

ASBC Annual Meeting

June 4–7 ■ Fort Myers, Florida

See what SCIENCE can brew for you

Building Quality Programs Across Breweries



The Science of Beer

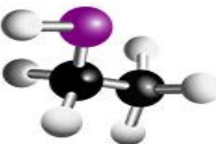
Lauren Zeidler
Director of Quality
Ballast Point Brewing

ASBC 2017



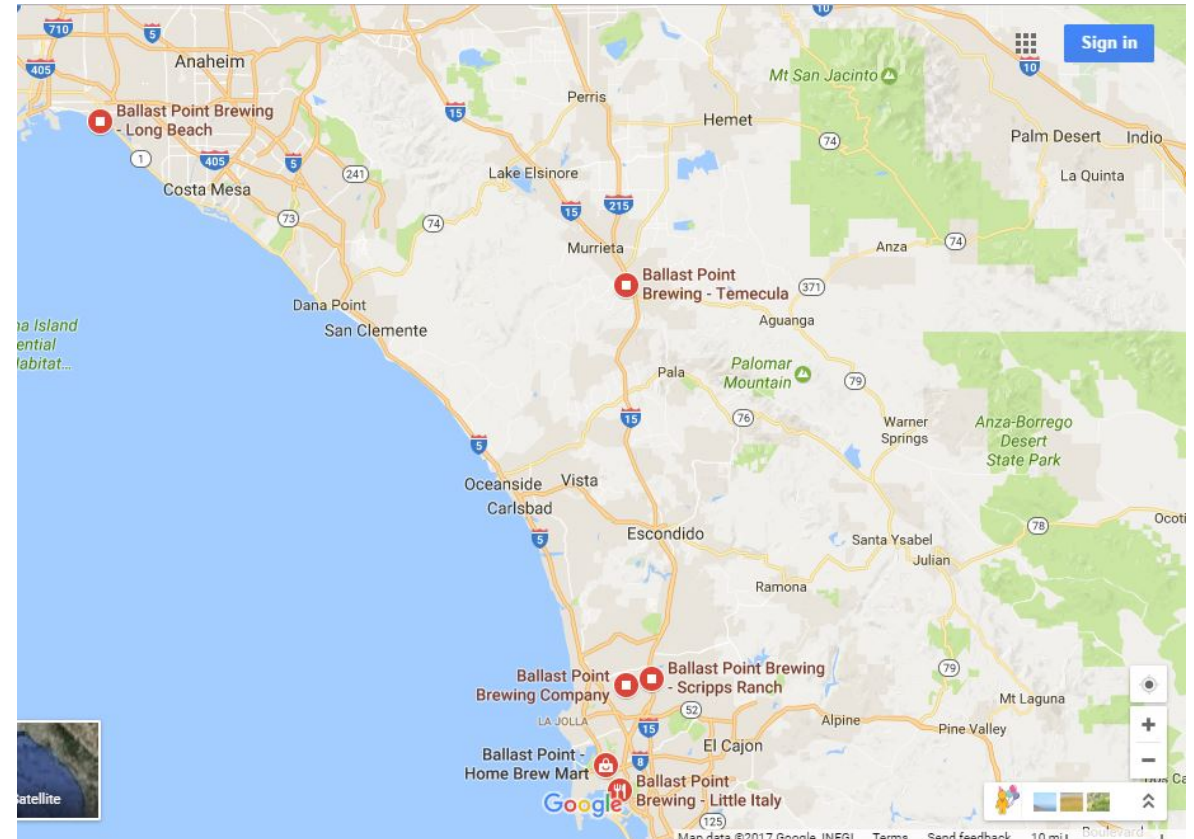
Tell them what you're going to tell them

- How to design a lab
- How to pick your lab equipment
- How to prepare at home (current brewery)
- Preparing your new lab for action
- What to do at brewery startup

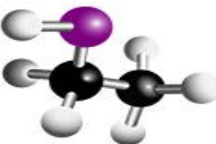


Meet Ballast Point

- BP has 6x locations in southern California, 5x of which are breweries
- 5bbl R&D to 300bbl production brewhouses
- Dozens of main production brands, new R&D brands every week

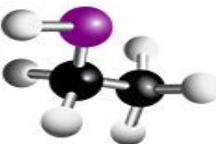
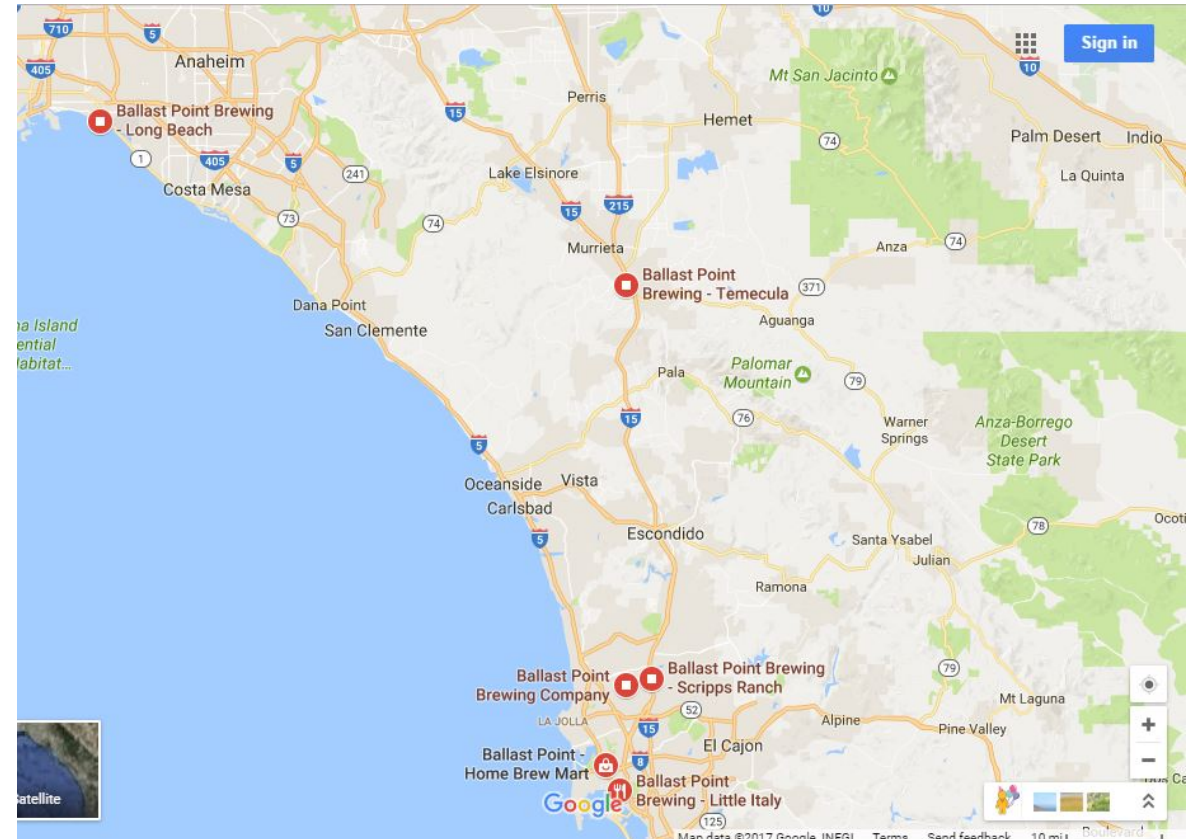


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Meet Ballast Point

- BP has 6x locations in southern California, 5x of which are breweries
- 5bbl R&D to 300bbl production brewhouses
- Dozens of main production brands, new R&D brands every week
- Building 2x new breweries with 3x total brewhouses



