

## Lab Presentations

### Overview

On **December 7** we will be holding lab presentations. Each student will select and give a presentation on a “News and Views” article from the scientific journal *Nature*. These articles give brief overviews of significant research results in many different scientific fields and are written at a level that introductory students should understand with some effort. I have compiled a list of “News and Views” articles published in the last two years on topics relevant to the material covered in lab and the various lecture courses taught this semester. Articles will be assigned on a first come, first serve basis, so as soon as you have made a choice, **let me know via email**. Everyone must submit their choice by **December 4**.

### Expectations

Each presentation should be 10 minutes long. You should have some sort of visual aid, such as a power point presentation, overhead transparencies etc. You must also submit a bibliography of the sources used to research your presentation.

Each presentation should at a minimum answer these questions:

- What question or problem does the research presented in the article seek to address?
- What methods do the researchers use? If they use a particular telescope or survey describe them. If they are doing theoretical work or a simulation describe what methods they use.
- What are their main findings?
- What important implications does this work have for the field? Has this work changed our understanding of the topic?

Also, please show (and explain!) any pictures or diagrams included with your article. You are also encouraged to show other pictures or diagrams you find in your research.

These articles describe research presented in much more technical articles than in *Nature*. You are not required to read or present material directly from the technical articles, but if you would like to look at them, you are welcome to.

When giving your presentations, don't forget about good presentation techniques. I will be looking for clarity, good organization and the effective use of visual aids in your talks. Remember to speak slowly and clearly. Also, avoid cramming your slides with lots of words that you end up reading to the audience.

At the end of the presentations, I will ask you to write a brief paragraph describing the

presentation that you found most interesting. This will be factored into your presentation grade. You should take notes so you are prepared to write this paragraph.

I will also be grading participation during presentations so please be respectful of your peers and ask lots of good questions.

## Logistics

If you are using a power point or keynote presentation you should email it to me on **December 6**. This will allow me time to test it to make sure it works on the laptop we will be using. The laptop will be a Mac and will have both power point and keynote. However, to be on the safe side, I would recommend that you save/export your presentation as a pdf file which is guaranteed to work the same way on any computing platform. The exception would be if you have any movies or animations in your presentation. If you need some help in creating a pdf version of your presentation, email me.

## Resources

In preparing your presentation you will need to do some research on your own. The material in these papers may be a little more intimidating than the astrobites articles that we have been reading so far. That is okay! Please don't hesitate to set up a meeting with me to discuss your paper. The earlier you reach out, the better! *Note: I will be away from Nov 30<sup>th</sup> until Dec 5<sup>th</sup>*, but could likely meet on Zoom during this time.

I suggest making a list of vocabulary words you don't understand, but think could be important. We could go over this together, and I can also help point you to other good resources online and in-person (including other graduate students and/or faculty in the Astronomy Department).

There are also many books and websites that you can use for your research. Astronomy books at Columbia are kept in the Mathematics library; I'm sure the Barnard library has many relevant resources. Ask a science librarian! A good place to start may be astrobites for a more direct explanation of complex topics: <https://astrobites.org>. There are also many popular science publications you can explore (Sky & Telescope, Scientific American) as well as newspapers with good science sections (New York Times). You are free to ask me for other resources. Also, don't forget your professors are good resources. For images you can check out NASA's website and the Astronomy Picture of the Day website (<http://apod.nasa.gov/apod/>).

In the case of online resources be careful. In particular, be wary of Wikipedia. There is a lot of correct information on Wikipedia, however, there is also some incorrect information. Always check to see what sources they reference.

## Articles

Here are articles that are related to one or more topics we discussed over the course of the semester. If you can't find one you are interested in, feel free to browse:

<https://www.nature.com/natastron/articles?type=news-and-views> and email me with a different suggestion (preferably related to a topic we covered).

### SOLAR FLARES

## A happy ending for SADs

<https://www.nature.com/articles/s41550-022-01607-0>

### EXOPLANETS

## A diverse planetary trio around a naked-eye star

<https://www.nature.com/articles/s41550-021-01386-0>

### SMALL BODIES

## Asteroid smashing, mixing and forming

<https://www.nature.com/articles/s41550-020-1206-0>

### METEORITES

## The tumultuous childhood of the Solar System

<https://www.nature.com/articles/s41550-019-0868-y>

### EXOPLANETS

## Predicting 'Earth-like' planets around red dwarfs

<https://www.nature.com/articles/s41550-022-01822-9>

### SOLAR PHYSICS

## Hidden currents at the Sun's surface

<https://www.nature.com/articles/s41550-022-01683-2>

### SOLAR SYSTEM

## **Future exploration of Ceres as an ocean world**

<https://www.nature.com/articles/s41550-020-1181-5>

EXOPLANETS

## **Are there extrasolar moons?**

<https://www.nature.com/articles/s41550-022-01631-0>

SOLAR SYSTEM

## **Towards a solution to the energy crisis**

<https://www.nature.com/articles/s41550-020-1167-3>

EXOPLANETS

## **Stellar radio aurorae signal planetary systems**

<https://www.nature.com/articles/s41550-020-1025-3>

PARKER SOLAR PROBE

## **Exploring the innermost solar atmosphere**

<https://www.nature.com/articles/s41550-019-0985-7>

PLANET FORMATION

## **Archaeology of the Solar System**

<https://www.nature.com/articles/s41550-019-0985-7>