

# *PVSS Presidential Banquet*

PVSS

Peripheral Vascular  
Surgery Society

Goose Island Brewery

Chicago, IL

June 15, 2011

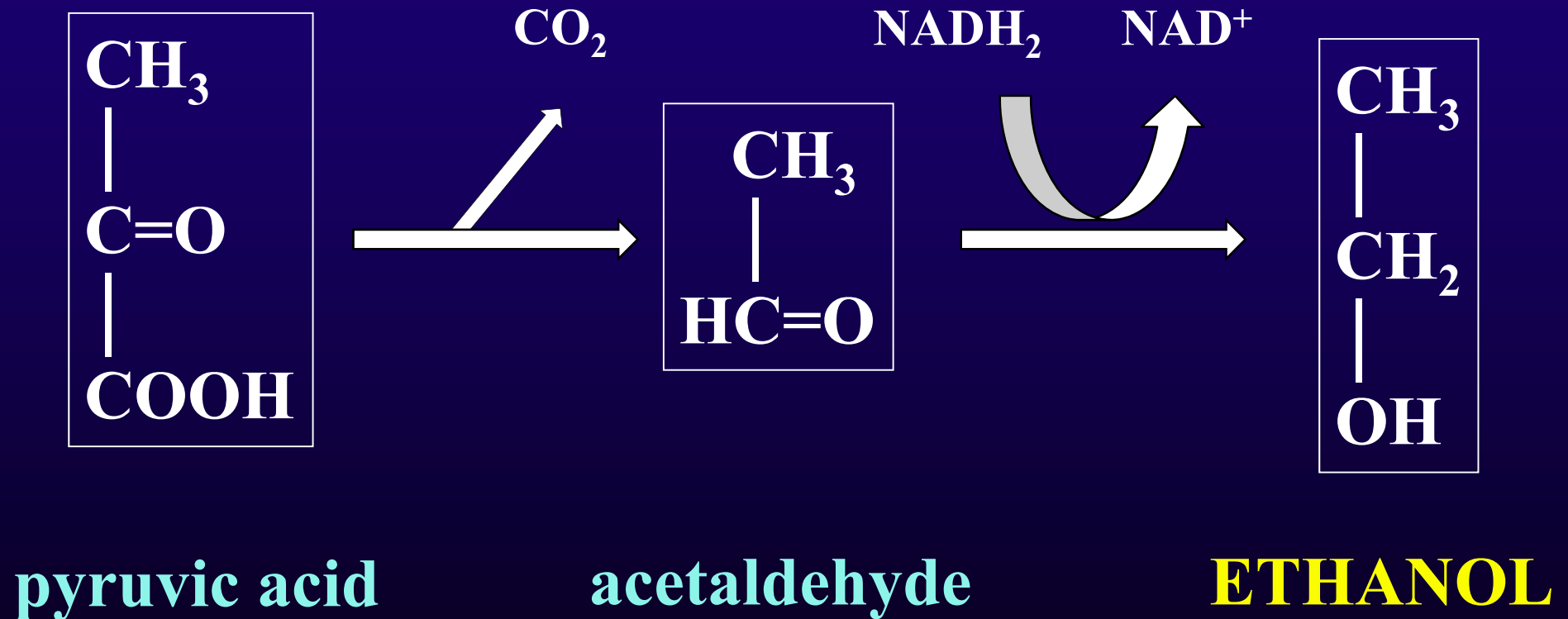


*HomeBrewing:  
Why We Should All Make Beer and  
Lots of It*

**Marc A. Passman, M.D.  
President, PVSS 2010-2011**

**“I would have been a lot more popular if I knew how to  
do this when I was 17 years old!”**

# Fermentation – Anaerobic Phase



Embden-Meyerhof-Parnas Pathway

# *Homebrew History*

- **Between 8,000-13,000 years ago**
  - Transition from nomadic hunters/gatherers → farming
- **4,000 -5,000 year ago**
  - Sumerian tablets – Sikaru - “world’s oldest beer recipe”
    - barley → bread + water → mash
    - “exhilarated, wonderful, blissful”
    - clay jars with beer residue
    - Ninkasi – “Goddess of Brewing”
- **Egyptians, Greeks, Romans**



# *Homebrew History*

- **Christian Abbeys (Roman Catholic)**

- centers of agriculture, knowledge, science
- refined techniques
- “for the Brothers”
- pilgrims
- financing community



- **Belgium lambic & kriek**



# *Homebrew History*

- **World View – Many Classic Styles**

- Belgium
- Germany
- Austria – Lagers
- Bohemia – Pilsner
- England – Ales
- Ireland – Dry Stout
- Northern France
- Switzerland
- Japan / Thailand
- Caribbean



- **North America**

- American beer
- Microbrew Pubs



# *Homebrew – Is It Legal?*

- **Yes, Yes, YES !!!**
  - Personal use only
  - Don't sell it
- **1920-1933 Prohibition**
  - The Dark Age of Beer Making
  - Clandestine home brew
- **End of Prohibition - Legal**
  - Commercial production
  - Homemade wine
  - Stenographic error (“and/or beer...”)
- **1979 Federal restriction on homebrewing beer repealed**
  - **Thank you, President Carter!**



# *Homebrew – Equipment*

- **Big boiling pot (Wort)**
- **Big plastic bucket (5 – 10 gallon)**
- **Glass carboy (5 gallon)**
- **Rubber stopper (w/ and w/o hole)**
- **Fermentation lock (Waterseal)**
- **Some plastic tubing (3/8inch)**
- **Funnel**
- **Thermometer**
- **Hydrometer**
- **A lot of bottles**
- **Bottle caps / Capper**

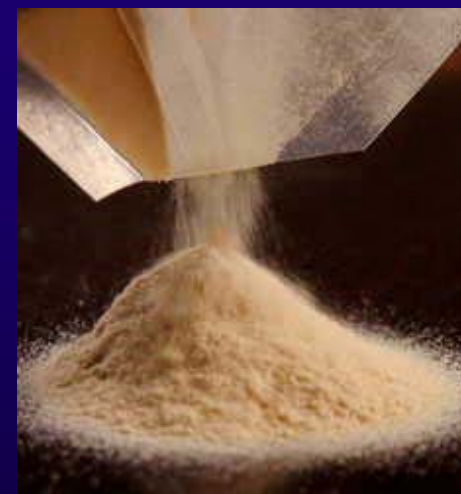




# *Homebrew – Malted Barley*

## *“color, sweetness, body”*

- **Malted barley**
  - grain+water → germinates → dry malt
  - Releases sugars, soluble starches, diastase (enzyme)
- **Mashing**
  - grinding malt – removes husk, kernel ground fine
  - Water – dissolves malt
  - Malt extract
- **Specialty Malts**
  - Black patent, chocolate, crystal, roasted barley, carapils, Vienna, Munich



# *Homebrew – Water*

## *“essential minerals & flavor”*

- **Humans are 60-70% water,  
Beer is 90-95% water...**
- **Used in all parts brewing  
process**
  - malting, mashing, boiling,  
fermentation, cleaning, tasting
- **Water quality**
- **Minerals**
  - Gypsum ( $\text{CaSO}_4$ ) and NaCl



# *Homebrew – Hops*

## *“bitterness & bouquet”*

- **Cone-like flower - hops vine**
- **Properties**
  - Antiseptic - Inhibit beer spoiling bacteria
  - Preservative - flavor stability & head retention
  - Lupulin glands - Resins & Oils - Bitterness
- **Used at different stages of brewing**
- **Many different hops varieties**
  - Regional variations
  - Fresh, pellets, oils, hopped malt extract

