



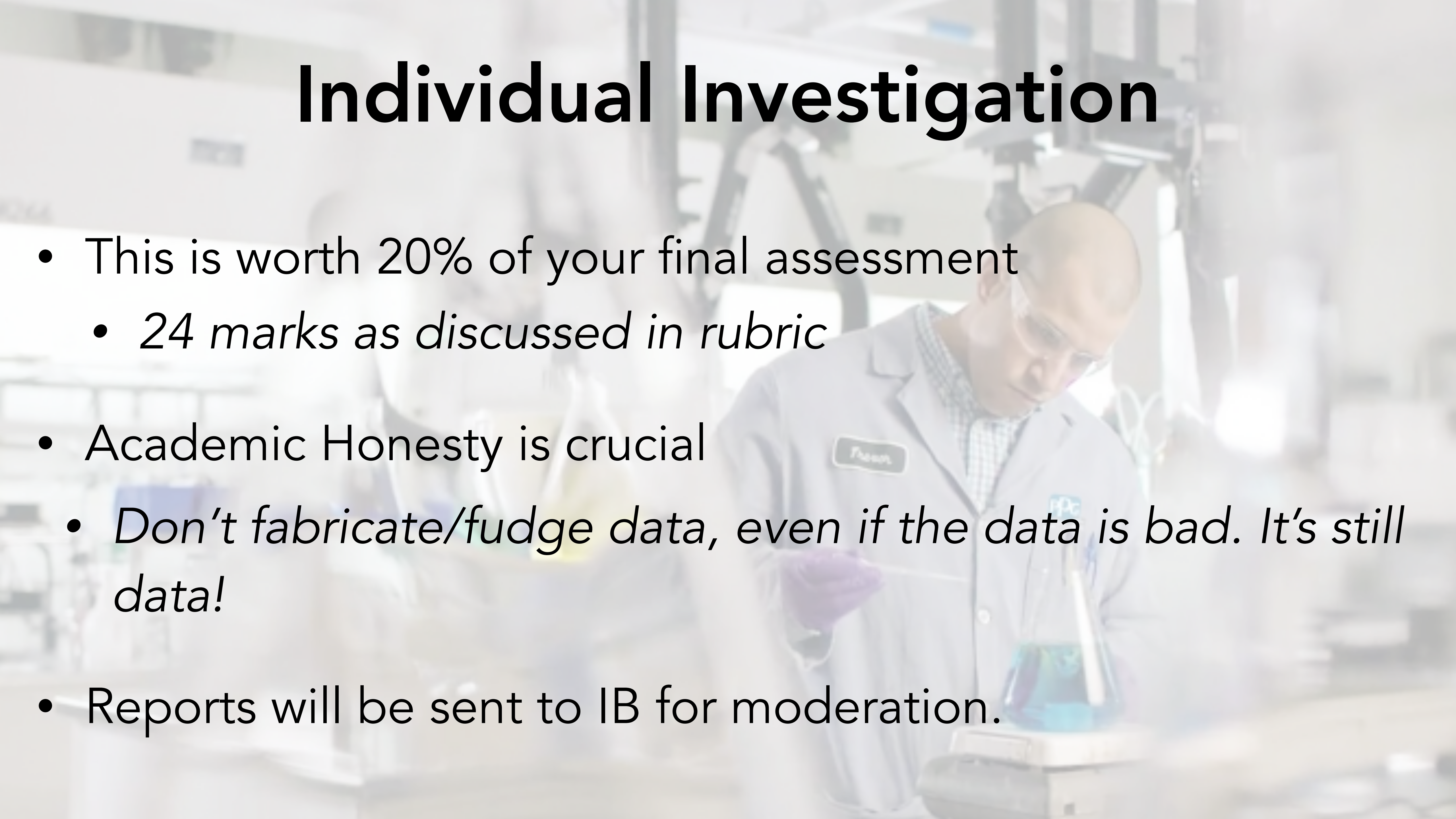
Individual Investigation

IB Chemistry 12 (HL): 2022-2023

Individual Investigation

- 10 class hours - time for you to plan and complete the investigation
 - *Plan on doing in class, though some investigations may be completed at home with approval.*
- An investigation (practical or secondary source) of your choosing, based on your interests.
- This does not need to be a brand new topic...just something you are interested in.
- Final product will be a 6-12 page report detailing, evaluating and analyzing your research.
- Failure to complete an IA (why wouldn't you?) means you **CANNOT** take the IB Exam in May = no potential college credit

Individual Investigation

- This is worth 20% of your final assessment
 - *24 marks as discussed in rubric*
 - Academic Honesty is crucial
 - *Don't fabricate/fudge data, even if the data is bad. It's still data!*
 - Reports will be sent to IB for moderation.
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- A background image of a scientist in a white lab coat working in a laboratory. The scientist is wearing safety glasses and purple gloves, and is focused on a task involving a flask on a stand. The lab is filled with various pieces of equipment, including microscopes and other labware, creating a professional and scientific atmosphere.

Units of Study

- Atomic Structure
- Periodicity (effects of size, reactivity)
- Chemical Bonding & Structure (geometry)
- Energetics (calorimetry, bond enthalpy)
- Kinetics (reaction rates)
- Equilibrium
- Acids & Bases (effect of A/B on materials, environment)
- Redox Processes (browning of fruit)
- Organic Chemistry (synthesis, addition, polymerization, combustion)

What you can do NOW

- Brainstorm potential research questions
- Consult with us regarding feasibility
- Do some research (online, textbook) about the scientific concept
- Brainstorm independent variables that could be manipulated to affect the dependent variable
- Do some more research (do not copy an experiment from the internet!)

Variables

The research question will identify the independent and dependent variables. You must however put some further thought into these variables so that you collect the data you need to consider your investigation valid. You must also think about other variables that **would possibly affect the result** if they were not kept constant. These are the fixed variables and must be identified and controlled if your experiment is to be a fair test.

It is useful to present variables in a table in your lab note - this same table will also help you design a better experiment.

Variables		Manipulated, Measured or Controlled by:
<i>Independent</i>	what variable are you manipulating	What is the range of manipulations? How are you changing the value of this variable? Are you testing an appropriate range to see the predicted effect?
<i>Dependent</i>	what is the responding variable?	How and when are you measuring this?
<i>Controlled</i>	make sure you include all the significant factors here	how are these variables kept constant? How do you know they are constant? (monitor them) Are any other precautions necessary? Are you making any assumptions?

Data & Calculations

- MUST have data to analyze.
- Calculating an average isn't enough to gain you full marks. Must have additional data to work up
 - Rate Equations
 - Activation Energy
 - Enthalpy Changes
 - Coulomb's Law
 - **comparison to literature values**

Observations from Past IAs

- Not including variables
- Safety concerns
- Improvements to your experiment *AFTER* you've conducted it.
- Colloquialisms in writing (avoid them.... 'Skewed', 'misread')
- Error (systematic vs. random) - NEVER should you be discussing hypothetical errors. Focus on what actually happened during your experiment.
- Equation editor
- Labels for Tables and Figures (**Bold**. Then a brief description)
- General formatting - PROOFREAD your document several times.