Tasting in the Cellar

SENSORY SCIENCE FOR WINEMAKERS

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What *is* Sensory Science?

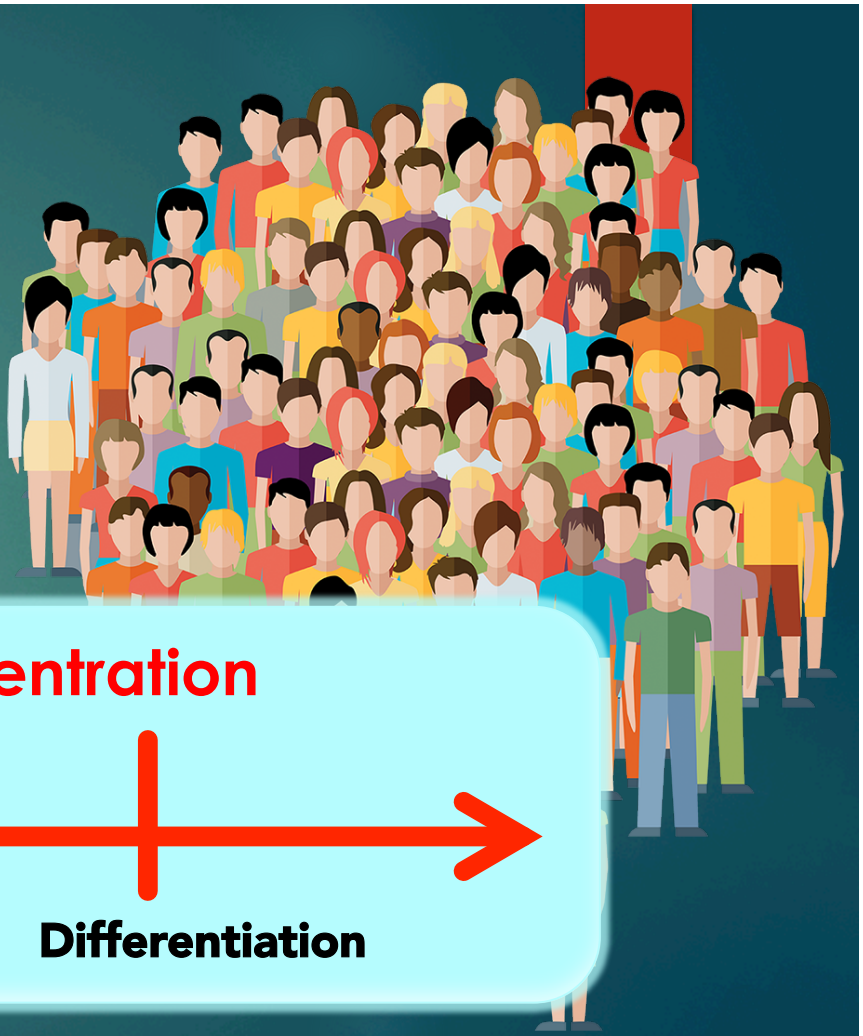
"A scientific discipline used to evoke, measure, analyze, and interpret responses to products that are perceived by the senses of sight, smell, touch, taste, and hearing."

(Stone and Sidel, 1993)

Why Sensory Evaluation?

- Everyone has a different sense of taste and smell!

Sensory Thresholds



Influenced by genes, gender, age, familiarity, etc...

Increasing aroma concentration

Detection → Recognition → Differentiation

Specific Anosmias

Inability to smell a particular odorant

(aroma 'blind spot')

≈ 70 KNOWN

Why Sensory Evaluation?

- Wine producers are biased judges of their own product

Why Sensory Evaluation?

- Ultimately, it's the consumer's preference that sells the wine

In-house Sensory Panel

- Expands representation
- Reduces bias
- More closely approximates population

Note: Panel members probably DO NOT represent the average consumer's tastes!

Who should taste?

