

Library Skills for 2nd Year Biological Sciences

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Learning Objectives

This tutorial covers the library skills required for students in 200-level Biological Sciences courses.

By the end of this tutorial you will:

- Understand the difference between popular and scholarly sources and know the different types of scholarly sources
- Know how to read a scholarly article
- Learn how to effectively search for articles and access library material from home
- Know how to properly cite sources and avoid plagiarism

Contents:

Part 1: Sources of Information

Part 2: Navigating Journal Articles

Part 3: How to Search

Part 4: Citation and Avoiding Plagiarism

How to Navigate

Use your left and right arrow keys to go from page to page, or click the blue buttons at the bottom of the page

Go directly to a specific chapter with the Contents bar at the top of the page



PART I

SOURCES OF INFORMATION

This chapter will introduce academic sources of information so that you can find the right materials for your assignments

1. Sources of Information
2. Scholarly and Popular Sources
3. Peer Review
4. Primary, Secondary and Tertiary Sources
5. Evaluating Resources
6. Quiz

1.1 Sources of Information

Learning Outcomes

After completing this chapter you will be able to:

- Identify scholarly and popular sources
- Understand the peer-review process
- Know the difference between primary, secondary and tertiary sources
- Use sources appropriately in your work

There are many different sources of information:

- Scholarly and popular sources
- Primary and secondary sources

It is important to know the difference between sources of information and to know what source to use when.



Sources of Information

1.2 Scholarly and Popular Sources

Scholarly vs Popular Sources

In academic assignments and writing, we need to use scholarly sources, so it is important to know the difference between scholarly and popular sources.

Which sources are scholarly and which are popular? Click on the images below to learn more



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here:

<https://openeducationalberta.ca/libraryskills200/?p=28>

Examples of popular and scholarly resources:

