are toxic, containing among other compounds, cardiac glycosides. This plant once was used widely to treat gout.

Soil: Moderate
Conclusion

- Many plants with medicinal properties – in the broadest sense – were identified.
- Data sources for medicinal properties included peer reviewed publications & online resources.
- The difference between a poison and medicine is dosage.
Can You Spot the Medicinals Hiding in Plain Sight?
Cindy Newlander
Denver Botanic Gardens

Medicinal Plants: interpretation & public interaction

CALENDULA
Mediterranean cultures have used calendula (also known as pot marigold) since the 12th century. The dried flowers help reduce redness of the skin and heal scrapes and cuts. Flower petals were added to foods such as rice, broths and pasta to give them color and flavor.

CALÉNDULA
Las culturas mediterráneas han utilizado la caléndula (también llamada botón de oro o maravilla) desde el siglo XII. Las flores secas ayudan a reducir el enrojecimiento de la piel y a curar raspaduras y cortaduras. Los pétalos de las flores se añadian a alimentos como el arroz, los caldos y la pasta para darles color y sabor.
Current Projects

- 2017-2019
- Medicinal Hillside Garden development
- Children’s Garden bilingual signage
- Gardens Navigator online interpretive tour 2018
- Herbalism Certificate 2019
Medicinal Hillside Garden

- Previously a non-accessible hillside
- 1800 square feet
- 126 taxa on inventory
- Mix of commercial sources and *Index Seminum*
Bilingual Interpretive Signage

- Originally printed in English
- Translation by professionals – don’t use Google Translate!
- Creating initial text was time-consuming for these “action oriented” signs with images

**SAGE**
Sage is highly antibacterial and has been used by Europeans in a number of ways — to deodorize, ease aches and pains, and help fight infection.
Rub the leaves to release the aroma of the sage plant. What do you think of the smell? Would you like it if you were an insect?

**SALVIA**
La salvia tiene propiedades sumamente antibacteriales, y los europeos la han utilizado de formas diversas: para eliminar olores, aliviar dolores y combatir infecciones.
Fruta los dedos en las hojas para liberar el aroma de esta planta de salvia. ¿Qué te parece el aroma? ¿Te gustaría si fueras un insecto?
Online Tour & Interpretation

Horticulture Intern Project summer 2018 - “Medicinal Plant Tour Researcher”

Goal: to create a Gardens Navigator tour of medicinal plants throughout York Street
Online Tour & Interpretation

- Integrated stories, history, recipes and videos
- Highlighted 28 species throughout the York Street Gardens

http://navigate.botanicgardens.org/weboi/oecgi2.exe/INET_ECM_DispTour?TOURCODE=MEDICINAL
Humulus lupulus var. neomexicanus
Common Hops

TOUR DETAILS

Medicinal uses: Medicinally, hops is known to have sedative, soporific (inducing sleep), anti-spasmodic, aromatic, diuretic, nervous and analgesic properties. The bitter taste and properties of hops stimulates digestion. The female cones are used and can soothe muscles and promote good night’s sleep. Scientists have found that hops may also ease menopausal side effects, such as hot flashes, night sweats and insomnia. Hops is also a galactagogue (promoting breast milk production) and has estrogenic properties. For this reason, it should not be given to children who haven’t yet hit puberty.

Mythology/Folklore: Let’s set the record straight: beer is not made from hops. Beer is actually made from barley and other grains and merely flavored with hops. It is the chemicals in hops that give beer its foam and bitter taste. The Latin name lupulus was given by the ancient Romans, meaning “wolf,” or “little wolf.” Like wolves circling their prey to eat them, so too the Romans thought the hops vines circled trees to strangle them. The word “hops” comes from the Anglo-Saxon hopan, meaning “to climb.” Hops had been used for centuries before becoming famous in beer-making. Many Native Americans used the herb to treat pain and insomnia. Even King George III (aka the king who lost America) is said to have slept on a pillow stuffed with hops to ease his porphyria, a condition that can cause mental illness. Species within the hops genus are closely related to, and somewhat smell like, cannabis.

Medicinal recipe: Hops Sleep Pillow. Pour 1 cup of fresh dried hop cones into a cotton or drawstring satin sachet bag. Cinch the drawstring and tie tightly.

