

Unit 1 Maintaining Dynamic Equilibrium II (Updated 2013)

The Nervous System

(1) U1 - Brain Anatomy

This diagram with popup labels will help you remember the parts of the brain.

<http://outreach.mcb.harvard.edu/animations/brainanatomy.swf>

<http://www.edumedia-sciences.com/en/a78-human-brain>

<http://www.gwc.maricopa.edu/class/bio201/brain/brshpx.htm>

<http://library.med.utah.edu/WebPath/HISTHTML/NEURANAT/CNS016A.html>

<http://www.garyfisk.com/anim/neuroanatomy.swf>

(2) U1 - Central Nervous System Protection

The first animation highlights the division between CNS and PNS. The next two animations illustrate the protective structures of the central nervous system (CNS): skull, meninges and the cerebrospinal fluid flow.

http://thebrain.mcgill.ca/flash/d/d_01/d_01_cr/d_01_cr_ana/d_01_cr_ana.html#2

<http://202.129.0.134/courses/581/csf.htm>

http://www.newworldencyclopedia.org/entry/Image:Illu_meninges.jpg

(3) U1 - Sympathetic & Parasympathetic Nervous System

This funny animation will help you remember the functions of the sympathetic nervous system (takes the body away from homeostasis) and the parasympathetic nervous system (re-establishes homeostasis).

<http://garyfisk.com/anim/autonomicns.swf>

(4) U1 - Neuron - Unmyelinated VS Myelinated

This animation shows an axon without a myelin covering (slower impulse transmission) and an axon with a myelin covering (faster impulse transmission...saltatory conduction).

<http://faculty.stcc.edu/AandP/AP/AP1pages/nervssys/unit11/saltator.htm>

(5) U1 – Neuron – Neurotransmitter Release

This animation illustrates the release of neurotransmitters at the axon terminal.

<http://www2.uah.es/farmamol/Public/Animaciones/nmj.html>

<http://www.sumanasinc.com/webcontent/animations/content/synapse.html>

(6) U1 – Neuron – Structure Quiz

This animation allows you to label the parts of a neuron.

<http://psych.athabascau.ca/html/Psych289/Biotutorials/1/part2.shtml?sso=true>

(7) U1 – General Reflexes & Knee Jerk Reflex

This animation shows the knee jerk reflex pathway. Note that there is no direct involvement of the brain. The YouTube link is great for a review of some reflexes studied in the lab.

http://www.pennmedicine.org/encyclopedia/em_DisplayAnimation.aspx?gcid=000105&ptid=17

<http://www.sumanasinc.com/webcontent/animations/content/reflexarcs.html>

<http://www.youtube.com/watch?v=kOq5Np0eZ6A&feature=related> (great for lab)

(8) U1 - Neuron Firing (Stages)

This animation illustrates the 3 stages in the operation of a neuron: polarization (at rest), depolarization (firing) and repolarization (recharging). Take a close look at the moving ions and the mV graph below.

<http://www.blackwellpublishing.com/patestas/animations/channel.html>

<http://www.sumanasinc.com/webcontent/animations/content/actionpotential.html>

http://outreach.mcb.harvard.edu/animations/actionpotential_short.swf

(9) U1 - The Synapse

This animation clearly shows the steps in the transmission of an impulse across a synapse.

<http://bcs.whfreeman.com/thelifewire/content/chp44/4403s.swf>

(10) U1 - Multiple Sclerosis

This animation shows the loss of myelin and scarring that occurs on neurons in the brain and spinal cord leading to this condition.

<http://vimeo.com/40420166>

<http://www.youtube.com/watch?v=qgySDmRRzxY>

(11) U1 – Alzheimer’s Disease

This video provides a brief explanation of the cause of Alzheimer's. The second link provides pictures of the physical difference in size of an Alzheimer's brain and an explanation of beta-amyloid plaque & neural tangles.

<http://www.alz.org/brain/08.asp>

http://www.pennmedicine.org/encyclopedia/em_DisplayAnimation.aspx?gcid=000106&ptid=17

(12) U1 – Meningitis

This short video explores meningitis.

<http://www.childhealthguide.com/vid/503>

<http://bacterial-meningitis.weebly.com/pathophysiology.html>

(13) U1 - Huntington’s Disease

This video that explores the cause and one personal story of this disorder.

<http://www.youtube.com/watch?v=rplp3rGzn5Y>

http://www.abpschools.org.uk/page/modules/genome/dna5.cfm?coSiteNavigation_allTopic=1

(14) U1 - CAT Scan

This is a short explanation of how a CAT Scan creates a 3-D image using a X-ray beam rotated in a spiral around the patient. Also view the second link, which explains how a CAT scan works.

<http://health.howstuffworks.com/cat-scan.htm#>

<http://www.medmovie.com/mmdatabase/MediaPlayer.aspx?ClientID=65&TopicID=772>

(15) U1 – MRI

This video animation illustrates how an MRI can provide information that can not be seen with X-rays or other types of imaging.

<http://www.cancercenter.com/video/treatments-technology/mri/>

(16) U1 - PET Scan

Although this animation contains more detail than we have studied, the beginning of the animation illustrates the basics of the PET scan process.

<http://www.sumanasinc.com/webcontent/animations/content/positronemissiontomography.html>

(17) U1 – EEG

This is an animation that shows the various types of brain waves recorded by an EEG.

<http://www.youtube.com/watch?v=BKVv6v-Hd0A>

<http://www.youtube.com/watch?v=M9XVm-ks1ME>

<http://www.youtube.com/watch?v=I3j2VrhqTAA>

(18) U1 – Parkinson’s Disease

This video shows the cause of Parkinson's Disease (death of dopamine producing cells in the brain) and its symptoms.

<http://www.youtube.com/watch?v=koL0PWcj4lo&feature=related>

<http://www.careflash.com/video/parkinsons-disease>

<http://www.umm.edu/patiented/articles/000505.htm>

<http://www.youtube.com/watch?v=7SyTpEdhBLw>

<http://www.youtube.com/watch?v=cFuPLYRtW90>

<http://www.youtube.com/watch?v=goAvrCPnpoe>

(19) U1 – Stroke

This animation explores the causes of stroke and the affect on the body.

<http://www.youtube.com/watch?v=11VhCYp6Ad4&NR=1>

<http://www.nhs.uk/video/pages/Strokeanimation.aspx>

(20) U1 - The Eye – Anatomy

Use this animation to test your knowledge of eye anatomy.

<http://www.purchon.com/biology/eye.htm>

(21) U1 – The Eye - Fovea

Click on “Fovea” for an animation that shows this area of keenest vision. Advance the slides by clicking on the arrow.

<http://www.tutis.ca/NeuroMD/L1Eye/Eye.swf>

(22) U1 - The Eye – Function

Use this animation see how the eye focuses incoming light rays.

<http://www.kscience.co.uk/animations/eye.swf>

http://www.pennmedicine.org/encyclopedia/em_DisplayAnimation.aspx?gclid=000109&ptid=17

http://www.pennmedicine.org/encyclopedia/em_DisplayAnimation.aspx?gclid=000106&ptid=17

(23) U1 - The Eye - Lens Accommodation

This animation illustrates focusing of light rays for near and far objects by accommodation (the changing shape) of the lens.

<http://micro.magnet.fsu.edu/primer/java/humanvision/accommodation/>

<http://www.edumedia-sciences.com/en/a87-the-eye>

(24) U1 – Myopia

This animation depicts myopia and the correction with a concave lens. If the link does not work try typing <http://www.eyequestions.com/Myope.htm> into your browser.

<http://www.eyequestions.com/Myope.htm>

(25) U1 – Hyperopia

This animation shows the defective anatomy of hyperopia.

<http://www.medindia.net/animation/myopia.asp>

(26) U1 – Astigmatism

This animation describes the unequal curvature of the lens that creates astigmatism.

<http://www.laservista.ch/en/forms-of-defective-vision/astigmatism/>

<http://www.muschealth.com/video/Default.aspx?videoId=10034&cId=16&type=rel>

(27) U1 – Glaucoma

This animation shows the damage created by the build up of fluid in the eye humours.

http://www.pennmedicine.org/encyclopedia/em_DisplayAnimation.aspx?gcid=000060&ptid=17

<http://www.glaucoma.org/glaucoma/video-what-is-glaucoma.php>

<http://www.muschealth.com/video/Default.aspx?videoId=10037&cId=16&type=rel>

(28) U1 – Cataracts

This animation shows the development of and the clouding of vision associated with a cataract.

<http://www.doctoroz.com/vp-videos/cataracts-animation>

<http://www.medindia.net/animation/cataract.asp>

<http://www.youtube.com/watch?v=Go82c4f1emc>

http://www.pennmedicine.org/encyclopedia/em_DisplayAnimation.aspx?gcid=000024&ptid=17

(29) U1 – LASIK

This animation is excellent for illustrating the LASIK procedure.

<http://www.youtube.com/watch?v=GaoA4PLb7hc>

<http://www.youtube.com/watch?v=m0L7A8ZUsMg>

(30) U1 – PRK

This animation shows the PRK procedure.

<http://www.ianseyesite.net/refract/prk/anim.html>

(31) U1 - Corneal Transplant

This brief animation illustrates the corneal transplant.

<http://www.southerneyebank.com/html/newsletter.html>

(32) U1 - The Ear

This animation explores the anatomy and function of ear components and how we hear.

http://www.pennmedicine.org/encyclopedia/em_DisplayAnimation.aspx?gcid=000062&ptid=17

http://www.pennmedicine.org/encyclopedia/em_DisplayAnimation.aspx?gcid=000063&ptid=17

<http://www.sumanasinc.com/webcontent/animations/content/soundtransduction.html>

(33) U1 - Ear – Tympanostomy

This video shows tube surgery. A slit is made in the eardrum and a tube is inserted to allow fluid drainage. Select "Tube Surgery Using Micro Cup Forceps".

<http://www.youtube.com/watch?v=iFLRR1j9Ps4>

http://www.handstable.com/ear_surgery.htm

http://www.pennmedicine.org/encyclopedia/em_DisplayAnimation.aspx?gcid=000010&ptid=57

<http://www.youtube.com/watch?v=T0HY4fgejCQ>

The Endocrine System

(1) U1B - Endocrine System - Steroid Hormones and Non-Steroid Hormones

This animation shows the mechanism through which steroid and non-steroid hormones exert their affect on target cells.

http://www.mhhe.com/biosci/esp/2001_gbio/folder_structure/an/m4/s1/anm4s1_6.htm

[http://highered.mcgraw-](http://highered.mcgraw-hill.com/sites/0072507470/student_view0/chapter17/animation_second_messenger_camp.html)

[hill.com/sites/0072507470/student_view0/chapter17/animation_second_messenger_camp.html](http://highered.mcgraw-hill.com/sites/0072507470/student_view0/chapter17/animation_second_messenger_camp.html)

<http://www.learnerstv.com/animation/animation.php?ani=183&cat=biology>

<http://www.wisc-online.com/Objects/ViewObject.aspx?ID=AP13704>

(2) U1B - Endocrine System - Location of Glands

This animation shows the location of most of the endocrine glands that we will discuss. Hit "Quiz". Also try the second link for an excellent site.

<http://www.greenfacts.org/en/endocrine-disruptors/1-2/endocrine-disruptors-1.htm>

(3) U1B - Hypothalamus / Pituitary Connection

These animations show the connection between the nervous and endocrine systems: the hypothalamus / pituitary connection.

http://www.pennmedicine.org/encyclopedia/em_DisplayAnimation.aspx?gcid=000048&ptid=17

<http://www.smbs.buffalo.edu/acb/neuro/images/Pituitary-post.swf>

<http://bcs.whfreeman.com/thelifewire/content/chp42/4202s.swf>

(4) U1B - Endocrine System - Human Growth Hormone (HGH)

This beginning of this animation illustrates the function of HGH and the conditions that result from a loss of homeostasis in its levels.

http://www.pennmedicine.org/encyclopedia/em_DisplayAnimation.aspx?gcid=000099&ptid=17

http://novonordisk.com/images/growth_hormone/flash/gh_aninsidelook_english_branded_new_patients_version/ght.html

(5) U1B - Endocrine System – Oxytocin

This animation shows the effect of oxytocin; uterine muscle contractions and milk letdown. Also view the YOUTUBE link for an interesting study.