- **MOTIVATION**
  - **Education**
  - **Feedback on performance**
  - **Compensation (monetary, wine, etc.)**

Who should taste?

- Interest
- Experience

Beginners

VS

'Experts'

Bottom up

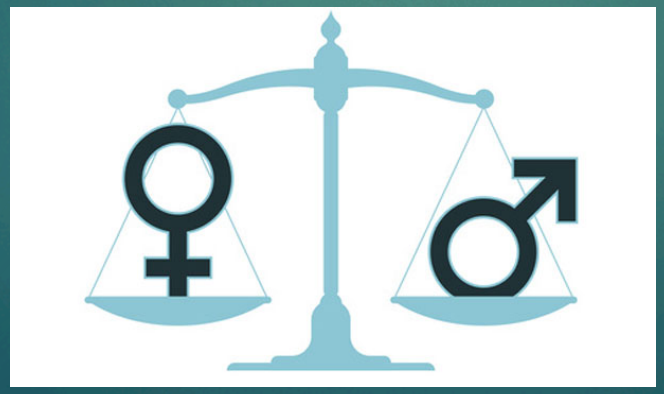
Build description from attributes

Top down

Determine category, assign descriptors

Who should taste?

- Interest
- Experience
- Age
- Gender



How many panelists?

- 8-12 dependable people
- Assemble panel of 12-15
  - Attrition
  - Underperforming panelists who have to be retained

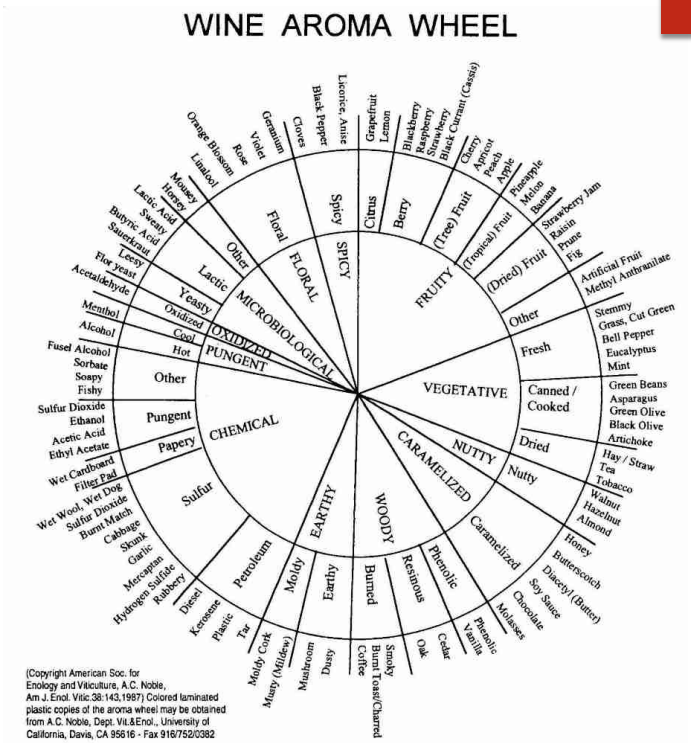
Panelist Training

- Wine Flaws

Panelist Training

- **Aroma Wheel Standards**

(Noble et al., 1987)



Panelist Training

- **Standard scales for sweetness, acidity**

Panelist Training

- Varietal wines from winery, region, world

Panelist Performance

- Triangle tests:
  - Two wines the same, one different
  - Proportion correct: e.g. 5/7
- Differences can be:
  - Similar wine styles or cultivars
  - Wines with one attribute changed