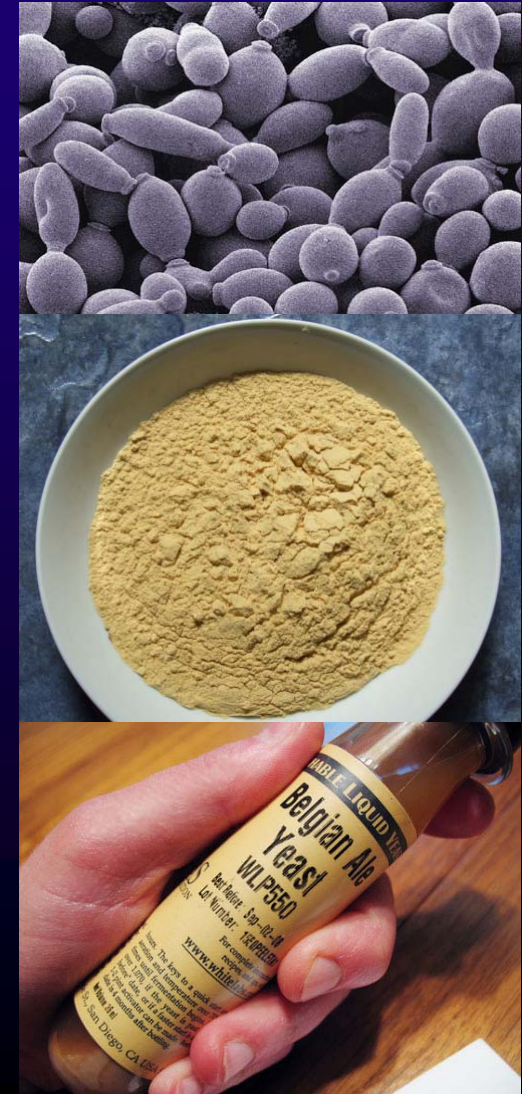




# Homebrew – Yeast

## “the workhorse”

- **Beer Yeast**
  - Ale (“top fermenting”)
    - *Saccharomyces cerevisiae* - high temperature range (65-75°F)
  - Lager (“bottom fermenting”)
    - *Saccharomyces uvarium* - low temperature range (45-55°F)
- **Yeast behavior - Fermentation**
  - Live microbial organism (nutrients)
  - Metabolism (aerobic respiration → fermentation)
  - Life cycle (reproduction)
  - Variable behavior patterns (ingredients, pH, temperature, oxygen, volume)
- **Added flavor notes**
  - sweetness, dryness, texture, fruity, grassy



# *Homebrew – Herbs, Spices, and More*

## *“unique flavors”*

- **Other sugars**
  - brown sugar, molasses, date sugar, turbinado
  - corn syrup, sorghum, maple syrup, rice syrup
  - honey
  - carmel
- **Fruits**
  - cherry, raspberry, currants, peaches, apples, pears, blueberries, etc...
- **Vegetables**
  - chili peppers, pumpkin
- **Other grains**
  - wheat, rye, oats, rice, corn, millet, quinoa, triticale, ...
- **Herbs & Spices**
  - cinnamon, coriander, ginger, licorice, spruce, cardomon, cloves, allspice, nutmeg, horseradish, walnut, peppercorn, basil, root beer extract, anise, juniper, vanilla, etc...
- **Miscellaneous**
  - chocolate, garlic, smoke, coffee



# *Homebrew – Finings*

*“clarifying & clearness”*

- **Irish Moss**
- **Gelatin**
- **Isinglass**
- **Papain**
- **PVP**
- **Activated silica gel**



# Homebrew – How to Brew “Five Easy Steps”

- **Sanitize**
- **Boil – Wort**
- **Sparging**
- **Fermentation**
  - open vs closed
  - single vs double stage
  - racking
- **Bottling / Waiting.....**



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# *Homebrew – How to Brew “Final Step”*

*ENJOY !*



# *Homebrew – Why You Should Do It!*

- **You already like beer, so why not drink more beer**
- **There is nothing better than the taste of fresh beer made by you.**
- **You can make any kind you want without leaving your house**
- **Self- reliance**

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- Practical science
- Tribute to human history

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- Tribute to human history
- **It's cool to do**
- **You will make lots of friends!**



# *Homebrew – Resources*

- Local brew supply shop
- You can find anything on the web
  - Supplies
  - Recipes
- Alternative Beverages – NC ( [www.ebrew.com](http://www.ebrew.com) )

