

Learning and recall of scientific and medical terms

This resource is designed to provide students with tips and strategies they can implement to help learn new scientific terms in their field.

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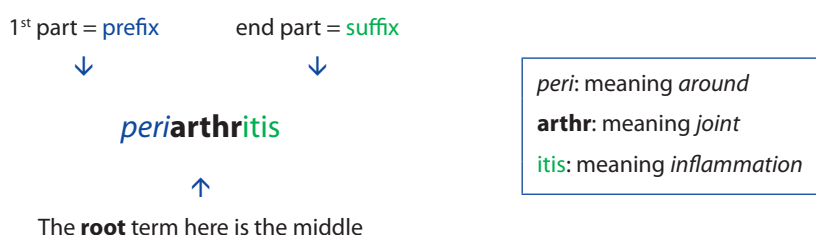
Studying in the Sciences

Background

When studying science, you will come across many terms that are unfamiliar. For example, in the area of health this includes scientific and or medical terminology including those related to anatomy and physiology, naming of diseases and conditions, and words for diagnostic and medical procedures. Many of these terms are derived from other languages (e.g. Greek, Latin) and as you become exposed to more terms you will start to pick up patterns in language.

Root terms, prefixes and suffixes

Scientific terminology commonly uses three elements; a **root** (or stem) word that is often built on with a **prefix** or a **suffix** to form new terms. Stem or root words are often derived from Greek and Latin languages. By knowing the English translation of the root word, it is easier to identify the meaning of derivative terms when common prefixes and suffixes are applied.



(NB: Throughout this resource **suffixes** will be coded in green, **prefixes** in blue italics and **roots** in black bold fonts).

Putting it together, the term translates to 'around joint inflammation', or put into simple language, **peri****arthr****itis** means **inflammation around a joint**.

So, rather than trying to memorise every single new scientific term you come across, by analysing the new term and knowing the meaning of common root words, suffixes and prefixes, you can decode the meaning of unfamiliar terms. First, you break down the new term into the components you already know (**root**, **prefix**, **suffix**), then, applying the definition of each of these smaller components interpret what the new term means.

Scientific terms may be arranged in several ways. Terms may:

- be combinations of all three (root/ prefix and suffix) as with the above example
- have no prefix (e.g. **arthr**itis)
- have two roots (e.g. osteoarthritis **oste**o|**arthr**|itis) with connecting vowels between the roots e.g. 'o'
- occur in different combinations (e.g. suffix and root with no prefix, have no roots at all, have two roots, be in plural or singular form)



Tip 1

LEARN key root terms, suffixes and prefixes in your field

- By learning the key root terms, suffixes and prefixes in your field of science you will be able to interpret many of the scientific terms in your field
- Deconstruct the term into known components (root term/prefix/suffix)
- Translate the components into English; by understanding each of the components you will begin understand the meaning of the overall term... **Have a go**

Learning Activity 1

What does the term arteriosclerosis mean? You could look this up in a medical dictionary or textbook but many words you come across will contain the roots **arteri**/o and **scler** and the suffix **osis**. It is better to try to break the word down, analysing the sub-components to decode the meaning, then you can apply this to new terms in the future.

arteri|scler|osis

You can use this resource [Scientific roots words, prefixes and suffixes](#), to help discover the meaning of the roots and suffixes:

arteri /o =	scler =	osis =
arteriosclerosis is ...		

[Check answer](#)

Other examples of terms containing these common roots/ suffixes include **scleroderma**, **arteriosten**osis and **neph**rosis.

Learning Activity 2

Most people are familiar with the muscle at the front of the upper arm, commonly known as the biceps, regularly flexed by body builders and alike to show their muscle definition. More correctly, this muscle is called **Biceps Brachii**.

Less commonly known, there is also a biceps muscle at the back of the back of the thigh called **Biceps femoris**.

What do the names of these muscles mean?

Step 1: Deconstruct each term in the muscles name into roots and prefixes to decode the words.

Biceps	Brachii / Femoris
Term one (prefix root)	Term two (root)
Bi = two or twice (Latin)*	Brachii = the arm
Ceps = headed (muscle)	Femoris = the femur or thigh

*NB. The prefix Bi/o can also mean life, as in the term biology (prefix from Greek)

Step 2: Having decoded what these terms mean, describe each of the muscles in plain language:

Biceps Brachii:
Biceps Femoris:

[Check answer](#)

Activity 3

Try to decode this muscle from the information you have learnt in the above example:

Triceps Brachii

<i>Tri</i> =	ceps =	Brachii =
Triceps Brachii	is a	

[Check answer](#)

What to do

Key message

Learn key **root** terms, **prefixes** and **suffixes** in your field. This will enable you to decode many of the scientific terms you come across and build your vocabulary.

- **Analyse new terms breaking them down** into known components (prefixes/ suffixes and roots); Decode each component to derive the meaning of the new term.
- Keep a glossary of common roots, prefixes and suffixes. By understanding these you greatly increase the number of terms you will be able to figure out. There are many such glossaries available online or create your own personalised glossary (for tips on how, [click here](#))
- Test your knowledge by defining common roots, prefixes and suffixes you have come across and generating a list of terms you know associated with these (for tips on how, [click here](#))

Other examples of scientific terms

There may be terms that you come across that do not fit the patterns of root word, suffix and prefix. You commonly need to memorise and understand such terms.

Here are some examples associated with the study of physiology:

- Action potential
- Golgi tendon
- Frank-Starling relationship

A good way to help learn such terms is to create a general glossary.



Tip 2

Create a glossary to help your study

A glossary is an alphabetical list of terms, in a particular field, with definitions for each term. When writing your glossary, use language you can understand and create links or references to other notes and resources. As you come across new terms look them up and record them. A medical dictionary ([link](#) to Mosby's dictionary e-book @SCU library) or a textbook in the field will be a useful place to look them up.

This table shows an example:

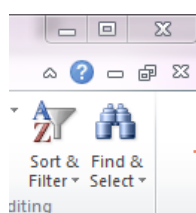
Put the definition in context by further explaining the term and /or providing examples. Do this in your own words, without copying from a source, to ensure you understand.

Reference to other sources for further details can be useful.

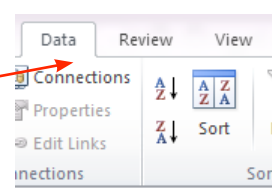
Term	Definition	Explanation/examples	Links/sources
Action potential	The electrical impulse that is transmitted along a nerves axon	An all or none response when the resting membrane potential of a nerve is depolarised	http://outreach.mcb.harvard.edu/animations/actionpotential_short.swf
Frank-Starling relationship	The relationship between myocardial (heart muscle) fibre length (due to stretching from blood filling at end of diastole) with blood) and the force of contraction of the heart)	Stroke volume of the heart increases when blood volume filing the heart increases. The increase volume increases the stretch on the cardiac fibres → more forceful contraction	See p. 345 of text book
Golgi tendon	A proprioceptive organ in the tendon of a muscle that responds to excess muscle tension	It detects excess muscle tension. If sensed a reflex is triggered inhibiting contraction of the muscle (i.e. opposite to a stretch reflex)	http://www.ncbi.nlm.nih.gov/books/NBK10986/figure/A1105/?redirect-on-error=__HOME__

Try to write it in your own words; language you clearly understand will be easier to remember.

Using a spread sheet to create a glossary



Create a glossary using an **Excel** (or equivalent) spread sheet. By using a spread sheet, it is really easy to continually add to the list and find the term you need by using the **sort function** (under the data tab in Excel) to alphabetise the list or run a **find & select** search for a specific term.



You can create your glossary on one worksheet as it is easy to sort or search terms or you can use separate tabs (worksheets) to collectively alphabetise your glossary.

How to use Excel to create a glossary

Create a list in column A of **terms** for the glossary. In column B write the **definition**, column C can provide explanations and examples and column D, links and references to other sources.

When you have a comprehensive list, to make it easy to find things, use the **sort & filter** (or **sort** under the **data tab**) and **find & select** functions to easily seek what you need.

If you are unfamiliar with using excel, try the [Video_Glossary.mp4](#) screencast for some tips.

Developing learning strategies to help remember word and terms



Tip 3

Implement learning strategies to help you remember words and terms

Study strategies

Connect new material with what you already know (terms roots prefix suffix)

Develop your scientific and/or medical vocabulary for your field of study. Generate a list of root terms, prefixes and suffixes. Define each and give examples of scientific or medical words using the term.

Example:

Terms	Examples
Root terms	
chondr = cartilage	osteochondral, costochondral, chondromalacia, chondrocyte
↓ continue list	
Prefix terms:	
hemi = half	hemiparesis, hemicolectomy, hemisphere, hemiplegic
↓ continue list	
Suffix terms:	
ectomy = removal or excision	hemicolectomy, hysterectomy, meniscectomy, appendectomy
↓ continue list	

Use new information in a meaningful context

Apply information in different contexts to aid in comprehensions and recall. Try to represent the material in different ways; do not do the same thing with it each time.

Explain or teach it to others

A good way to check your understanding is to explain the concept (or thing) to someone else in everyday, simple language. Where you stumble or struggle or the person is at a loss to what you are saying, it is likely you do not have a good grasp of that aspect of the concept.

Flash cards

Create flash cards. Write a word or concept on one side of a card and a definition or explanation on the other. Randomly test yourself using these cards.

These strategies are explored in more detail in the **Studying in the sciences resource: Understanding and learning scientific concepts**.

Answers to activities

Activity 1

arteri/o = artery	scler = hard	osis = abnormal condition
Arteriosclerosis is... an abnormal condition of the arteries where they become hardened		

Activity 2

Biceps Brachii: a two headed muscle of the upper arm
Biceps Femoris: a two headed muscle of the thigh

Activity 3

<i>Tri</i> = three	ceps = headed (muscle)	Brachii = arm
Triceps Brachii	is a three headed muscle of the arm	

Other related guides

- Studying in the sciences: Understanding and learning scientific concepts.

Reference

Davies, J. J. (2008). *Essentials of medical terminology*. (3rd ed.). Clifton Park, NY: Thomas Delmar Learning.