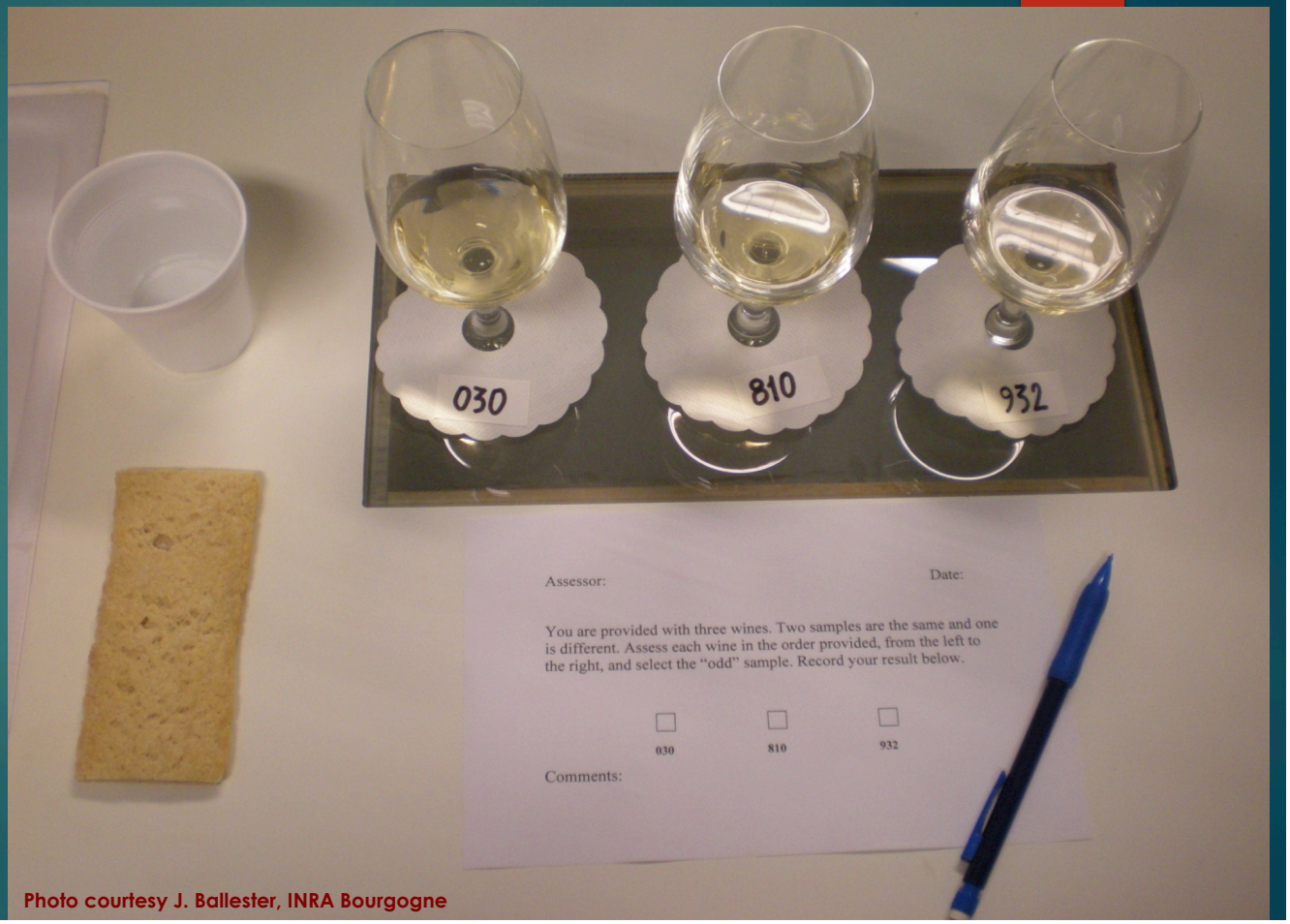


Photo courtesy J. Ballester, INRA Bourgogne

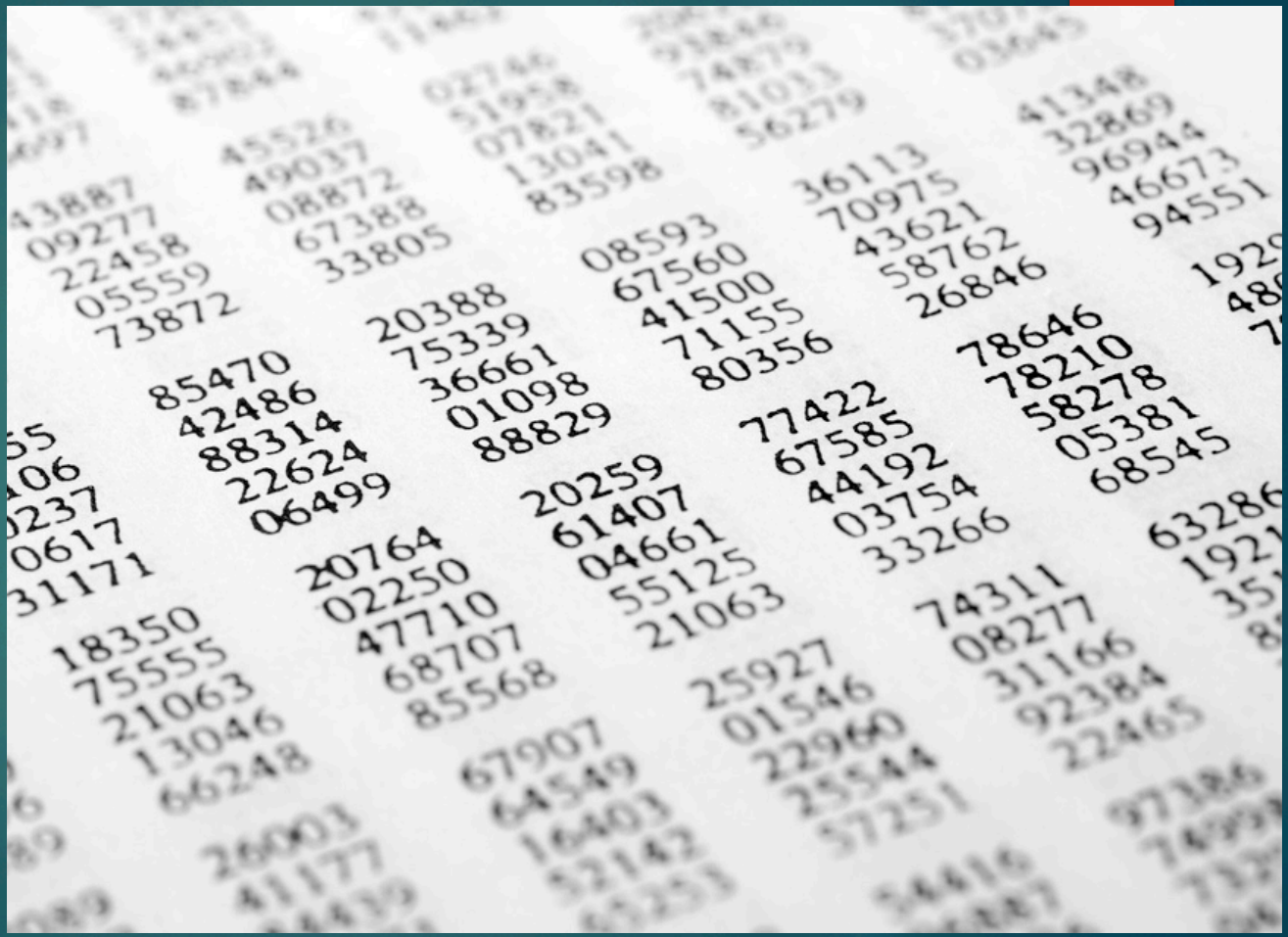
Panelist Performance

- Recognition of learned standards
  - # correct

Protocol

Taste blind.

