# Process of publishing scientific research

1. Come up with an idea or question
2. Create an experiment
3. Do the experiment. Possibly adjust as needed and redo
4. Write a paper about it. Include your coworkers and figures (images). Do some research about similar or relevant experiments that have already been done and include some of that information in your paper
5. Send the paper to a journal (a scientific magazine) that covers the topic your experiment is about
6. The journal decides to publish it (accept it) without any changes, reject it, or accept it if some edits are made. This is all determined by the referee or the peer reviewer. This reviewer is someone else in the field (like another astronomer who studies galaxies). They are not paid to read your paper and give suggestions.
7. You do the edits the referee suggested (or you tell them why you can’t do them) and resubmit the paper.
8. The referee looks at it again and decides if it needs more edits or not. You can have several rounds of this.
9. The journal publishes your paper.
10. You pay the journal for publishing it. Scientists will use grants or money from their institutions. This can cost hundreds to thousands of dollars.

# How to access scientific papers

There are several ways you can access scientific journals and the articles in them. Most are just electronic now. If you are looking for a specific person, it is helpful to know the title or the first author and the date it was published. If you are looking for papers in general, then you want to know which topics and keywords are most relevant. Since y’all are in school, you should never pay for an article! You can access almost all articles for free through your school. If you have trouble doing that, you can contact your school’s library, and they will help!

Google Scholar (<https://scholar.google.com/>) has the ability to search many journals. You can click the menu icon (the three horizontal bars) in the top left and then Advanced Search to more efficiently search for articles.

# Reading scientific papers

Scientific articles (that’s what we call a scientific paper) can be hard to read, but the notes below give some advice on how to approach this task.

When reading a scientific article, it is important to grasp the broad picture first – the questions being asked, and the nature of the evidence being presented – before becoming bogged down in the details. Rather than reading straight through, try this order:

1. Read the abstract, the paragraph just below the title that summarizes the article’s questions, methods, and conclusions.
2. Look at the figures, charts, and tables that show the data. If you don’t understand the figures in detail right away, don’t worry; you’ll spend much more time on them later.
3. Next, look at the methods and results sections to get a better overall sense of what the authors did and what they found. The methods section of the article (usually labeled with a separate heading) is usually placed close to the introduction, but sometimes comes towards the end of the article. This section will provide a step-by-step description of how the data were obtained
4. Finally, move on to the introduction and conclusions. The introduction will provide some additional insight into the background and motivation for the research strategy that was adopted. The conclusions will summarize the results and implications.

When reading an article, it is OK to skip over a word, sentence, or paragraph as long as you understand the next one. You may find it necessary to read the article multiple times, but with each reading you should make the effort to decipher more and more of the details. Remember there are online tools (Google is your friend), library resources (e.g., medical dictionaries), and human help (e.g., your instructor or mentor) available to assist you.

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# Galaxy Zoo Specifics

## Abstract

* Goal:
* Methods:
* Motivation (why):
* Findings:

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## Useful vocabulary/jargon

## Outstanding questions to investigate later: