Unit 1 Maintaining Dynamic Equilibrium II
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

(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://itc.gsw.edu/faculty/gfisk/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://www.blackwellpublishing.com/matthews/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 - 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.brainviews.com/abFiles/AniPatellar.htm
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/matthews/channel.html
http://www.sumanasinc.com/webcontent/animations/content/actionpotential.html

(9) U1 - The Synapse
This animation clearly shows the steps in the transmission of an impulse across a synapse.
http://www.tvdsb.on.ca/westmin/science/sbioac/homeo/synapse.htm

(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://www.msif.org/en/about_ms/demyelination.html
http://csvi-ms.net/en

(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

(12) U1 – Meningitis
This short video explores the cause of meningitis and the 2 types. To activate please click on the 3-D animation window.
http://www.virtualneurocentre.com/diseases.asp?did=162

(13) U1 - Huntington's Disease
This video that explores the cause and one personal story of this disorder.
http://myspacetv.com/index.cfm?fuseaction=vids.individual&videoid=7029293

(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.spineuniverse.com/videos/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=M9XVm-ks1ME

(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.
https://www.parkinsonshealth.com/parkinsons-disease-video.ashx
http://www.mypdinfo.com/en/background_on_pd/what_causes_pd/

(19) U1 – Stroke
This animation explores the causes of stroke and the affect on the body.
http://www.youtube.com/watch?v=M_fo6ytlmD0

(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 "Intro" for an animation that shows this area of keenest vision.
http://www.physpharm.fmd.uwo.ca/undergrad/sensesweb/L11EyeMovements/L11EyeMovements.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

(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://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.improveyourvision.com/understanding-vision/problems-diseases/astigmatism.html

(27) U1 – Glaucoma
This animation shows the damage created by the build up of fluid in the eye humours.
http://video.aol.com/video-detail/glaucoma-animation/2720190377

(28) U1 – Cataracts
This animation shows the development of and the clouding of vision associated with a cataract.
http://www.medindia.net/animation/cataract.asp
http://drtayfour.com/catsurg.html

(29) U1 – LASIK
Although this animation is not in English, it is excellent for illustrating the LASIK procedure.
http://www.euroeyes.com/laserchirurgie/lasik.htm

(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://health.howstuffworks.com/adam-200010.htm
http://video.about.com/deafness/Cochlear-Implants.htm

(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.handstable.com/ear_surgery.htm

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-hill.com/sites/0072507470/student_view0/chapter17/animation__second_messenger__camp.html
http://www.learnerstv.com/animation/animation.php?ani=183&cat=biology

(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://trc.ucdavis.edu/biosci10v/bis10v/media/ch26/endocrine_glands_v2.swf
http://www.greenfacts.org/en/endocrine-disruptors/l-2/endocrine-disruptors-1.htm
http://kuwaitmd.hsc.edu.kw/main/index.php?q=node/765

(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

(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://trc.ucdavis.edu/biosci10v/bis10v/media/ch26/posterior_pituitary.html
http://www.youtube.com/watch?v=Mv3NzSMOaic&feature=related
http://www.cartoonstock.com/directory/o/oxytocin.asp

(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.virtualcancercentre.com/humanatlas1/vmc_white.asp?anid=0091

(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
http://trc.ucdavis.edu/biosci10v/bis10v/media/ch26/parathyroid.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://trc.ucdavis.edu/biosci10v/bis10v/media/ch26/pancreatic_hormones.html
http://www.medmovie.com/mmdatabase/MediaPlayer.aspx?ClientID=65&TopicID=923

(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://archives.cbc.ca/health/medical_research/clips/4060/

(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=oqzeNenzt34
http://www.youtube.com/watch?v=XoyXcbPZTgo&feature=related
http://www.youtube.com/watch?v=cBfxx7Rub5A&feature=related

(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. The second animation shows how cortisol

levels are regulated through a negative feedback loop.
http://health.howstuffworks.com/adam-200053.htm
http://trc.ucdavis.edu/biosci10v/bis10v/media/ch26/cortisol.html

(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) Good Review
http://www.youtube.com/watch?v=1IQQPtyE7Lc
http://www.allthingsscience.com/video/664/Anatomy-Endocrine-System