Popular: Science magazine, newspaper, science blog, non-fiction book

Scholarly: Academic journal, textbook, dictionary

~~~

## What's the difference between a scholarly and a popular source?

**Scholarly sources** – Scholarly sources present original research (in an article or thesis) or compile research (in a textbook, dictionary or encyclopedia). They are written by researchers or scholars and are designed for an academic audience. Scholarly resources use specialized, scientific vocabulary. Scholarly resources contain references to back up information and they are considered to be reliable resources.

**Popular sources** – Popular sources present information with the intent of informing or entertaining. Popular sources do not contain original research but can summarize or report on original research. They are written by non-experts for a wide audience. Popular sources use accessible language. Popular sources do not usually contain references and they are not considered to be a reliable academic source.

This chart covers the characteristics of popular and scholarly sources

|                    | Scholarly                                       | Popular                                              |
|--------------------|-------------------------------------------------|------------------------------------------------------|
| <b>Content</b>     | Contains original research data                 | Covers popular interest topics                       |
| <b>Authors</b>     | Expert scholars with their credentials listed   | Not experts, often journalists or writers            |
| <b>Audience</b>    | Scholars, researchers                           | General public                                       |
| <b>Purpose</b>     | To share research findings and expand knowledge | To inform or entertain                               |
| <b>Style</b>       | Straight forward design with complex language   | Flashy, eye catching design with accessible language |
| <b>References</b>  | Contains references                             | No references                                        |
| <b>Peer-review</b> | Articles are peer-reviewed                      | Articles are not peer-reviewed                       |

# 1.3 Peer Review

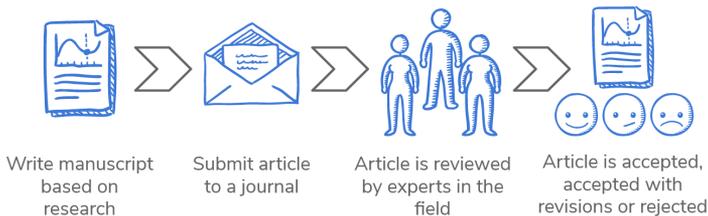
What is peer review?

Scholarly articles are sometimes called **peer reviewed** articles as they go through the **peer review process**.

In peer review, journals uses experts (peers) to review potential articles. When an author submits an article to a journal, that journal sends the article to experts in the field for review. Reviewers assess the accuracy and validity of the research methodology.

Peer review sets a high standard of research quality and reliability, so peer reviewed articles are considered to be the highest quality source of information on your subject. This is why you should use peer reviewed, scholarly articles in your work.

The peer review process:



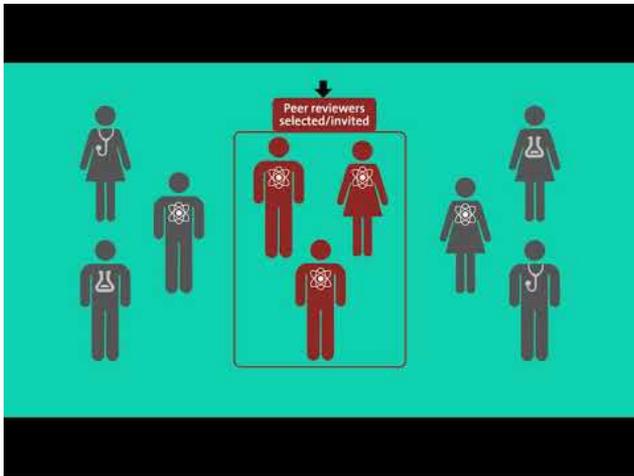
Steps to peer review

1. Researcher writes a manuscript based on their original research
2. Researcher submits the manuscript to a journal
3. The journal editor sends the article to experts (peers) in the

researcher's field for review. Reviewers evaluate the quality and validity of the research.

4. Article is accepted, accepted with revisions or rejected based on the reviewers suggestions

Watch this video to learn more:



*A YouTube element has been excluded from this version of the text. You can view it online here:*

*<https://openeducationalberta.ca/libraryskills200/?p=31>*

# 1.4 Primary, Secondary and Tertiary Sources

## Types of Scholarly Sources

Now that we know the difference between scholarly and non scholarly sources, it is important to know the different types of scholarly sources.

Scholarly sources can be primary, secondary or tertiary sources.



### **Primary Sources**

Primary sources present original findings or research. Authors describe their research and their conclusions

- Journal articles describing original research
- Theses and dissertations



### **Secondary Sources**

Secondary sources analyze, summarize or synthesize original research. They comment on information presented in primary sources

- Review articles (often have review in the title)
- Books (including textbooks)



### **Tertiary Sources**

Tertiary sources index, abstract, organize, compile, or digest other sources

- Dictionaries and encyclopedias
- Handbooks and guidebooks



## What Source Should You Use?

It is important to know when to use each type of scholarly source:

**Primary Sources** - Use primary sources to provide credible evidence for your arguments and to back up specific claims. As primary sources provide authoritative, first-hand research information, they are important to use in your work.

**Secondary Sources** - Use secondary sources to gain an overview of your topic. As secondary resources summarize or synthesize a

number of primary resources, they are useful to understand the various aspects of your research topic.

**Tertiary Sources** – Tertiary sources are used to provide technical information or general background information. Refer to tertiary sources when need definitions or basic information about a topic.

### *What About Grey Literature?*

Grey literature is research that is either unpublished or not commercially published. Grey literature can be published by governments, NGO's, industry and academic institutions.

Even though grey literature can present original research, it is not **peer-reviewed**. Though it is not peer-reviewed, grey literature can still have useful, reliable information.

Examples of grey literature include:

- Government publications
- Maps
- Conference proceedings
- Theses and dissertations
- Research reports
- Newsletters and bulletins

**Note:** academic materials like theses, dissertations and conference proceedings are both primary literature and grey literature as they present original research, but do not go through the peer-review process.



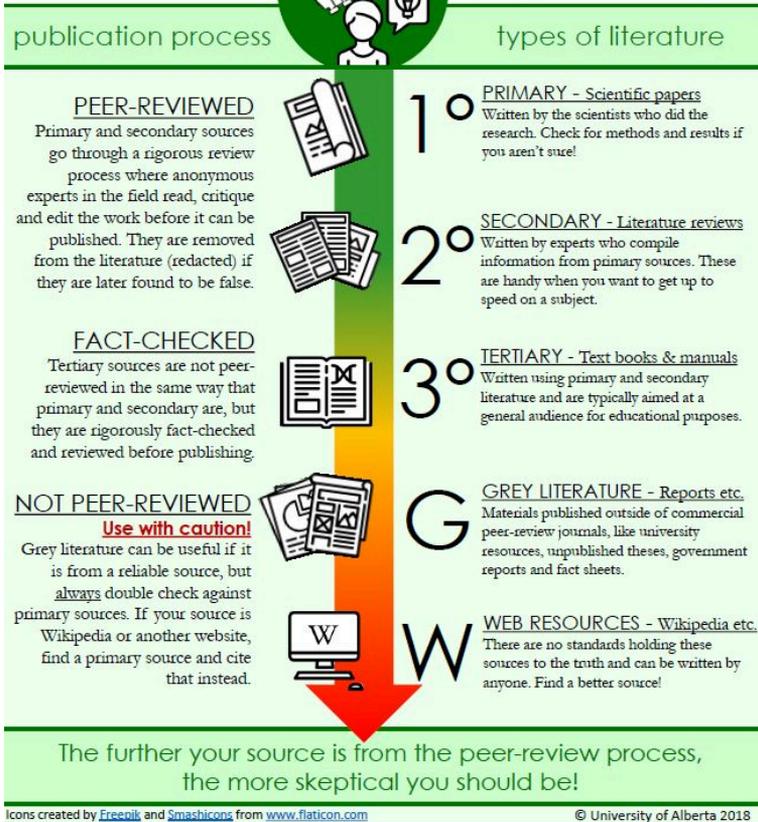
# 1.5 Evaluating Resources

## Identifying Reliable Resources

We use many different sources in our work, so it is important to choose quality, credible resources. Peer reviewed resources are the most credible, as they go through the peer review process, while internet resources are less credible as anyone can post information on the internet.

