

Video Guide

to accompany

Animal Physiology, Fifth Edition

Hill • Cavanaugh • Anderson



[Please read the disclaimers at the bottom of this list.]

Chapter 1

Animals and Environments Function on the Ecological Stage

Evolutionary processes:

https://www.youtube.com/watch?v=vyPvo_7tXLM&ab_channel=JeffCarmichael

Chapter 2

Molecules and Cells in Animal Physiology

Membranes and transport:

https://www.youtube.com/watch?v=dPKvHrD1eS4&ab_channel=CrashCourse

Cell membrane introduction:

https://www.youtube.com/watch?v=QpcACa39YtA&ab_channel=khanacademymedicine

Epithelial Tissue:

https://www.youtube.com/watch?v=IUe_RI_m-Vg&ab_channel=CrashCourse

Types of Epithelial Tissue:

https://www.youtube.com/watch?v=P3714_a3l0w&ab_channel=Don%27tMemorise

What are Enzymes:

https://www.youtube.com/watch?v=ozdO1mLXBQE&ab_channel=FreeMedEducation

Proteins:

https://www.youtube.com/watch?v=HSCUAjZQhXI&ab_channel=Osmosis

Chapter 3

Genomics, Proteomics, and Related Approaches to Physiology

What is Genomics:

https://www.youtube.com/watch?v=mmgIClq0Y1k&ab_channel=GenomeBC

What is cellular transcriptomics?:

https://www.youtube.com/watch?v=M9mzXlrCOI8&ab_channel=GarvanInstituteofMedicalResearch

What is Proteomics?:

https://www.youtube.com/watch?v=qccwEfX8y0o&ab_channel=MedicalSciencesAnimations

Metabolomics Explained:

https://www.youtube.com/watch?v=eCNyj5PzJQU&ab_channel=Explified

Chapter 4

Physiological Development and Epigenetics

Phenotype plasticity:

https://www.youtube.com/watch?v=Mh3QXbVU6Eo&ab_channel=KhanAcademy

Mosquito life cycle:

https://www.youtube.com/watch?v=wFfO7f8Vr9c&ab_channel=IlseKnatzOrtabasi

What is epigenetics?:

https://www.youtube.com/watch?v=aAhcNjmvhc&ab_channel=TED-Ed

Chapter 5

Transport of Solutes and Water

Diffusion:

https://www.youtube.com/watch?v=jhszFBtBPoI&ab_channel=AmoebaSisters

Simple Diffusion:

https://www.youtube.com/watch?v=a_Y9wBQ610o&ab_channel=KhanAcademy

Facilitated diffusion:

https://www.youtube.com/watch?v=8HIVy_J8XA&ab_channel=KhanAcademy

Active Transport:

https://www.youtube.com/watch?v=2-icEADP0J4&ab_channel=Teacher%27sPet

Freshwater fish vs seawater fish ion regulation - Animal Physiology:

https://www.youtube.com/watch?v=Dtsen_YNwVk&ab_channel=AnimalPhysiology

Chapter 6

Nutrition, Feeding, and Digestion

Animal Nutrition - IGCSE Biology:

https://www.youtube.com/watch?v=o2w2F8KJkk4&ab_channel=SenseBusinessStudies

Feeding Methods (marine organisms):

https://www.youtube.com/watch?v=Bz22Lf2BAEI&ab_channel=EarthRocks%21

Your Gut Microbiome: The Most Important Organ You've Never Heard Of:

https://www.youtube.com/watch?v=B9RruLkAUm8&ab_channel=TEDxTalks

Insect digestive and excretory systems:

https://www.youtube.com/watch?v=5ldSruWQG5k&ab_channel=LarryKeeley

Chapter 7

Energy Metabolism

The Second Law of Thermodynamics:

https://www.youtube.com/watch?v=WTtxlaeC9PY&ab_channel=Lesics

Calorimetry:

https://www.youtube.com/watch?v=SAR-5wdQKSY&ab_channel=BozemanScience

Metabolic Scaling:

https://www.youtube.com/watch?v=ofbwFY9noZA&ab_channel=ComplexityExplorer

Chapter 8

Aerobic and Anaerobic Forms of Metabolism

Mechanism of ATP/ADP Cycle:

https://www.youtube.com/watch?v=QfnQdzO6Nac&ab_channel=HussainBiology

Making ATP with or without O₂:

