III. Results Section:

- **III. Results**: (past tense) statement of data, data analysis, what is observed in the data

- Provide a broad description of the experiments
  - Provide the "big picture"
  - Refrain from repeating the experimental details.

- Should sequentially follow the *Experimental section*.

- Select the *most pertinent data applicable* to the study.
III. Results Section (cont):

- Present representative data rather than endlessly repetitive data

- Describe figures and tables selectively
  - Take advantage of Figure Captions
  - Stand alone
  - Significant impact if used correctly
  - Opportunity to tell a mini-story & discuss trends (Audience: guide & capture)
  - If multiple curves, data or fit - must ID each (legend, arrows with text, etc.)
  - Do not regurgitate
  - This adds redundancy = most common fault.

- Describe observations of results for each figure & table
  - Tendencies
  - Trends

- Compare tendencies and trends between figures and tables
  - e.g., what variables dictate your experiment
III. Results Section (cont.):

- Be direct and to the point without verbiage.
- State Results clearly and simply.
- Introduction - tell why you obtained the results.
- Experimental - tell how you obtained the results.
- Discussion - designed to tell what they mean.

Hence, the paper must stand or fall on the basis of the Results.

III. Results Section (cont.):

- 4 language areas important to the Results Section
  - Sequence, Frequency, Quantity, Causality
  - Sequence - how long each step took and where it occurred in the sequence.
    - The temperature was stable.
    - Initially, the temperature was stable.
    - The temperature increased to 320K and then decreased to 300K.
    - The temperature increased to 320K and soon decreased to 300K.
    - The temperature increased to 320K and later decreased to 300K.
    - The temperature dropped sharply when the pressure was reduced.
  - Punch line: provide the reader details of your results. Be kind to your reader - guide them by the hand through your Results.
III. Results Section (cont.):

4 language areas important to the Results Section
- Sequence, Frequency, Quantity, Causality
- **Frequency** - how often a particular event or result occurred.
  - The temperature increased to 320K and soon decreased to 300K regularly.
  - The temperature increased to 320K and soon decreased to 300K often.
  - The temperature increased to 320K and soon decreased to 300K occasionally.
  - The temperature increased to 320K and soon decreased to 300K in 50% of the experiments.

**Punch line**: Provide the reader details of your results. Be kind to your reader - guide them by the hand through your Results.

III. Results Section (cont.):

4 language areas important to the Results Section
- Sequence, Frequency, Quantity, Causality
- **Quantity** - The power of words can encourage readers to form strong impressions.
  - The temperature increased to 320K and soon decreased to 300K in 50% of the experiments.
    - Comment: Not telling the reader anything new - just the result.
  - The temperature increased to 320K and soon decreased to 300K in only 50% of the experiments.
    - Comment: Telling the reader that the result is a weak result.
  - The temperature increased to 320K and soon decreased to 300K in as many as 50% of the experiments.
    - Comment: Telling the reader that the result is a strong result.

**Punch line**: guide the reader towards what you think of your results.
III. Results Section (cont.):

4 language areas important to the Results Section:
- **Sequence, Frequency, Quantity, Causality**
- **Causality** - Indicating the relationships or connections between the events that you observed.
  - A reduction in pressure was **accompanied** by a sharp drop in the temperature.
    - Comment: You are not certain of the connection, so you provide a very weak causality.
  - A reduction in pressure was **associated** by a sharp drop in the temperature.
    - Comment: You are somewhat certain of the connection, so you provide a weak causality.
  - A reduction in pressure was **caused** a sharp drop in the temperature.
    - Comment: You are certain of the connection, so you provide a strong causality.

**Punch line:** guide the reader towards what you think of your results.

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III. Results Section (cont.):

Last word on results:

“The compulsion to include everything, leaving nothing out, does not prove that one has unlimited information; it proves that one lacks discrimination”[3]
References for this overview:

2. Galsman-Deal, H. “Science Research Writing for Non-Native Speakers of English”, (Imperial College Press, 2010). Ch. 3.
3. Eschew Obfuscation: Advice on Writing Clearly, Larry J. Forney, Dept. of Biological Sciences, Professor Trish Hartzell, PhD. Department of Microbiology, Molecular Biology, and Biochemistry, University of Idaho, Moscow, ID: presented at the 2008 INBRE Conference, Boise, ID

In-Class Exercise

- Examine Figure:
  - Are they Compelling?
- Examine Figure Captions:
  - Are they adequate? Do they stand alone? Do they discuss trends?
- Go over example Results sections you found from Journal articles most applicable to your study:
  - Do the Results Sections provide guidance to the reader in terms of:
    - Sequence
    - Frequency
    - Quantity
    - Causality
  - Examine Paragraphs Versus Figures
    - Do they correlate?
  - Paragraph structure - is there any?
    - Topic Sentence
    - Supporting Sentences (list, chain-link, combo)
    - Implication-conclusion
- Regurgitation from Experimental?
Tenses:

- **Tenses:**
  - **Present tense:**
    - For the general case and statements on what is currently known.
    - E.g., statements that are: general knowledge, widely accepted, and those that can be referenced in the present tense.
  - **Past tense:**
    - Experimental results
    - Observations that were made during your study