Use the following figure to understand what makes a resource credible, and how to identify reliable resources.

# Identifying CREDIBLE sources for your writing



From Christianne Nylund, University of Alberta

## Evaluating Information

Once you have found sources you want to use, you should always evaluate them critically.

Use the CRAAP test to evaluate the information you find. Ask yourself the following questions about the resources you find

**Currency** - Is it timely or up to date?

**Relevance** - Useful for your purposes?

**Authority** - Who wrote it? What is the source?

**Accuracy** - Are there references to back it up?

**Purpose** - Why was it written? Is there a bias?

Watch this video to learn more:



*A video element has been excluded from this version of the text. You can watch it online here:*

<https://openeducationalberta.ca/libraryskills200/?p=319>

# 1.6 Quiz

Test your knowledge!



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from this version of the text. You can view it online*

here:

<https://openeducationalberta.ca/libraryskills200/?p=331>

PART II

# NAVIGATING JOURNAL ARTICLES

Learn how to navigate, read and understand  
journal articles

1. Introduction to Journal Articles
2. Anatomy of a Journal Article
3. How to Read a Journal Article
4. Sources of Information in an Article
5. Quiz



# 2.1 Introduction to Journal Articles

## *Learning Outcomes*

After completing this chapter you will be able to:

- Navigate different parts of journal articles
- Effectively read a journal article
- Identify the correct source of information in an article
- Find supplementary data

Journal articles are scholarly sources that represent original research:

- Journal articles can also be called **scientific articles**, **peer reviewed articles**, or **scholarly research articles**
- Articles in a particular field are collectively referred to as **the literature**

You will need to read and use journal articles throughout your studies. Knowing the ins and outs of journal articles will save you time and effort. See the previous chapter, Sources of Information, to learn about types of sources and peer review

See an example article below:

# Sheep recognize familiar and unfamiliar human faces from two-dimensional images

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OPEN SCIENCE

rsos.royalsocietypublishing.org

Research



Cite this article: Knolle F, Gonçalves RP, Morton AJ. 2017 Sheep recognize familiar and unfamiliar human faces from two-dimensional images. *R. Soc. open sci.* 4: 171228.  
<http://dx.doi.org/10.1098/rsos.171228>

Received: 25 August 2017  
Accepted: 4 October 2017

**Subject Category:**  
Biology (whole organism)

**Subject Areas:**  
behaviour/cognition

**Keywords:**  
sheep, learning, cognitive testing

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Electronic supplementary material is available online at <https://dx.doi.org/10.6084/m9.figshare.c.3911908>.

THE ROYAL SOCIETY  
PUBLISHING

## Sheep recognize familiar and unfamiliar human faces from two-dimensional images

Franziska Knolle<sup>†</sup>, Rita P. Gonçalves and A. Jennifer Morton

Department of Physiology, Development and Neuroscience, University of Cambridge, Downing Street, Cambridge CB2 3DQ, UK

© AIM, 0000-0003-0181-6346

One of the most important human social skills is the ability to recognize faces. Humans recognize familiar faces easily, and can learn to identify unfamiliar faces from repeatedly presented images. Sheep are social animals that can recognize other sheep as well as familiar humans. Little is known, however, about their holistic face-processing abilities. In this study, we trained eight sheep (*Ovis aries*) to recognize the faces of four celebrities from photographic portraits displayed on computer screens. After training, the sheep chose the 'learned-familiar' faces rather than the unfamiliar faces significantly above chance. We then tested whether the sheep could recognize the four celebrity faces if they were presented in different perspectives. This ability has previously been shown only in humans. Sheep successfully recognized the four celebrity faces from tilted images. Interestingly, there was a drop in performance with the tilted images (from  $79.22 \pm 7.5\%$  to  $66.5 \pm 4.1\%$ ) of a magnitude similar to that seen when humans perform this task. Finally, we asked whether sheep could recognize a very familiar handler from photographs. Sheep identified the handler in  $71.8 \pm 2.3\%$  of the trials without pretraining. Together these data show that sheep have advanced face-recognition abilities, comparable with those of humans and non-human primates.

### 1. Introduction

Human face recognition is a critical social skill [1,2]. Humans recognize familiar faces within milliseconds of seeing them [2,3], and can learn to identify unfamiliar faces from repeatedly presented images [4,5]. These skills require both complex image processing and holistic face recognition [6,7]. Sheep are social animals with acknowledged face-recognition skills.

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Read the full article here: <https://doi.org/10.1098/rsos.171228>

## 2.2 Anatomy of a Journal Article

All journal articles have a similar format, consistent format. The parts of a scholarly article are labeled so that readers can easily navigate them.

### Example Article:

Click the parts of an article for more information



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here:

<https://openeducationalberta.ca/libraryskills200/?p=44>

### Note:

The names and orders of article sections may vary from article to article. Not every article has the same format, though they will all be similar.

## Parts of a Journal Article

Title: a concise and descriptive title. This lets you know what the article is about.

Author Information: All authors who contributed to the article are listed. Often their affiliated institutions are included here or as a footnote.

Abstract: a short summary of the article. The abstract should share the research findings.

Introduction or Background: an overview of the research area that lays the foundation for the articles research.

Methods or Methodology: This describes how the research study was performed.

Results: a description of the results obtained. It presents the results without providing an interpretation. This often includes figures and tables.

Discussion: This section analyses and interprets the results presented in the Results section. New data is never presented.

Conclusion: This is a short section that summarizes the findings and significance of the article. The conclusion is omitted in some articles.

References: A list of all articles cited in the article. This section is sometimes labeled Bibliography, Works Cited or Literature Cited.

## Supplementary Materials

Supplementary materials are information or data that a researcher makes available that was not included in the printed version of an article. This information is omitted for space and is not essential to

the article, but is still relevant to readers. Supplementary materials can include data, expanded explanations, equations and more.

Supplementary materials can help you better understand an article. Supplementary data can be used to verify an article's findings

## How do you read a scholarly article?

Front to back? Bottom to top? Read every single word?

No researcher has time to read every article in depth. It is important to know how to read journal articles so that you can get the information you need without wasting time.

First you should read the abstract and evaluate whether the article is relevant to you, then you take a closer look at the rest of the article.

Do not waste your time on articles that do not fit your work.

Watch this video to learn more about reading scientific articles:



*From [www.flaticon.com](http://www.flaticon.com)*

**STEP THREE: READ THE RESULTS**

**Pay close attention to charts and graphs!**

- Quick summaries of the data collected

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<https://openeducationalberta.ca/libraryskills200/?p=46>

## Order to read a journal article:

- 1. Abstract** – is this article relevant to you?
- 2. Introduction** – what is the goal of this research?
- 3. Results** – what did they find?
- 4. Discussion/conclusion** – what are the author's conclusions?
- 5. Methods** – how did the authors conduct their research?

Tips

- Stop reading the article if you do not understand it. If it does not make any sense to you, search for another article that will be easier to read and understand
- Skim the article the first time, then read more closely the second time and take notes
- Look at the article's references to find other articles that might be useful to your work

## 2.4 Sources of Information in an Article

It is important to identify the correct source of information in an article. How do you know when to cite to author of the article or when to cite one of their citations:

**Ask:** Where did the information you want to use come from?

- If the information comes from the author's statements or observations ⇒ cite the article author
- If the information comes from a source cited in your article ⇒ cite the original source

### Note

- Always cite the original source of information
- Make sure to look at the original article to confirm the information you want to cite

### Example:

This article discusses a dolphin that choked on an octopus it was trying to eat. This article also lists other articles sharing examples of suffocation in cetaceans (whales/dolphins/porpoises) caused by eating or inhaling fish.

Who I cite depends on which information I want to use.

Look the highlighted sections below:



Notes |  Full Access

## Death by octopus (*Macroctopus maorum*): Laryngeal luxation and asphyxiation in an Indo-Pacific bottlenose dolphin (*Tursiops aduncus*)

Nahiid Stephens , Pádraig Duignan, John Symons, Carlysle Holyoake, Lars Bejder, Kristin Warren

First published: 22 May 2017 | <https://doi.org/10.1111/mms.12420> | Citations: 2

There are numerous reported cases of nondrowning asphyxiation due to laryngeal displacement and resultant suffocation caused by an intended prey item in various cetacean species, most involving fish species either too large to be swallowed, or whose strong dorsal spines caused them to become lodged in place, rarely with concurrent involvement of fishing gear (Hult *et al.* 1980, Byard *et al.* 2003, Watson and Gee 2005, Mignucci-Giannoni *et al.* 2009, Byard *et al.* 2010, Stolen *et al.* 2013, Ryan and Bolin 2014, IJsseldijk *et al.* 2015). A notable exception is that of two long-finned pilot whales (*Globicephala melas*) that asphyxiated due to the presence of fish in their nasal cavities (IJsseldijk *et al.* 2015). The present case report is, to the authors' knowledge, the first cetacean asphyxiation reported involving a cephalopod, namely an octopus; this report outlines relevant postmortem findings, and discusses the risky, but potentially rewarding, practice of preying upon octopodes.

(see full article here: <https://doi.org/10.1111/mms.12420>)

### Which article do I cite?

**If I write:** A dolphin choked on an octopus it was trying to eat

**Who do I cite?** Stephens *et al.* 2017, the example article above

**Why?** I am using information presented about the author's research and observations, so I cite the article I am reading.

**If I write:** Two whales choked on fish stuck in their nasal cavities

**Who do I cite?** IJsseldijk et al. 2015, the original source of the information

**Why?** I am using information that the article I am reading cited. So I go to the original source of information and cite the original article

See the image below for clarification:

**Marine Mammal Science**

Notes | Full Access

**Death by octopus (*Macroctopus maorum*): Laryngeal luxation and asphyxiation in an Indo-Pacific bottlenose dolphin (*Tursiops aduncus*)**

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**Source of information for highlighted text (who to cite):**

(IJsseldijk et al. 2015)

(Stephens et al. 2017)

Remember: Always cite the original source of information!

## 2.5 Quiz

Test your knowledge!



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from this version of the text. You can view it online*

*here:*

<https://openeducationalberta.ca/libraryskills200/?p=202>



## PART III

# HOW TO SEARCH

Learn where and how to look for library resources for your assignments

1. Where to Look for Library Materials
2. Finding Information for Biological Sciences
3. Generating Search Terms
4. Searching in Google Scholar
5. Accessing Library Materials From Home
6. Quiz



# 3.1 Where to Look for Library Materials

What type of material are you looking for?

There are many places to look for library materials. Where you look depends on what type of resource you are looking for.

Looking for Books? Videos? Journals? Music?

Try the library catalogue!

Search in the catalogue search bar on the library home page:  
[www.library.ualberta.ca](http://www.library.ualberta.ca)



## Looking for Journal Articles?

Try a database!

There are many options. Use Google Scholar or the Library Article Search. If you want to find more databases to try out, view the list of Databases.

The screenshot shows the top navigation bar of the University of Alberta Library website. The navigation menu includes: UNIVERSITY OF ALBERTA LIBRARY, Library Services, Subject Guides, Hours & Locations, About Us, My Account, Ask Us, and a search icon. A 'version française' link is visible in the top right. Below the navigation is a search interface with a search bar and a 'Search Tips' button. Underneath the search bar are several buttons: 'Find Articles', 'Find Databases', 'Find Journals', 'Course Materials', 'Google Scholar', and 'Refworks'. The 'Find Databases' button is highlighted in blue, and the 'Google Scholar' button is highlighted in pink. To the right of the search interface is a 'Chat with Us' widget with a status indicator 'Available', a text input field, and a 'Send' button. The chat widget also displays the chat availability hours: 'Chat is available Mon to Fri 8am to 6pm Sat & Sun 11am to 6pm'.

## Looking for More Biological Sciences Information?

Check out our Subject Guides. Each subject guide contains the best resources for finding subject specific information.

The screenshot shows the top navigation bar of the University of Alberta Library website. The navigation menu includes: UNIVERSITY OF ALBERTA LIBRARY, Library Services, Subject Guides, Hours & Locations, About Us, My Account, Ask Us, and a search icon. The 'Subject Guides' link is highlighted with a pink box. Above the 'Subject Guides' link, the text 'Find Subject Guides' is displayed in pink.

## Choosing a Database

Choose the database that will work best for you:

- Google Scholar: good for simple searches, it is the easiest database
- Article Search: good for more complex searches
- More databases (use databases such as Web of Science or Scopus): good for in depth searches and literature reviews

Tip

In order to easily access library materials, start your search at the library homepage

# 3.2 Finding Information for Biological Sciences

## Subject Guides

The U of A Library has created guides for each subject area to help you find the best information in that area.

The Biological Sciences Subject Guide is the best place to start your research



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here:

<https://openeducationalberta.ca/libraryskills200/?p=346>

<https://guides.library.ualberta.ca/biology>

### The Subject Guide includes:

- Links to databases (for finding articles)
- Links to books and e-books
- Resources for undergrads
- Research and writing help
- Your subject librarian

To find Subject Guides for other areas, see the Subject Guide Page

### Tip

Bookmark the Biological Sciences Subject Guide:  
<https://guides.library.ualberta.ca/biology>

Your subject guide is the best place to start your research.

## 3.3 Generating Search Terms

In order to do the most effective literature search, we need to come up with good search terms. Follow these easy steps to generate search terms.

### Three Steps to Search Terms:

1. State your research topic
2. Identify the main concepts in your topic
3. Come up with keywords for each concept

Note:

When you have good search terms, you can get better search results, faster!



**1. State your research topic**

What are you interested in studying?

What information do you want to find?

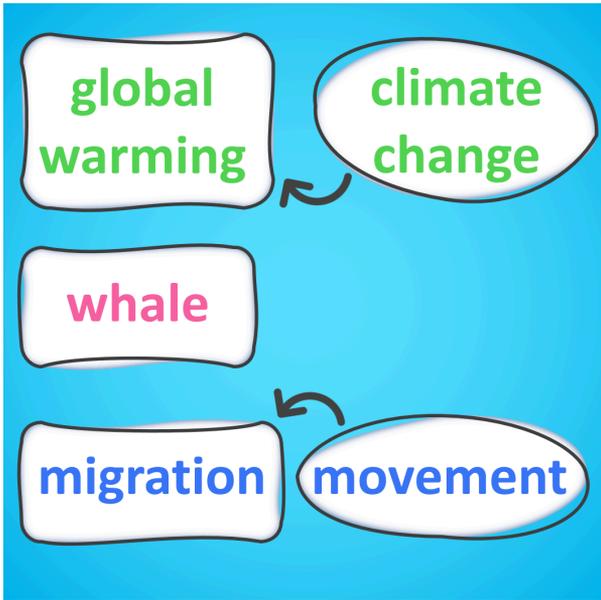


How does  
global warming  
effect whale  
migration?

**2. Identify the main concepts in your topic**

What are the key concepts?

Look for subjects like “whale”, not action words like “effect” or “impact”



### 3. Come up with keywords for each concept

How many ways can you state each concept?

Look for synonyms, related or alternate words

Make a list of all keywords for each concept

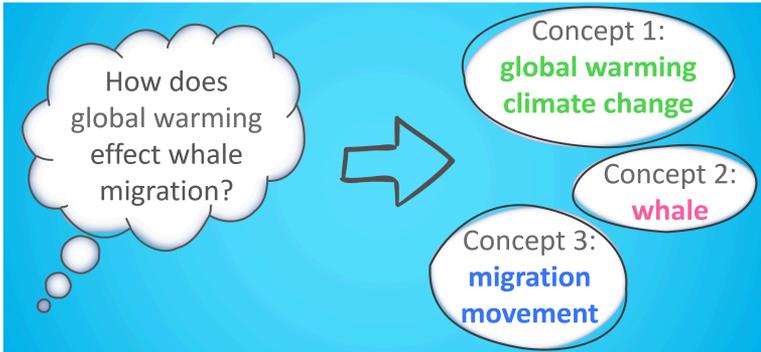
#### Tip

Make a chart to keep track of your concepts and keywords

| <b>Concepts</b>   | <b>Keywords</b>                |
|-------------------|--------------------------------|
| 1. Global warming | Global warming, climate change |
| 2. Whales         | Whales                         |
| 3. Migration      | Migration, movement            |

# 3.4 Searching in Google Scholar

Now that we have generated our search terms? How do we put together a search?



## Building a Search in Google Scholar

We build a search by putting together the search terms we generated

We always want to search one keyword for each concept:

Google Scholar



## Steps to a Search

1. Pick one keyword for each concept and try putting that in your search

2. Examine your results then try out different keyword combinations

3. Stop you have found enough results you like and use the “GetIt @ UAlberta” link to get full-text from the UAlberta Library

[Giemsa C-banding of potato chromosomes](#)

LP Pijnacker, MA Ferwerda - Canadian Journal of Genetics ... 1984 - NRC Research Press

... PIJNACKER, LP et MA FERWERDA. 1984. Giemsa C-banding of **potato** chromosomes. Can. J. Genet. ... Chromosome 1 is characterized by a nonnucleolar constriction in the proximal part of the short **arm**. Chromosome 2 has a FIGS. 1-3. Solcitrurium tuherovim monohaploid. Fig ...

☆   Cited by 152 Related articles All 3 versions Web of Science: 117

[GetIt @ UAlberta](#)

## Search Tips:

- For phrases you want to search, use quotation marks, ie “climate change”
- If you have too few results, try using fewer keywords
- If you have irrelevant results, try using more specific keywords
- Simple searches often work best
- Searching is iterative, keep trying new searches until you have enough useful results

Note:

Use the Google Scholar link on the library homepage when working off-campus. This ensures you can access articles with the “GetIt @ UAlberta” link



<https://library.ualberta.ca/google-scholar>

# 3.5 Accessing Library Materials From Home

## Off Campus Access

Access to many of the resources on the University of Alberta Library website is restricted to students, faculty and staff.

To access these materials at home, navigate to the e-journal or database you wish to use via the Library Home Page and **log in** using your **Campus Computing ID and Password**.

~~~

Trouble Shooting

EZProxy Access

The library provides off-campus access using out EZProxy server. When you access databases and materials through the library website, you will automatically be directed to the EZProxy log-in screen if you are off campus.

If you are unable to access an article or ebook and are hitting a paywall, follow these steps to check your access:

1. Check the web address of the item, does it have EZProxy in the URL?



Web address with no proxy



Web address
with the
proxy –
ezproxy.libra
ry.ualberta.c
a

2. If there is no proxy in the URL, add the EZProxy prefix

To enable off-campus access to online resources, add the EZProxy prefix “https://login.ezproxy.library.ualberta.ca/login?url=” before the web address.

For example, the following is a URL for an online article:
<https://pubs.acs.org/doi/pdf/10.1021/bi8006143>

Once the EZProxy prefix is included, the link will appear as follows:

<https://login.ezproxy.library.ualberta.ca/login?url=https://pubs.acs.org/doi/pdf/10.1021/bi8006143>

3. If the proxy is in the URL, we do not have access to the item

If you have logged into the proxy, and you still do not have access, this means the library does not have access to the item you want. In order to get access to this item fill out an Interlibrary Loan request, and the library will loan a copy from another library (www.library.ualberta.ca/services/interlibrary-loan)

Tip

If you have an article title, and you want to know if the library has access, try our new Request an Article Search

NEW: Request an Article - Beta Test

Don't wait! See instantly if you have access to an article. Use this search tool...

e.g. World Scientists Warning of a Climate Emergency

[Find article](#)

www.library.ualberta.ca/services/interlibrary-loan

For more information and help on off campus access, visit:
<https://www.library.ualberta.ca/services/off-campus-access>

3.6 Quiz

Test your knowledge!



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from this version of the text. You can view it online*

here:

<https://openeducationalberta.ca/libraryskills200/?p=377>

PART IV

CITATION AND AVOIDING PLAGIARISM

When we use resources, it is important to give correct credit and avoid plagiarism. Learn how to paraphrase and cite

1. Introduction to Citing
2. Citation Basics
3. Citation Styles
4. Citing with CSE
5. Citing with APA
6. Citing with Ecology
7. Avoiding Plagiarism
8. Quiz

4.1 Introduction to Citing

Learning Outcomes

After completing this chapter you will be able to:

- State why citing your sources is important
- Paraphrase correct
- Use common citation styles
- Avoid plagiarism

Why do we cite?

It's important to cite sources you used in your research for several reasons:

- To back up your claims – show you've done proper research by listing sources you used to get your information
- To give credit – be a responsible scholar by giving credit to other researchers and acknowledging their ideas
- To avoid plagiarism – do not claim the words and ideas of other authors
- To share your sources – allow your reader to track down the sources you used by citing them accurately in your paper



4.2 Citation Basics

What is a citation?

Citations are a short way to uniquely identify a published work (e.g. book, article, chapter, web site).

There are two parts to any citation: an in text citation and a reference list citation

1. In text citation – a shortened citation that appears in the body of your work and points readers to the reference list

Colossal squid (*Mesonychoteuthis hamiltoni*) are thought to be ambush predators, catching prey that inadvertently swim by (Rosa & Seibel, 2010).

2. Reference list citation – longer citations that appear at the end of a paper and provide enough information needed to describe and find your source again, physically or online.

References

Rosa, R., & Seibel, B. A. (2010). Slow pace of life of the Antarctic colossal squid. *Journal of the Marine Biological Association of the United Kingdom*, 90(7), 1375–1378.
<https://doi.org/10.1017/S0025315409991494>

What goes into a citation?

Citations consist of standard elements. A citation contains all the information necessary to identify and track down publications, including:

- author name(s)
- titles of books, articles, and journals
- date of publication
- page numbers
- volume and issue numbers (for articles)
- DOI (a unique identifier for each article)

Citations may look different, depending on what is being cited and which style was used to create them.

When should you cite a source?

You should cite your sources whenever you take words, ideas, figures, images, etc. from another place.

What information do you cite?

You must cite:

- Facts, ideas, or other information that comes from a resource or publication
- Figures, images or tables that were created by another person
- Any exact wording or quotations that come from a resource or publication

You do not need to cite:

- Information that is common knowledge for your subject area (ie. DNA has a double helix structure, squids are a type of mollusc)

Tip

When in doubt, be safe and cite your source!

4.3 Citation Styles

Citation Styles

This tutorial will cover three citation styles commonly used in biology:

- CSE (Council of Science Editors)
- APA (American Psychological Association) 7th Edition
- Ecology

Each style has the same elements, but uses them in a slightly different way.

Elements of an article citation:

- Author name(s)
- Date of publication
- Title of article
- Title of journal
- Volume and issue number (for articles)
- Page numbers
- DOI (a unique identifier for each article that is not included in all styles)

CSE

Roeleveld M. 1991. The Giant-squid *Architeuthis* in southern African waters. *J Zool.* 224(3):431-477. doi:10.1111/j.1469-7998.1991.tb06036.x.

APA

Roeleveld, M. (1991). The Giant-squid *Architeuthis* in southern African waters. *Journal of Zoology*, 224(3), 431-477. <https://doi.org/10.1111/j.1469-7998.1991.tb06036.x>

Ecology

Roeleveld, M. 1991. The Giant-squid *Architeuthis* in southern African waters. *Journal of Zoology* 224:431-477.

When citing it is important to carefully follow the rules of the citation style you are using. This helps readers find the sources you cite and gives proper credit to your sources. In the next section, we will cover the rules to different styles.

Make sure you use the correct citation style for your course.

4.4 How to Cite with CSE

CSE

This guide is based on the 8th edition (2014) of *Scientific Style and Format: The CSE Manual for Authors, Editors, and Publishers* and covers the CSE Name-Year citation system.

In-text citations

In text citations include the surname(s) of the author(s) and the year of publication. Follow these guidelines to format your in text citations correctly.

1. How names are displayed depends on the number of authors:

One author:	(Hanlon 2007)
Two authors:	(Rosa and Seibel 2010)
Three or more authors:	(IJsseldijk et al. 2015)

2. To cite multiple works at once, list the works in chronological order, from earliest to most recent.
(Hanlon 2007; Arnaud 2015; Torras 2016)
3. If you are quoting a paper, include the page number of the quotation as follows:
(Mathevon et al. 2017: 2353)

Reference list citations

Reference list citations change depending on the type of item you are citing. Examples are below. I

Notes for all citations:

- Citations have a hanging indent, that means every line after the first line is indented to the right.
- Only the first word of titles or proper nouns should be capitalized.
 - If the first word is “the” or “a”/”an”, capitalize the second letter as well
- CSE uses journal title abbreviations. To search for the appropriate abbreviation try CASSI or Web of Science Journal Title Abbreviations

Journal Article

Author AA, Author BB, Author CC. Year. Article title.
Journal title abbreviation. Volume(issue):pages.

Mathevon N, Casey C, Reichmuth C, Charrier I. 2017. Northern elephant seals memorize the rhythm and timbre of their rivals' voices. *Curr. Biol.* 27(15):2352-2356.

Online Journal Article

Author AA, Author BB, Author CC.. Year. Article title.
Journal title abbreviation. [accessed Year Mon Day];Volume(issue):pages. Notes.

Note: Online article citations contain the day accessed. The notes contains the article URL or the DOI (a unique identifier for each article) if available.

Rosa R, Seibel BA. 2010. Slow pace of life of the Antarctic colossal squid. *J. Mar. Biolog. Assoc. U.K.* [accessed 2020 Jun 1];90(7):1375–1378.
doi:10.1017/S0025315409991494.

Book

Author AA, Author BB, Author CC. Year. Title. Edition. Place of publication: publisher. Extent. Notes.

Note: Extent and notes are optional. Extent can include information about pagination or number of volumes. Notes can include other useful information, such as a URL for online works.

Everard M. 2020. The complex lives of British freshwater fishes. 1st ed. Boca Raton (FL): CRC Press.

Chapter in an edited book

Author AA, Author BB, Author CC. Year. Title of chapter. In: Editor names(s), editor(s). Book title. Edition. Place of publication: publisher. Extent. Notes.

Mannise N, Moreno F, González S. 2019. Neotropical ungulates of Uruguay. In: Gallina-Tessaro S, editor. Ecology and conservation of tropical ungulates in Latin America. Cham: Springer International Publishing. p. 273–289.

Further help

For more help with CSE and in depth examples, check out the CSE Citation Guide: <https://guides.library.ualberta.ca/citing/cse>

Tip

There are many free citation tools online. However these tools can often have mistakes.

Always check your citations carefully

4.5 How to Cite with APA

APA

This guide is based on the 7th edition (2020) of the Publication Manual of the American Psychological Association.

In-text citations

In text citations include the surname(s) of the author(s) and the year of publication. Follow these guidelines to format your in text citations correctly.

1. How names are displayed depends on the number of authors:

One author:	(Hanlon, 2007)
Two authors:	(Rosa & Seibel, 2010)
Three or more authors:	(IJseldijk et al., 2015)

2. To cite multiple works at once, list the works in alphabetical order, by author last name.

(Arnaud, 2015; Hanlon, 2007; Torras, 2016)

3. If you are quoting a paper, include the page number of the quotation as follows:

(Mathevon et al., 2017, p. 2353)

Reference list citations

Reference list citations change depending on the type of item you are citing. Examples are below.

Notes for all citations:

- Citations have a hanging indent, that means every line after the first line is indented to the right.
- For all references, include the DOI (a unique identifier for each article) if available, or a URL if there is no DOI.
 - It should be formatted [https://doi.org/\[doi number\]](https://doi.org/[doi number])
- All titles should be in sentence case.
 - Capitalize the first word of title, first word of subtitle and proper nouns.

Journal Article

Author, A. A., Author, B. B., & Author, C. C. (Year). Title of article. *Title of journal*, volume number(issue number), pages. <https://doi.org/xx.xxx/yyyy>

Mathevon, N., Casey, C., Reichmuth, C., & Charrier, I. (2017). Northern elephant seals memorize the rhythm and timbre of their rivals' voices. *Current Biology*, 27(15), 2352–2356. <https://doi.org/10.1016/j.cub.2017.06.035>

Book

Author, A. A. (Year). Title of work: Capital letter also for subtitle (# edition). Publisher. <https://doi.org/xx.xxx/yyyy>

Everard, M. (2020). *The Complex lives of British freshwater fishes*. CRC Press. <https://doi.org/10.1201/9781003007609>

Chapter in an edited book

Author(s). Date. Title of chapter. In: Editor names(s), editor(s). Book title. Edition. Place of publication: publisher. Extent. Notes.

