Organic Chemistry
Current Research
ISSN: 2161-0401

Mohareb, Organic Chem Current Res 2012, 1:2
DOI: 10.4172/2161-0401.1000e105

Editorial Open Access

Conducting Scientific Research: Research Hypothesis and Null Hypothesis

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Editorial

What about research hypothesis? A hypothesis is a specific statement of prediction. It describes in concrete (rather than theoretical) terms what you expect will happen in your study. Not all studies have hypotheses. Sometimes a study is designed to be exploratory. There is no formal hypothesis, and perhaps the purpose of the study is to explore some area more thoroughly in order to develop some specific hypothesis or prediction that can be tested in future research. A single study may have one or many hypotheses. Hypotheses are the researcher's attempt to explain the phenomenon being studied and that explanation should involve a prediction about the variables being studied. These predictions are then tested by gathering and analyzing data. As an example, the molecular biology was once a cottage industry based on the laborious study of one gene, one protein, and one process at a time, often for scientist's entire career. Now biology has come significant part, a high-throughput, industrialized operation. Further, it is being post-industrialized as programmable robotics makes their way into common practice. It is also being 'microminiaturized' and perhaps 'nanoized' as the perceived need for high throughput motivates invention of highly parallel technologies that require as little time, space, and material as possible. In other words, many of the developments we saw in the past century with respect to microelectronics are being recapitulated in biology. All of these developments reflect what can be termed 'omic' research [1-5]. Omic research includes studies in genomics, proteomics, transcriptomics, kinomics (for the kinases), CHOmics (for the carbohydrates) and epigenomics, among many others. It also includes compound forms like pharmacogenomics, functional genomics, structural genomics and pharmacomethylomics [5]. Research hypothesis includes all fields of research like the medical, biomedical, interspersal, budgetary, non falsifiable and implausible hypotheses [6-13].

In the simplest forms, hypotheses are typically phrased as "if-then" statements. For example, a researcher may hypothesize that "if people exercise for 30 minutes per day at least three days per-week, then their cholesterol levels will be reduced". This hypothesis makes a prediction about the effects of exercising on levels of cholesterol, and the prediction can be tested by gathering and analyzing data. Your prediction is that variable A and variable B will be related (you don't care whether it's a positive relationship. Actually, whenever you talk about a hypothesis, you are really thinking simultaneously about two hypotheses. Let's say that you predict that there will be a relationship between two variables in your study. The way we would formally set up the hypothesis test is to formulate two hypothesis statements, one that describes your prediction and one that describes all the other possible outcomes with respect to the hypothesized relationship or negative relationship). Then the only other possible outcome would be that variable A and variable B are not related. Usually, we call the hypothesis that you support (your prediction) the *alternative* hypothesis, and we call the hypothesis that describes the remaining possible outcomes the *null* hypothesis [14-23]. Sometimes we use a notation like HA or H1 to represent the alternative hypothesis or your prediction, and Ho or H0 to represent the null case. In some studies, your prediction might very well be that there will be no difference or change. In this case, you are essentially trying to find support for the null hypothesis and you are opposed to the alternative. In conclusion finding a research hypothesis requires a scientific thinking about a certain problem that is going to be answered after doing the research. In recent years free, online journals, many of them open access and peer-reviewed, have begun to both challenge and complement traditional academic publishing. Through OMICS open access publishing group enable researchers to be aware by the electronic published work as soon as it will be ready for publication [24,25]. Thus, through the open access Journals the researchers will be aware by the research different alternative hypothesis in different fields leading to improvement of the conducting research.

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Received March 22, 2012; **Accepted** March 30, 2012; **Published** April 05, 2012

Citation: Mohareb RM (2012) Conducting Scientific Research: Research Hypothesis and Null Hypothesis. Organic Chem Current Res 1:e105. doi:10.4172/2161-0401.1000e105

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