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# Basics of a Research Plan

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## What is a Research Plan?

- A written or outlined in the **FUTURE TENSE BEFORE** start of an experiment.
- It is **NOT** a Science Project Report
- Plan must be **APPROVED PRIOR** to start of the experiment by Sponsor and SRC/IRB (where applicable).
- The Research Plan states the method or steps that **WILL BE USED (FUTURE TENSE)**.
- Research Plan should **NOT HAVE** data and conclusion and **SHOULD NOT** be written in the past tense.
- The Research Plan **SHOULD BE** typed and not hand-written.
- See “*Components of a Research Plan Attachment*” of the *Intel International Rules & Guidelines*.

## The Research Plan Format

A. **Question:** A statement stated as a question leading to the study. Use the **QUESTION MARK!!!**  
**AND/OR**

**Problem:** Stated as the Problem, Objective, or Engineering Goal.

- **DO NOT** use personal pronouns.
- Remember the verbs. Action words should be in **THE FUTURE TENSE**.

**Hypothesis:** A temporary answer/educated guess based on known information-power statement!

- Follows the Purpose (Problem, Objective, or Engineering Goal).
- Use “**IF/THEN**” format and **RELATE** it to the question and Purpose (Problem/Objective, etc.) **STAY AWAY** from “*I think that. . .*” It should be direct, clear, and not wordy.

B. **Method or Procedure:** (Use the **FUTURE TENSE**)

- May be written stepwise, in sections, or in phases.
- Detail the procedure and experimental design that will be used very clearly.
- **STAY AWAY FROM** personal pronouns like “*I will . . . , We will . . . , Next I will . . . etc.*”
- Measurements should be in **METRIC**. Include concentrations, quantities, and major equipment.
- Include a section (Data Analysis) describing the procedures that will be used to analyze data.

***Human Subject Studies (Intel International Rules and Guidelines)***

- Include exactly what the Human Subjects are being asked to do.
- Give the number of subjects that will be involved, their ages, gender, etc.
- Describe the Risk Assessment process and how risks will be minimized. Use Form 4.
- Explain what strategies will be used to protect privacy and confidentiality. Use Form 4.
- Submit a sample of **Inform Consent Form**. **EACH** Human Subject needs to sign one if applicable.
- If applicable, include a copy of surveys, questionnaires, or tests administered.

***Vertebrate Animal Studies (Intel International Rules and Guidelines)***

- Justify the use of non-human vertebrate animals. What contribution will the study have?
- Give the number of animals to be used, their species, strain, sex, etc. and describe housing, daily care, and all procedures/methods to minimize discomfort, pain, and injury.
- What will happen to the animals after the study?

***Potentially Hazardous Biological Agents (Intel International Rules and Guidelines)***

- Give the Biosafety Level (BSL), source of agents, source of specific cell line, etc.
- Where will bacteria or fungi be collected, ordered from, cultured, observed, and disposed of?
- What will be the safety or sterilization procedures that will be used? Supervision?

***Hazardous Chemicals, Activities, & Devices (Intel Intl. Rules & Guidelines)***

- Describe risks involved, the safety precautions, supervision, and procedures to minimize risk.
- Detail chemical concentrations, drug dosages, disposal, and type of hazardous equipment.

C. **Bibliography:** Need at least **5** major references. Use a proper format. Refer to the Sample Research Plan. **Internet resources** should have the author if given, title of the article, website, **date** the article was posted on the website or the **date** it was retrieved by the student from the website.