Mannise, N., Moreno, F., & González, S. (2019). Neotropical ungulates of Uruguay. In S. Gallina-Tessaro (Ed.), *Ecology and conservation of tropical ungulates in Latin America* (pp. 273–289). Springer International Publishing.
https://doi.org/10.1007/978-3-030-28868-6_12

Further help

For more help with APA and in depth examples, check out the APA Citation Guide: <https://guides.library.ualberta.ca/citing/apa>

Tip

There are many free citation tools online. However these tools can often have mistakes.

Always check your citations carefully.

4.6 How to Cite with Ecology

Ecology

This guide is based on the style used in the journal Ecology, from the Ecological Society of America.

In-text citations

In text citations include the surname(s) of the author(s) and the year of publication. Follow these guidelines to format your in text citations correctly.

1. How names are displayed depends on the number of authors:

One author:	(Hanlon 2007)
Two authors:	(Rosa and Seibel 2010)
Three or more authors:	(Ijsseldijk et al. 2015)

2. To cite multiple works at once, list the works in chronological order, from earliest to most recent.

(Hanlon 2007; Arnaud 2015; Torras 2016)

3. If you are quoting a paper, the page numbers are not required

Reference list citations

Reference list citations change depending on the type of item you are citing. Examples are below.

Notes for all citations:

- Citations have a hanging indent, that means every line after

the first line is indented to the right.

- Only the first word of titles or proper nouns should be capitalized.

Journal Article

Author, A. A., B. B. Author, and C. C. Author. Year. Article Title. *Journal title*. **Volume**: pages.

Note: DOI address (<https://doi.org/xx.xxx/yyyy>) should be added for online-only journals.

Mathevon, N., C. Casey, C. Reichmuth, and I. Charrier. 2017. Northern elephant seals memorize the rhythm and timbre of their rivals' voices. *Current Biology* **27**:2352–2356.

Book

Author, A. A., B. B. Author, and C. C. Author. Year. *Book title*. Publisher, City of publication, State of publication, Country of publication.

Everard, M. 2020. *The complex lives of British freshwater fishes*. First edition. CRC Press, Boca Raton, Florida, USA.

Chapter in an edited book

Author, A. A., B. B. Author, and C. C. Author. Year. Title of chapter. Pages in A. A. Editor, B. B. Editor, and C. C. Editor, editors. *Book title*. Publisher, City of publication, State of publication, Country of publication.

Mannise, N., F. Moreno, and S. González. 2019. Neotropical ungulates of Uruguay. Pages 273–289 in S. Gallina-Tessaro, editor. *Ecology and conservation of tropical ungulates in Latin America*. Springer International Publishing, Cham, Switzerland.

Further help

For more help with Ecology style, see recent issue of the journal *Ecology* or check out the Ecology Citation Guide: <https://guides.library.ualberta.ca/citing/ecology>

Tip

There are many free citation tools online. However these tools can often have mistakes.

Always check your citations carefully

4.7 Avoiding Plagiarism

Plagiarism

Plagiarism is the action or practice of taking someone else's work, idea, etc., and passing it off as one's own; literacy theft (Oxford English Dictionary)

There are two types of plagiarism:

1. **Intentional plagiarism** – Intentional plagiarism occurs when one claims to be the author of work that they know was originally written completely or in part by someone else.
2. **Unintentional plagiarism** – Unintentional plagiarism occurs when a writer fails to follow to properly cite their sources without an explicit intent to cheat.

Take the following quiz to understand what counts as plagiarism



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here:

<https://openeducationalberta.ca/libraryskills200/?p=309>

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Avoiding Plagiarism

To avoid plagiarism you must always give proper credit when you use an idea, image, quotation, or any other information created by someone else.

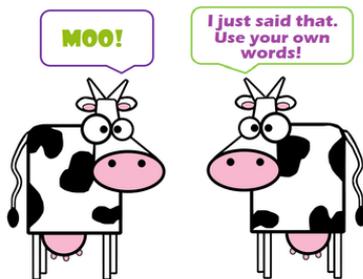
How to avoid plagiarism

- Start your work early
 - Students often plagiarize when they do not have time to finish an assignment
- Direct quotations
 - Quote no more words than necessary
 - Cite any authors you quote
- Paraphrase
 - Restate the ideas in an existing work while retaining the original meaning and level of detail
 - Cite any authors you paraphrase

Paraphrasing

Paraphrasing is not just expressing ideas “in your own words,” a writer must express the original idea in the context of their own writing.

- Paraphrasing is not just replacing words
 - It is still plagiarism to replace words in the original text with synonyms



From <https://www.virtuallibrary.info/paraphrasing.html>

- A good paraphrase changes the wording and the sentence structure
- Always cite your source
 - Paraphrasing without citing the original source is plagiarism

4.8 Quiz

Test your knowledge!



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from this version of the text. You can view it online*

here:

<https://openeducationalberta.ca/libraryskills200/?p=382>

For further library help:

Ask Us!

Use the Ask Us! chat box on the library home page to get library help over chat or visit the Ask Us page to get help over chat, email or phone.



library.ualberta.ca/ask-us