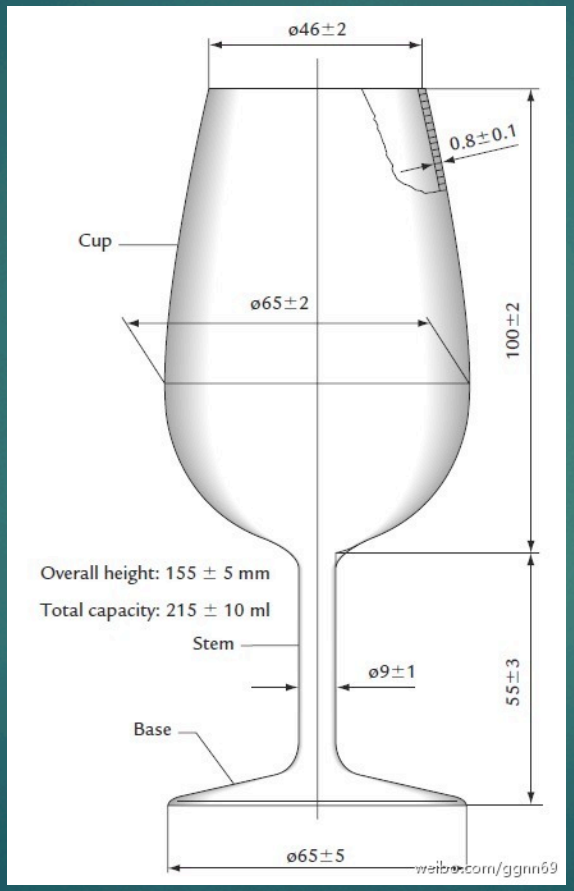
Ideally, label with 3-digit random numbers



Start with a
warm-up wine.

Protocol

- Matching glasses
- ISO



Protocol

- Equal pours
- Randomize service order if possible

Protocol

- Same temperature

Protocol

- Provide spit buckets or cups

Protocol

Protocol

- Ask panelists to avoid personal fragrances …

Protocol

- …smoking or vaping right before a tasting…

Protocol

- …and showing up hungry or right after eating.

Protocol

- Complete individual evaluations before discussion

Protocol

- Expectorate

Protocol

- Wait 30sec between samples

Protocol

- Rinse mouth between samples
- Odorless, tasteless water

Protocol

The best time to taste: 10 AM

Examples of Useful Tests

- Assessment of processing methods
- Evaluation of finished wines
- Consumer Acceptance

Assessment of Processing methods

- How much sugar should be added?
- Parameter ranking
- Trained panel (specific parameter)
- Identical pour order
  - Lowest to highest
- Panelists rank levels by preference

Parameter Ranking

Write "1" in the blank under the sample with sweetness level that you most prefer, "2" in the next, "3" for the next, and so on, with "6" for the sample you least prefer.

629	137	937	730	385	247
____	____	____	____	____	____

Assessment of Processing methods

- **Which blend is best?**
- **Ranked preference test**
- **Trained panel (Familiar with stylistic goals)**
- **Randomized pour order**
- **Panelists indicate preference**

Evaluation of Finished Wines

- Is 2006 as good as 2005?
- Subjective rating of quality
- Trained panel
- Wines served in random order
- Numeric scoring
  - 20 or 100 pt scale