Meet Ballast Point

- BP journey of main production brewing:

Scripps Ranch
San Diego, CA
50bbl brewhouse



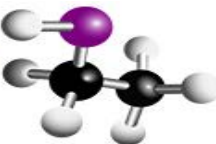
Miramar BH1
San Diego, CA
150bbl brewhouse



Miramar BH2
San Diego, CA
300bbl brewhouse

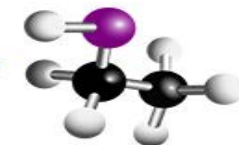


Daleville
Daleville, VA
100bbl brewhouse
300bbl BH eventually

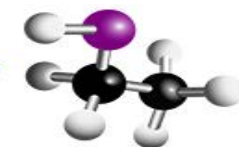


How to design a lab

- Think about workflow and foot traffic
 - Group items together that make sense
 - Example that makes sense: flow hood next to incubator for micro
 - Example that doesn't make sense: yeast cell counting next to micro setup
- Incorporate open space, incorporate extra space
 - You will need it eventually!
- Make it pretty
 - Your Quality people live in your lab. Make it a lab-home



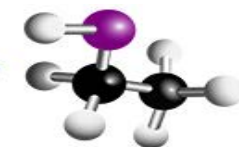
Two San Diego labs



Daleville, Virginia lab

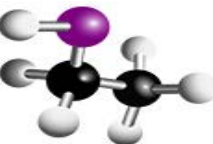


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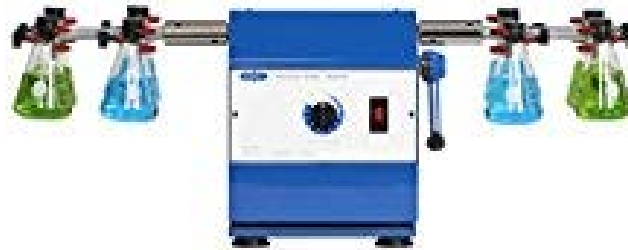
How to pick your lab equipment

- Whenever possible, duplicate everything!
- Incorporate same capabilities you currently have
 - If one lab is getting more sophisticated equipment than the other, be prepared to use that newer equipment for both breweries OR upgrade old lab
- If new equipment is different than what you already have, figure out how to use it to get the same information
- These decisions will likely be \$\$\$ driven

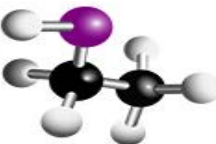


How to pick your lab equipment

- Example: shaker table for IBUs

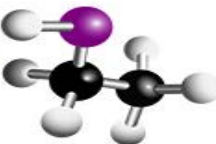


- They all shake... but they shake differently



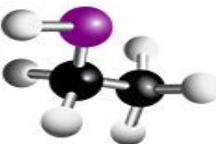
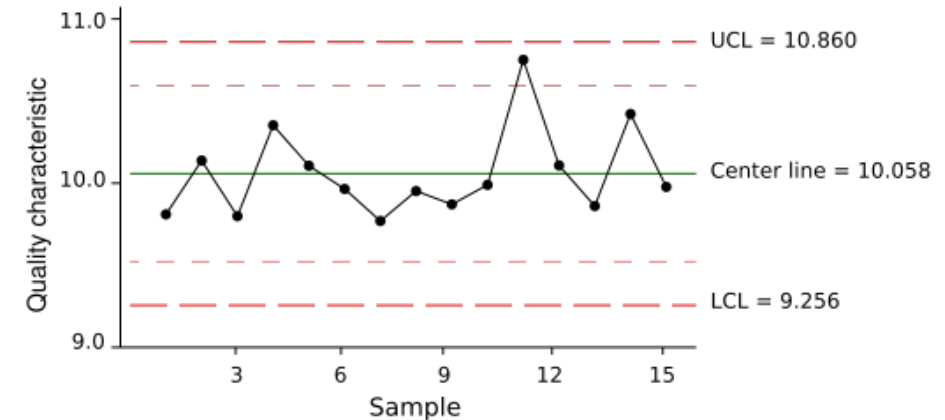
How to prepare at home for the new brewery