Culture: (from Blake Burger, staff horticulturist): “To ensure the best success with growing hops, plant a rhizome rather than growing from seed. A hops rhizome should be planted in early spring, as soon as the soil can be worked. Once you notice sprouts rising from the soil, pick the strongest and healthiest and start to train up a trellis. Cut back the weaker ones. Once established, water several times a week. Keep the base of the plant relatively thinned out to prevent powdery mildew.”
Herbalism Certificate

- 350 Hour Certificate
- 75+ medicinal plant species
- 200 classroom hours over 7 months
- Tinctures & Cordial Making
- Herbal Allies for the Digestive System
- Plant Identification
- Hiking & Wildcrafting/Making Herbal Remedies
Herbalism Certificate

- 350 Hour Certificate
  - 100 extra-curricular/homework activity hours
    - Reading, home herbal preparation, case studies
  - 50 hours of work opportunity/volunteering
    - Internship, volunteer at DBG or elsewhere in community

https://www.botanicgardens.org/education/adult-programs/herbalism-certificate-program
Acknowledgments

- Blake Burger, horticulturist
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- Kenna Castleberry, Medicinal Plant Tour Researcher intern 2018
Clinton Morse
Ecology & Evolutionary Biology
Biodiversity Greenhouses University of Connecticut
What we grow and why
Teaching, Research & Outreach
What we grow and why
"Teachable moments"
Interpretation – Public Website
http://florawww.eeb.uconn.edu/

**SPECIAL COLLECTION:**
**Medicinal Plants**

The following plants have been discovered to possess properties that provide relief of pain, ailments and discomforts. From thousands of years of study to more recent laboratory research, they are seen to promote optimal health and vitality. However, plants also have the ability to be toxic. With this caution in mind, adventure through Earth's most dynamic regions and explore how cultures have incorporated plants into medicinal usage.

**Plants by Traditions:**
- Ayurveda Medicine
- Chinese Traditional Medicine
- Traditional African Medicine
- Native American Medicine

**Medicinal Plants as Systemic Remedies:**
- Nervous System
- Skeletal & Muscle Disorders/Aliments
- Immune System
- Circulatory System: Heart, Blood, Lungs
- Respiratory System: Lungs, Blood, Heart
- Digestive
- Urinary

**156 Accessions:**

Asclepias curassavica

Number in parentheses references locator map icons

1. Catharanthus roseus - Rose Periwinkle - Apocynaceae
2. Ansellia africana - Leopard Orchid - Orchidaceae
3. Vanguea madagascariensis - Spanish Tamarind - Rubiaceae
4. Strophantus gratus - Climbing Oleander - Apocynaceae
5. Strophantus preussii - Poison Arrow Flower - Apocynaceae
6. Tamarindus indica - Tamarind - Fabaceae
7. Whittfadella elongata - White Candles - Acanthaceae
8. Combretum molle - Velvet Bush Willow - Combretaceae
9. Combretum molle - Velvet Bush Willow - Combretaceae
Interpretation – Public Website
http://florawww.eeb.uconn.edu/

Acorus calamus L.

- **Common Name:** Sweet Flag
- **Family:** Acoraceae J.G. Agardh
- **Country of Origin:** Asia, N. America

**Habitat:** stream banks & marshes

**Description:** Hardy perennial herb of marshy places, to 6 feet tall, aromatic, rhizome stout. The genus Acorus is considered to be the most primitive extant monocot. **Rhizome** stout, 4-10(-20) x (0.8)-1.5(-3) cm, aromatic; roots at lower side of rhizome. **Leaves** several, mid-green, often reddish at base, ensiform, (60)-70-100-150 x (0.7)-2(-2.5) cm impari; 1.5 cm wide, apex acuminate; midrib conspicuous on both sides. **Pseudoscle."
**Interpretation – Backend Tools**

**Automatic Signage Generator - Standard**

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**Sweet Flag**

*Scientific Name: Acorus calamus*

*Origin: Asia, N. America*

It has been used medicinally for a wide variety of ailments, and its aroma makes calamus essential oil valued in the perfume industry. In Europe Acorus calamus was often added to wine, and the root is also one of the possible ingredients of absinthe.
Interpretation – Backend Tools

NFC Signage Technology – What it is
Interpretation – Backend Tools
NFC Signage Technology - Implementation
Wandering Cowpea

Scientific Name: Sigmoidotropis speciosa
Origin: central America to tropical South America

Unique purple flowers produce copious nectar attracting bees. Visiting bees must push their way between the petals, pushing the keel down in the process. This causes the stigma and stamens to emerge from the tip of the keel enforcing pollen transfer.