<http://www.youtube.com/watch?v=Mv3NzSMOaic&feature=related>

<http://www.cartoonstock.com/directory/o/oxytocin.asp>

http://www.youtube.com/watch?v=7D_dARScDM&feature=related
<http://www.youtube.com/watch?v=DQj-Mn0c370&feature=related>

(6) U1B - Endocrine System – Thyroxine

This animation shows the regulation of thyroxine through a negative feedback loop.

<http://www.vivo.colostate.edu/hbooks/pathphys/endocrine/basics/control.html>

http://medindia.healthology.com/hybrid/hybrid-autodetect.aspx?content_id=3085&focus_handle=thyroid-health&brand_name=medindia
(hyperthyroidism)

<http://www.muschealth.com/video/Default.aspx?videoId=10158&cId=5&type=rel>
(hyper & hypothyroidism)

<http://www.biologyinmotion.com/thyroid/thyroid.swf>
(goiter)

<http://wockhardthospitals.files.wordpress.com/2009/08/goiter.jpg>
(goiter)

(7) U1B - Endocrine System - Calcitonin & PTH

This animation shows the affects of two antagonistic hormones that control blood calcium levels; calcitonin from the thyroid and parathyroid hormone (PTH) from the parathyroid gland.

<http://bcs.whfreeman.com/thelifewire/content/chp42/4202003.html>

(8) U1B - Endocrine System - Insulin & Glucagon

This animation explores the role of these antagonistic hormones secreted from the Islet tissue of the pancreas in controlling blood glucose level.

<http://www.abpischools.org.uk/page/modules/hormones/horm6.cfm>

<http://www.medmovie.com/mmdatabase/MediaPlayer.aspx?ClientID=65&TopicID=923>

http://www.youtube.com/watch?v=jkioZCDHT_E&list=PL7A750281106CD067&index=40&feature=plpp_video

(9) U1B - Endocrine System – Insulin

This animation shows how insulin increases the permeability of the cell to glucose.

http://www.vivo.colostate.edu/hbooks/pathphys/endocrine/pancreas/insulin_phys.html

(10) U1B – Endocrine System – Interview with Charles Best

Listen to this CBC interview of Dr. Charles Best from 1977, which reviews the research leading up to the discovery of insulin.

<http://www.cbc.ca/archives/categories/health/medical-research/chasing-a-cure-for-diabetes/banting-and-best-develop-the-miracle-drug.html>

(11) U1B – Endocrine System – Melatonin (Pineal Gland)

View this YOUTUBE video that shows the GoLite. This type of light therapy is used for treatment of Seasonal Affective Disorder (SAD) associated with high levels of melatonin. This

disorder has been proven to be more prominent in areas furthest away from the equator with low average solar energy.

<http://www.youtube.com/watch?v=oqzeNenz34>

<http://www.youtube.com/watch?v=cBfxx7Rub5A&feature=related>

<http://www.webmd.com/video/seasonal-affective-disorder-one-womans-struggle>

(12) U1B - Endocrine System - Thymosin (Thymus Gland)

Click on "Learn all about the thymus gland" and read this interesting info.

<http://www.becomehealthynow.com/article/bodyimmune/961/>

(13) U1B - Endocrine System – Adrenaline & Cortisol (Adrenal Glands)

This animation highlights two hormones secreted from the adrenal glands: adrenaline from the adrenal medulla and cortisol from the adrenal cortex.

http://www.pennmedicine.org/encyclopedia/em_DisplayAnimation.aspx?gcid=000051&ptid=17

<http://www.wisc-online.com/Objects/ViewObject.aspx?ID=AP13804>

(14) U1B – Endocrine System – Androgens and Estrogens (Testes & Ovaries)

This animation explores the role of androgens and estrogens in the development of the secondary sex characteristics (the changes that accompany puberty).

<http://www.bbc.co.uk/science/humanbody/body/interactives/lifecycle/teenagers/>

(15) For Fun & Review

http://kidshealth.org/PageManager.jsp?lic=1&article_set=59297&cat_id=20607

http://www.youtube.com/watch?v=-S_vQZDH9hY&feature=related