Scientific Study Blueprint for Licensed Hair Practitioners – Part 1

Use Your Status and Expertise to Advance Science

Information from Clinical Studies in the Cosmetic Industry

- 1. To show the effectiveness of products, ingredients, instruments, and/or techniques
- 2. To understand why our bodies respond to external factors such as the environment, products, stimuli, etc.

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- 3. To gain insights on the perception of:
 - consumers
 - professionals

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Why Aren't More Scientific Clinical Studies Done?

- 1. Lack of funding
- 2. Few opportunities for wide-spread/comprehensive studies
- 3. Lack of qualified collaborators/facilitators



Accumulation of Evidence

Oftentimes statements are made (especially through product claims) as though they are absolutely factual. However, there are levels of truth based on the amount of experimental evidence available.

Level 1: Hypothesis

- A statement based on a few observations
- An idea or proposition based on observations without experimental evidence

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Accumulation of Evidence cont.

Level 2: Theory

- Based on many observations and there is a lot of experimental evidence
- Not "written in stone" so it is *flexible* enough to be modified if new data/evidence is introduced

Level 3: Law

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- Stands the test of time, often without change
- Is experimentally confirmed over and over
- Can create true predictions for different situations
- Has uniformity and is universal

Accumulation of Evidence cont.

Bonus Term: Models

You may also hear about the term "model." A **model** is a scientific statement that has some experimental validity or is a scientific concept that is only accurate under **limited** situations. Models do not work all of the time because they may depend on the situation or environment in which the experiment is done. They are not universal ideas like a law or theory.

Can you think of examples of models you have heard of?

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Hypothesis – What You Need to Know

A **hypothesis** is an educated guess about the outcomes of an experiment. It is based on:

- Your personal or professional experience
- Research you have conducted
- A "testable question" which can be answered through an investigation

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Variables

An **independent variable** is the part of your experiment that is designed to change.

A **dependent variable** is something that is measured and changes during your experiment. In other words, the outcome of the measurement <u>depends on</u> the independent variable.

An experimental **control** is a standard of comparison during testing. It can be a "no treatment" group or something else in which the results can be compared.



Benefits and Impact

There are limitless questions you can ask when considering research *efforts* in which you want to partake. But ALL QUESTIONS ARE NOT EQUAL!!! This means we need to be <u>very</u> strategic and purposeful in what we decide to spend our time doing.

Give suggestions for a question you want to answer.

- 1. Name possible independent variables.
- 2. Name possible dependent variables.

3. Name possible controls.

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Types of Studies – Qualitative vs. Quantitative (Subjective vs. Objective) Qualitative (Subjective)

- Based on the **qual**ity of something
- Uses one of the 5 senses (sight, feel, smell, taste, and sound)

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• Usually cannot be directly measured

• <u>Quantitative</u> (Objective)

- Deals with the **quant**ity of something
- Does not use any of the 5 senses
- Can be measured with a definitive unit



Types of Studies - Laboratory vs. Clinical

Laboratory

- Development and testing of ideas in a controlled environment
- · Usually the first step of the research process
- Clinical
 - Explores the safety and/or effectiveness of treatments, processes or devices on humans
 - Usually the final stage of the research process

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information about possible outcomes and provides more insight about future study considerations (such as design modifications, study feasibility, unforeseen events, ideal sample size) for a larger more impactful study.

This type of study will be your primary way of obtaining valuable information. (Draelos example)

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Types of Studies – Questions

- 1. When is it alright to do a single-blinded study?
- 2. How do you design a double-blinded study?
- 3. What strategies can you use to eliminate bias especially with product testing?
- 4. Which type of testing is best: <u>qual</u>itative or <u>quant</u>itative?