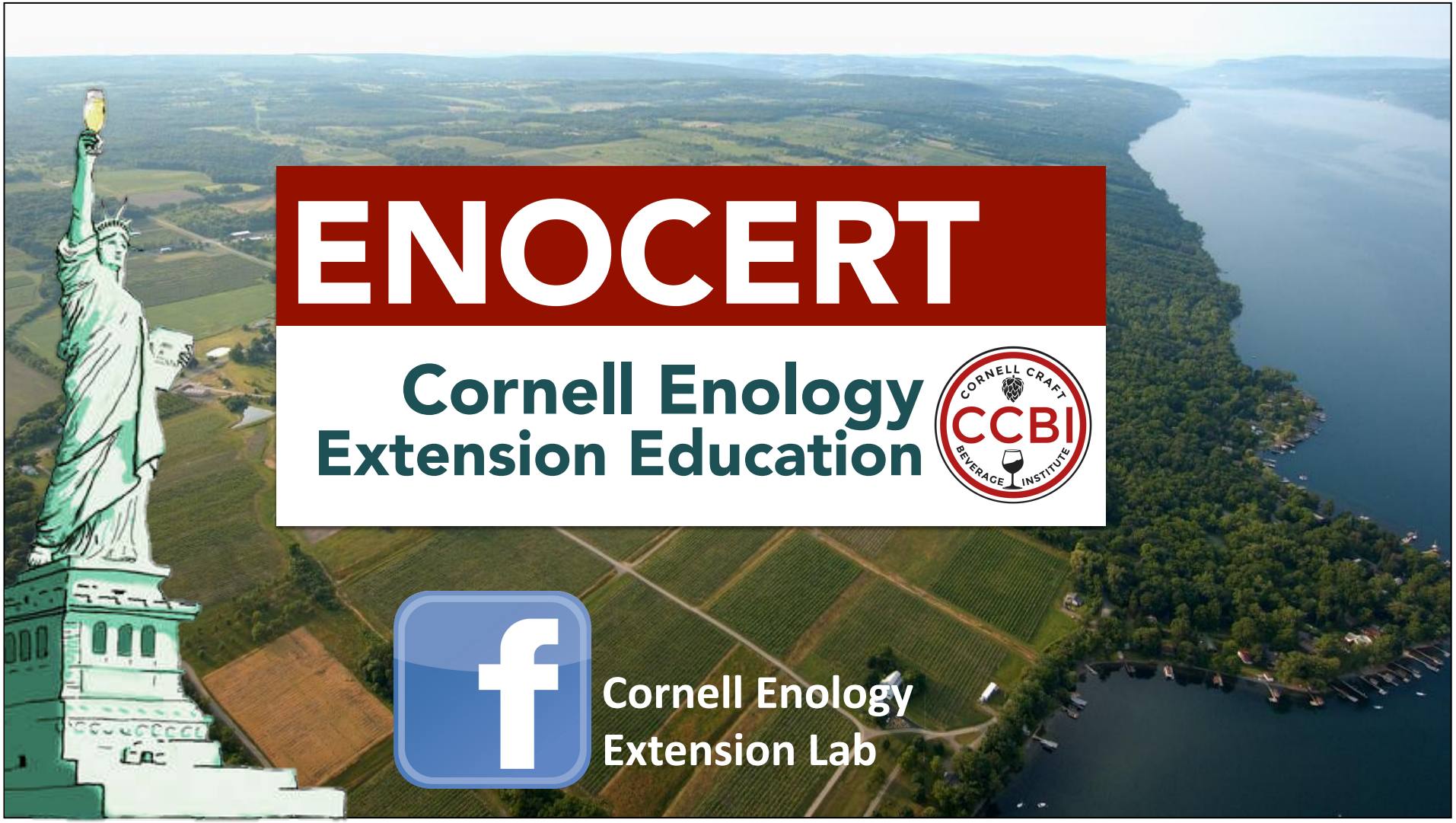
Consumer Acceptance

- Would you buy this wine?
- Hedonic or acceptance test
- Untrained panel
- Randomized pour order
- Acceptance scale
- Caveats:
  - Larger number of responses needed
  - Environment hard to control

Hedonic & Acceptance Scales

Hedonic scale	Purchase intent scale
☐ Like extremely	☐ Definitely would buy
☐ Like very much	☐ Probably would buy
☐ Like moderately	☐ Maybe/Maybe not
☐ Like slightly	☐ Probably would not buy
☐ Neither like nor dislike	☐ Definitely would not buy
☐ Dislike slightly	
☐ Dislike moderately	
☐ Dislike very much	
☐ Dislike extremely	

Are wine competitions sensory science?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