Ask Staff for Demonstration
Visitation – Scavenger Hunts
Guided Tours vs Self Exploration
Visitation – Scavenger Hunts
Guided Tours vs Self Exploration
Visitation – Scavenger Hunts

http://florawww.eeb.uconn.edu/keyword_hunt-pollination.html
Visitation – Scavenger Hunts

http://florawww.eeb.uconn.edu/keyword_hunt-pollination.html

26 accession locations for Pollination Syndrome Scavenger Hunt

Map updated on: Friday, May 17th 2019, 07:16 AM
Visitation – Scavenger Hunts

Scalability
Every plant has a story to tell
Plants are cool too!
Chelsea McKinley
United States Botanic Garden
Growing Under Glass In The Mid-Atlantic

- Hot humid summers
- Glass limits light transmission
- Tropical and temperate species planted
- Other species displayed temporarily
Plants of Value

- Education over Aesthetics
- Species vs. Cultivars
- Is the species recognizable?
- What is the story of this species?
- How does it add to the story of your collection?
Phone tour
Interpretation

Catharanthus roseus
Madagascar periwinkle
(Madagascar)
All plant parts contain vinblastine and vincristine, used to treat cancer including blood, breast, and ovarian.
New Interpretive Master Plan
Signage

Plant Highlights: 5 x 7 in

Story: 12 x 16 in

Big Idea: 16 x 30 in

Nature’s Medical Supply
Modern treatments, ancient origins

About half of the prescription drugs we depend on are compounds originally extracted from plants or fungi. Many of these plants have been used for thousands of years by traditional healers to treat illness and injury. Today, scientists continue to study the active compounds in traditional treatments to see what works—and then try to synthesize them in the lab.

Can you find...

Plants around you with compounds for treating colds and fever? Read the back plant IDs labels to discover plants used to treat headaches, arthritis, cancer, diabetes, inflammation, pain, and more.

MEDICINAL PLANTS
**Asian ginseng**  
*Panax ginseng*

Used for Medicine

Ginseng has been used traditionally in Asia to boost energy and improve well-being. It is still used today for this purpose and to treat certain ailments. Scientific studies have not shown conclusive evidence of its benefits.

**foxglove**  
*Digitalis purpurea*

Used for Medicine

Foxyglove is the source of digoxin, which is used to make a lifesaving heart medication. Like many medicinal plants, foxglove can be lethal if ingested.

**turmeric**  
*Curcuma longa*

Used for Medicine

Turmeric is a common spice that is also used traditionally in India to treat inflammation and pain. Modern researchers are studying turmeric extract as a treatment for a range of illnesses, including diabetes and arthritis.
Atropa belladonna, a poisonous plant, is the source of atropine, scopolamine, and hyoscyamine—drugs that all have medical uses.

Poisonous Plants with Benefits

Poison may save your life.

Many plants contain poisonous substances that help deter predators or prevent infections.

Some of these same substances can also be used in medical treatments. But, they must be taken in the right form and right dosage.

A compound taken incorrectly could be toxic or even lethal. Used as a doctor directs, it could save your life.
Big Idea

Signs

Discovering Medicinal Plants
Testing active ingredients

To create new medicines, researchers often extract and test secondary compounds found in plants.

These compounds help protect plants from insects, fight off bacterial and fungal infections, or even stop competing plants from growing! They evolved over thousands of years to help plants survive, but are not primarily needed for growth and reproduction.

Most plant-based medicines are derived from secondary compounds.

Did you know?
The concentration of medicinal compounds in plants can differ depending on the environment in which the plant grows.

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Tours!
Questions?

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