When conducting research in the natural sciences, you will encounter three common types of sources:

- Primary sources are results of original research, observations, studies, and experiments.
- Secondary sources can include:
  - Peer reviewed journal articles,
  - Conference papers,
  - Technical reports,
  - Laboratory notebooks,
  - Field notes,
  - Dissertations or theses.
Primary articles will have a methods section—describing the specific design of the study, a results section—describing the outcome of the study, and a discussion section—interpreting the results of the study and framing the discussion for the field.

Secondary sources are articles written about the findings from a primary source. They are generally written in everyday language and use less field-specific jargon. Secondary sources generalize the findings providing additional analysis and evaluation of the original study.
Types of secondary sources in the natural sciences are:

Science magazines,

websites,

professional blogs,

encyclopedias,

and textbooks

A review article is a specific type of secondary source. Review articles take several published studies and summarizes the current understanding of the topic as it applies to the field.

Review articles are not new data, but an evaluation of existing research.

Review articles can be highly technical. They are peer-reviewed and follow academic publishing standards. However, because they are not generating new data, they will not have a Methods, Results, and Discussion section.
Let's look at some real world examples to see how this works.

William F. N. Chan, Cécile Gurnot, Thomas J. Montine, Joshua A. Sonnen, Katherine A. Guthrie, and J. Lee Nelson conducted a study to investigate if male DNA found in the female brain was of fetal origin.

They published their original study: Male Microchimerism in the Human Female Brain in PLOS One—a peer reviewed scientific journal.

Because the article is a primary source, it has a Methods, Results, and Discussion section.
What are Primary Sources: Natural Sciences 5

| 14 | Robert Martone, a researcher not associated in any way with the original study or authors wrote an article for Scientific America. It generalizes the original study while providing additional analysis and evaluation. |
| 15 | Noren Alcon, a researcher not associated with the original study or authors uses Male Microchimerism in the Human Female Brain, Pregnancy, microchimerism, and the maternal grandmother. Maternal microchimerism in human fetal tissues. Microchimerism of maternal origin persists into adult life to write a review article summarizing the current understanding microchimerism in the human brain. |
| 16 | Okay, Let’s review. The primary source is the findings of an original study which can be generalized and evaluated in a secondary source and used in a review to understand the concept in a larger context. |

End titles / References 5 slides