- Your beer should have no secrets!
- Know your brands - inside and out, backwards and forwards – so you know what to expect at the new brewery



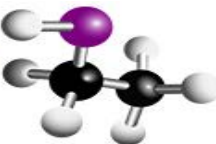
How to prepare at home for the new brewery

- Your Quality program needs to be very strong before building new brewery
- To build a strong Quality program:
 - Identify what parameters are important to you and your beers. Don't measure things just to measure them
 - Measure those parameters ad nauseam
 - Develop SPC
 - Helps to ID parameters by process
- And voilá, you know your beers' secrets



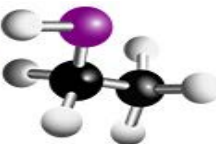
Preparing your new lab for action

- So you have a new lab with new equipment... now what?
- Think it through...
 - Measure first beer brewed at new brewery – exciting!
 - Measurement comes back OOS
 - Is it really OOS? Or is it instrument/user error?



Preparing your new lab for action

- You must trust your instruments!!!
- Set aside time before brewery startup to validate instrument methods across breweries
- If possible, get standard beer to measure in both labs for the same parameters
 - Ideally should get same readings
 - If not, determine if user error or instrument/method differences
 - Repeat until you get the same readings at both breweries
 - If measurements consistently differ, factor the delta into your spec limits



Preparing your new lab for action

- Example:

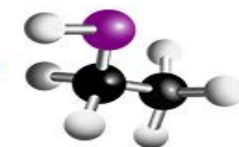


GC with ECD

Vs.

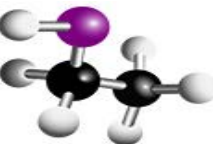


GC-MS



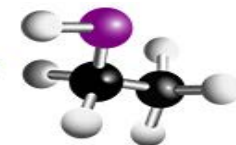
Brewery startup

- So you have a new brewery and a new (validated) lab... now what?
- Measure everything...within reason
 - Per your brewery's Quality program, measure your key parameters
- Lot of analysis will center around process validation
 - New equipment, new processes, new sizes, etc.
- Do measurements fall within specification limits?
- If not... time to troubleshoot!



Brewery startup: Story time

- We brought Sculpin from a 50bbl brewhouse to a 150bbl brewhouse in a new facility



Brewery startup: Story time

- We brought Sculpin from a 50bbl brewhouse to a 150bbl brewhouse
- Focusing on wort, we identified our key parameters and knew our specification limits

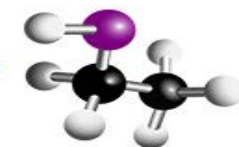


Brewery startup: Story time

- We brought Sculpin from a 50bbl brewhouse to a 150bbl brewhouse
- Focusing on wort, we identified our key parameters and knew our specification limits
- Lo and behold... we saw differences!

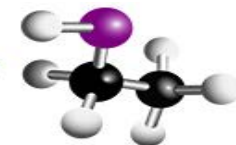
Moral of the story: increasing brewhouse size by 3x does NOT necessarily mean you multiply your recipe by 3x.

Lot of tweaking involved!



Brewery startup: Story time

- But wait, there's more!
- We then brought Sculpin to a 300bbl brewhouse, with hot side centrifuge instead of whirlpool



Brewery startup: Story time

- But wait, there's more!
- We then brought Sculpin to a 300bbl brewhouse, with hot-side centrifuge instead of whirlpool
- Again, measured same key parameters for wort, and included more to validate CF
 - WP hop addition with no WP?
 - Does CF strip yeast nutrients?
 - Used these questions to identify additional parameters to measure



Cheers and thank you!

Lauren Zeidler

Director of Quality

Ballast Point Brewing

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