https://www.youtube.com/watch?v=6sGNuamPfls&ab_channel=KathyPapastephanou

Aerobic and Anaerobic Catabolism During Exercise:

https://www.youtube.com/watch?v=vqnfAqSldQs&ab_channel=JustinJimmy

How Do Marine Mammals Hold Their Breath For So Long?:

https://www.youtube.com/watch?v=UGhim3Gch2Q&ab_channel=SciShow

Chapter 9

The Energetics of Aerobic Activity

VO₂ and Oxygen Consumption Explained for Beginners:

https://www.youtube.com/watch?v=A3YK_-8PrZw&ab_channel=Corporis

Energy Metabolism PART 4 Aerobic Metabolism and Body Size:

https://www.youtube.com/watch?v=4HA1ioADCMk&ab_channel=PaulHeideman

The Amazing Life Cycle of the European Eel:

https://www.youtube.com/watch?v=WBRnNk_uo9Y&ab_channel=ZSL-ZoologicalSocietyofLondon

Chapter 10

Thermal Relations

Heat Transfer [Conduction, Convection, and Radiation]:

https://www.youtube.com/watch?v=kNZi12OV9Xc&ab_channel=MikeSammartano

Physics - Heat Transfer - Thermal Radiation:

https://www.youtube.com/watch?v=5GoZZKcNZiQ&ab_channel=expertmathstutor

Poikilothermy & How it is achieved? Cold Blooded or Warm Blooded:

https://www.youtube.com/watch?v=S-VMHUuhU-0&ab_channel=HussainBiology

Thermoregulation in Birds:

https://www.youtube.com/watch?v=IV2D6YA48BU&ab_channel=PetraPandurevic

Temperature Regulation Of The Human Body:

https://www.youtube.com/watch?v=vJhsyS4ITW0&ab_channel=FuseSchool-GlobalEducation

Meet the bluefin tuna, the toughest fish in the sea:

https://www.youtube.com/watch?v=WA_jlj_w12U&ab_channel=TED-Ed

Chapter 11

Food, Energy, and Temperature At Work: The Lives of Mammals in Frigid Places

Mechanism of Non-Shivering Thermogenesis:

https://www.youtube.com/watch?v=A7AEQP5LbrM&ab_channel=HussainBiology

How an Arctic Squirrel Survives Winter:

https://www.youtube.com/watch?v=5Afcf_A6aY&ab_channel=BBCEarth

How does hibernation work?:

https://www.youtube.com/watch?v=xptpXSTtgSY&ab_channel=TED-Ed

Chapter 12

Neurons

Endocrine System vs. Nervous system:

https://www.youtube.com/watch?v=b6m35PIH7t8&ab_channel=DrMatt%26DrMike

Cells of the Nervous System (Neurons and Glia):

https://www.youtube.com/watch?v=yT9Ad01oUgc&ab_channel=DrMatt%26DrMike

The Membrane Potential: Ionic Basis of the Resting Membrane Potential:

https://www.youtube.com/watch?v=vYcAHamelGw&ab_channel=PeteMeighan

The Action Potential:

https://www.youtube.com/watch?v=HYLyhXRp298&ab_channel=BozemanScience

Anatomy and Physiology - Action Potential Generation and Propagation:

https://www.youtube.com/watch?v=RZLR4ri_LTg&ab_channel=INTELECOM

Chapter 13

Synapses

The Synapse:

https://www.youtube.com/watch?v=L41TYxYUqqs&ab_channel=BozemanScience

Types of neurotransmitters:

https://www.youtube.com/watch?v=FXYX_ksRwlk&ab_channel=khanacademymedicine

Types of neurotransmitter receptors:

https://www.youtube.com/watch?v=yg44T2HcA2o&ab_channel=khanacademymedicine

Neurotransmitters | Nervous System:

https://www.youtube.com/watch?v=qJXZD2gaLMU&ab_channel=DrMatt%26DrMike

Chemical Signalling & Post Synaptic Receptors:

https://www.youtube.com/watch?v=xV4wc4Qb0Rw&ab_channel=SotonBrainHub

Synaptic plasticity:

https://www.youtube.com/watch?v=tfifTUYuAYU&ab_channel=BrainsExplained

Long term potentiation and synaptic plasticity:

https://www.youtube.com/watch?v=uVQXZudZd5s&ab_channel=khanacademymedicine

Chapter 14

Sensory Processes

Types of Sensory Receptors:

https://www.youtube.com/watch?v=AG7Ev2hJGFk&ab_channel=DrMatt%26DrMike

2-Minute Neuroscience: Touch Receptors:

https://www.youtube.com/watch?v=vF80u3qJkkQ&ab_channel=NeuroscientificallyChallenged

2-Minute Neuroscience: Vestibular System:

https://www.youtube.com/watch?v=P3aYqxGesqs&ab_channel=NeuroscientificallyChallenged

The vestibular system, balance, and dizziness:

https://www.youtube.com/watch?v=1AZnFszUrol&ab_channel=khanacademymedicine

The Vomeronasal Organ, Pheromones, & Mating Behavior:

https://www.youtube.com/watch?v=7ROBgvzmlE&ab_channel=CatalystUniversity

2-Minute Neuroscience: Phototransduction:

https://www.youtube.com/watch?v=dhd2fja0LZ4&ab_channel=NeuroscientificallyChallenged

Visual sensory information | Processing the Environment:

https://www.youtube.com/watch?v=3m-464MqBJY&ab_channel=khanacademymedicine

Chapter 15

Nervous System Organization and Biological Clocks

Structure of the nervous system:

https://www.youtube.com/watch?v=jmD0LBdAvIE&ab_channel=khanacademymedicine

Circadian Rhythm and Your Brain's Clock:

https://www.youtube.com/watch?v=UbQ0RxQu2gM&ab_channel=SciShow

Biological Clocks and the Rhythm of Life:

https://www.youtube.com/watch?v=XzydOfCFk6c&ab_channel=NatureLeague

Chapter 16

Endocrine and Neuroendocrine Physiology

Hormone concentration metabolism and negative feedback:

https://www.youtube.com/watch?v=RycF0ub2AI0&ab_channel=khanacademymedicine

Endocrine System, Part 1 - Glands & Hormones:

https://www.youtube.com/watch?v=eWHH9je2zG4&ab_channel=CrashCourse

Endocrine gland hormone review:

https://www.youtube.com/watch?v=ER49EweKwW8&ab_channel=khanacademymedicine

Responding to stress | Processing the Environment:

https://www.youtube.com/watch?v=rj6u2SldEeg&ab_channel=khanacademymedicine

Pheromones | Processing the Environment:

https://www.youtube.com/watch?v=EO4_vu9luNk&ab_channel=khanacademymedicine

Hormonal Control of Metamorphosis in Insects:

https://www.youtube.com/watch?v=TzN0i9OiAQ8&ab_channel=HussainBiology

Chapter 17

Reproduction

Reproduction: Crash Course Zoology:

https://www.youtube.com/watch?v=poLyJDVjKIM&ab_channel=CrashCourse

Some Mammals Can Just... Pause Pregnancy:

https://www.youtube.com/watch?v=LaXnfhlXEqY&ab_channel=SciShow

Human Physiology - Reproduction: Sex Determination and Differentiation:

https://www.youtube.com/watch?v=VKQLtgBWQ9Q&ab_channel=Janux

Welcome to the reproductive system:

https://www.youtube.com/watch?v=jRYEqOOrjH8&ab_channel=khanacademymedicine

Chapter 18

Integrating Systems At Work: Animal Navigation

How Do Animals Find Their Way Home Without GPS?:

https://www.youtube.com/watch?v=5qHRxvlqHWw&ab_channel=Seeker

How Ants Sniff Out Food:

https://www.youtube.com/watch?v=N8rGEiHI52c&ab_channel=TheNewYorkTimes

Turtle GPS:

https://www.youtube.com/watch?v=eU4mTAaWb6k&ab_channel=NationalScienceFoundation

Chapter 19

Control of Movement: The Motor Bases of Animal Behavior

Motor Units: Where Nerve Meets Muscle:

https://www.youtube.com/watch?v=qTt_2oPI2kk&ab_channel=Corporis

The Structure and Function of the Muscle Spindle Fiber:

https://www.youtube.com/watch?v=F0dp7A4IKyY&ab_channel=AndySchulte

Locust flight:

https://www.youtube.com/watch?v=MYtXUVf74zA&ab_channel=TheConversation

Salamandra Robotica II Robot Walking and Swimming:

https://www.youtube.com/watch?v=g9Y21XuyMbM&ab_channel=PaulStrauss

2-Minute Neuroscience: Motor Cortex:

https://www.youtube.com/watch?v=APuiZCxDnTA&ab_channel=NeuroscientificallyChallenged

Chapter 20

Muscle

Muscles, Part1 - Muscle Cells: Crash Course:

https://www.youtube.com/watch?v=Ktv-CaOt6UQ&ab_channel=CrashCourse

How do fish make electricity:

https://www.youtube.com/watch?v=z0M7_HPSi14&ab_channel=TED-Ed

Muscles Animal Anatomy:

https://www.youtube.com/watch?v=AwWG4-J7K5M&ab_channel=GregKelly

Invertebrate Muscle Innervation:

https://www.youtube.com/watch?v=swBruW7Wc7c&ab_channel=LarryKeeley

Chapter 21

Movement and Muscle At Work: Plasticity in Response to Use and Disuse

Colin Jackson's leg biopsy - The Making of Me:

https://www.youtube.com/watch?v=j-mHQACvZfc&ab_channel=BBCStudios

Mitochondrial Density Explained:

https://www.youtube.com/watch?v=wsAZxtbG7bA&ab_channel=TheMovementSystem

Muscle atrophy:

https://www.youtube.com/watch?v=oOaoCi0vB3Q&ab_channel=EuropeanSpaceAgency%20CESA

I GOT THE HERCULES GENE - Myostatin Deficiency:

https://www.youtube.com/watch?v=CwawKd2DKLA&ab_channel=LondonReal

Chapter 22

Introduction to Oxygen and Carbon Dioxide Physiology

Nature's Scuba Divers: How Beetles Breathe Underwater:

https://www.youtube.com/watch?v=T-RtG5Z-9jQ&ab_channel=DeepLook

Transportation of Gases:

https://www.youtube.com/watch?v=HI-R8uAh2fI&ab_channel=Don%27tMemorise

Chapter 23

External Respiration: The Physiology of Breathing

External respiration:

https://www.youtube.com/watch?v=CaRxDUAOo8E&ab_channel=PreliminaryPDHPE

Gas Exchange in Different Animals:

https://www.youtube.com/watch?v=LXGG-HgtJol&ab_channel=FuseSchool-GlobalEducation

Fish Respiration:

https://www.youtube.com/watch?v=2kjL9BV3SA&ab_channel=BOGOBiology

The Lung Fish | Nile:

https://www.youtube.com/watch?v=s0JdbWwLWgQ&ab_channel=BBCEarth

Respiratory Organs In Amphibians:

https://www.youtube.com/watch?v=Nfojq4ikHH0&ab_channel=TutorVista

Reptiles' Breathing Hack Helped Birds Dominate the Air:

https://www.youtube.com/watch?v=xXuWi_ODAqo&ab_channel=SciShow

The Avian Respiratory System:

https://www.youtube.com/watch?v=kWMmyVu1ueY&ab_channel=KellyKage

Breathing in insects (mantis):

https://www.youtube.com/watch?v=EALjuKSd2GU&ab_channel=OVDTHIMO

Chapter 24

Transport of Oxygen and Carbon Dioxide in Body Fluids

Types of respiratory pigments:

https://www.youtube.com/watch?v=bynta8TCA08&ab_channel=ScienceofBiology

Haematology - Red Blood Cell Life Cycle:

https://www.youtube.com/watch?v=cATQFej6oAc&ab_channel=ArmandoHasudungan

Oxygen's surprisingly complex journey through your body:

https://www.youtube.com/watch?v=GVU_zANtroE&ab_channel=TED-Ed

The Bohr Effect:

https://www.youtube.com/watch?v=n0MMzv0NITw&ab_channel=medikatie

Factors Shifting Oxygen Hemoglobin Dissociation Curve:

https://www.youtube.com/watch?v=ejVMm0VFq5c&ab_channel=NonstopNeuron

Respiratory Response To High Altitude:

https://www.youtube.com/watch?v=6KHQGS4jJyI&ab_channel=ByteSizeMed

Chapter 25

Circulation

How the heart actually pumps blood:

https://www.youtube.com/watch?v=ruM4Xxhx32U&ab_channel=TED-Ed

Cardiovascular System Overview, Animation:

https://www.youtube.com/watch?v=28CYhgjrBLA&ab_channel=AlilaMedicalMedia

Circulatory System in Fish:

https://www.youtube.com/watch?v=6m_6O1cFFb0&ab_channel=MohammadAmier

Insect circulatory system:

https://www.youtube.com/watch?v=KCC_FrbuR3U&ab_channel=LarryKeeley

Chapter 26

Oxygen, Carbon Dioxide, and Internal Transport At Work: Diving by Marine Mammals

Into the Deep with Elephant Seals:

https://www.youtube.com/watch?v=gQRGHjmoq-s&ab_channel=KQED

How Marine Mammals Survive Underwater Life | BBC Studios:

https://www.youtube.com/watch?v=UYkiRbgiwx0&ab_channel=BBCStudios

Oxygen stores and aerobic dive limit:

https://www.youtube.com/watch?v=ASTnz1Ujj_0&ab_channel=JordiAltimiras

Chapter 27

Water and Salt Physiology: Introduction and Mechanisms

Water balance in the body:

https://www.youtube.com/watch?v=ezDJ1GSXI4s&ab_channel=FuseSchool-GlobalEducation

Osmoregulation:

https://www.youtube.com/watch?v=qfWx8msgHqM&ab_channel=BozemanScience

What is Metabolic Water??? How much water is formed from Carbohydrates, Fats & Proteins in humans:

https://www.youtube.com/watch?v=GqZL-mtuVew&ab_channel=biochemistryCONCEPTS

Kangaroo Rat Live Without Drinking Water:

https://www.youtube.com/watch?v=CJADsyQ5CTE&ab_channel=iLM

Chapter 28

Water and Salt Physiology of Animals in Their Environments

Hypotonic, isotonic, and hypertonic solutions (tonicity):

https://www.youtube.com/watch?v=afWnU10ZNfg&ab_channel=KhanAcademy

20 Second Story of Osmosis - Freshwater Fish:

https://www.youtube.com/watch?v=D3voCy12AnY&ab_channel=MaryClareBernal

Comparison of Salt Glands in Marine Animals:

https://www.youtube.com/watch?v=WZCGRAPN3wM&ab_channel=KimberlyRenee

An Amazing Adaptation: the Supraorbital Gland:

https://www.youtube.com/watch?v=NUJ1PtcKagI&ab_channel=TheCenterforEcosystemSentinels

Can Saltwater Fish Live in Freshwater and Vice Versa:

https://www.youtube.com/watch?v=FjvSWqsTof0&ab_channel=Fisholover

Which Animals Beat the Heat?:

https://www.youtube.com/watch?v=5po9SdBNTJw&ab_channel=NatGeoWILD

Desert Amphibians:

https://www.youtube.com/watch?v=aZfNwHhfpEA&ab_channel=ArizonaGameAndFish

Chapter 29

Kidneys and Excretion (with Notes on Nitrogen Excretion)

How do your kidneys work?:

https://www.youtube.com/watch?v=FN3MFhYPWWo&ab_channel=TED-Ed

Discuss The Excretory System Of Frog & Its Structure & Function:

https://www.youtube.com/watch?v=kfM1iBJcrE&ab_channel=StudioBiology

Formation of Urine - Nephron Function, Animation:

https://www.youtube.com/watch?v=9_h0ZXx1IFw&ab_channel=AlilaMedicalMedia

Excretory system in insects:

https://www.youtube.com/watch?v=Kn-JcVc-Cv4&ab_channel=VeereshTutorial

Nitrogenous Wastes:

https://www.youtube.com/watch?v=NxfVLipnvno&ab_channel=InstructorMaryChristie%3ABiology

Chapter 30

Water, Salts, and Excretion At Work: Mammals of Deserts and Dry Savannas

The Serengeti Wildebeest Migration Explained:

https://www.youtube.com/watch?v=aGNn9vOz-Vo&ab_channel=ExpertAfrica

How This Beetle Could Help Solve Our Water Crisis:

https://www.youtube.com/watch?v=lofIT3Uvels&ab_channel=ScienceInsider

How the Desert Oryx Stops Its Brain From Frying:

https://www.youtube.com/watch?v=JJuwFwq1WI4&ab_channel=SmithsonianChannel

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