Introduction to Scientific Research

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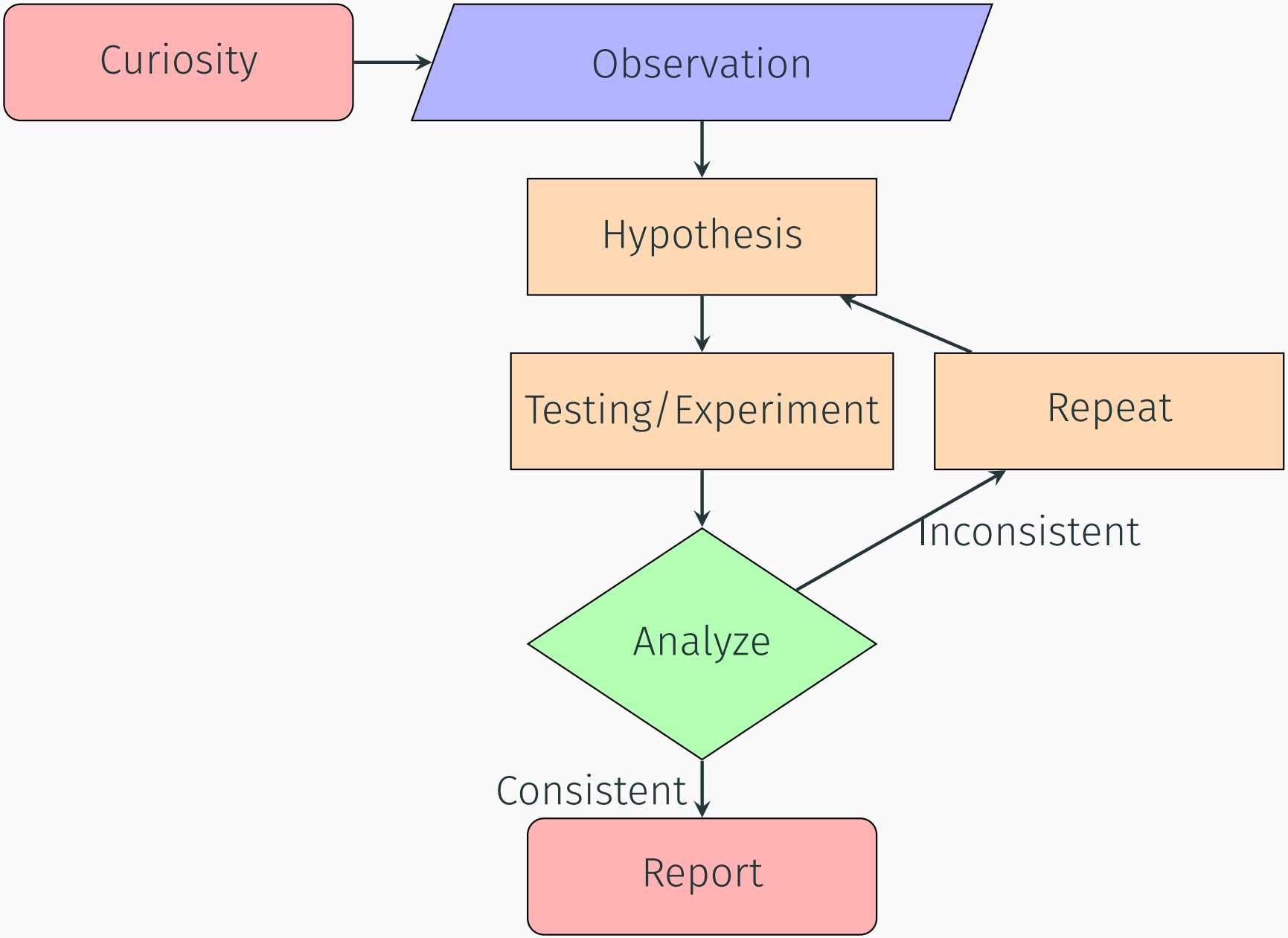
August 30, 2016

BISC 104
Session 1

Scientific research probes deepest mysteries of universe

The Process


Curiosity
Observation
Hypothesis
Testing/Experiment
Repeat
Inconsistent
Analyze
Consistent
Report

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- **Dependent variable**: Changes due to change in independent variable [Measured/Observed]
- **Control variable**: Could possible affect dependent variable, so should be kept constant

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- **Control Variables**: Water, salt, temperature, brand of ingredients ... Should remain constant

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- **Independent Variable**: Amount of sugar
- **Dependent Variable**: Size of loaf
- **Control Variables**: Water, salt, temperature, brand of ingredients
  ... Should remain constant

Amount of Sugar	Size of bread
10g	$600cm^2$
20g	$700cm^2$
25g	$710cm^2$
30g	$715cm^2$

Analysis Table

Sample Size?
Variability?

Example: Fertilizer and yield

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Example: Fertilizer and yield

- **Hypothesis:** Fertilizer X gives a better yield over fertilizer *Y*
- **Independent Variable:** Amount of fertilizers X,Y
- **Dependent Variable:** Yield [kg/tonnes..]
- **Control Variables:** Watering frequency, temperature, weather conditions ....

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- All groups vote to select the best proposal
- Form groups of 2, decide a day/time to collect data
- Disperse!
- Carry out your experiments, analyze your results.

We will go over analysis part in next session. Please email your analysis report by next Monday 5PM.

Office Hours

Tuesday: 9-10AM

Wednesday: 9-10AM

ZSH 372

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Please don't forget to mail your analysis/report by 5PM, Monday(09/05).