

Movie Links *Molecular Biology of the Cell*

Chapter 1: Cells and Genomes

1.1 Keratocyte Dance

<https://vimeo.com/garlandscience30308032/review/136866751/aa688d058d>

1.2 Mitochondrial Tomography

<https://vimeo.com/garlandscience30308032/review/137523035/f24a65d804>

1.4 Crawling Amoeba

<https://vimeo.com/garlandscience30308032/review/136867266/df9e515bbf>

1.5 Swimming Eutreptiella

<https://vimeo.com/garlandscience30308032/review/136867275/1a7b071ac4>

1.6 Embryonic Cell-Division

<https://vimeo.com/garlandscience30308032/review/137523673/de7f0f32dd>

Chapter 2: Cell Chemistry and Bioenergetics

2.1 Noncovalent Interactions

<https://vimeo.com/garlandscience30308032/review/136760804/aa8e64ce02>

2.2 Analogy of Enzyme Catalysis

<https://vimeo.com/garlandscience30308032/review/136760815/5011239934>

2.3 Brownian Motion

<https://vimeo.com/garlandscience30308032/review/136867382/328a0766e5>

2.5 Glycolysis

<https://vimeo.com/garlandscience30308032/review/137182991/8dfba80603>

2.6 Citric Acid Cycle

<https://vimeo.com/garlandscience30308032/review/136760834/f8eb30fa64>

Chapter 3: Proteins

3.1 Viewing Proteins SH2

<https://vimeo.com/garlandscience30308032/review/136648975/456ddec4fa>

3.2 Alpha Helix

<https://vimeo.com/garlandscience30308032/review/136649010/3996445b52>

3.3 beta Sheet

<https://vimeo.com/garlandscience30308032/review/136649090/78c996404e>

3.4 Coiled Coil

<https://vimeo.com/garlandscience30308032/review/136649229/4210cabaf6>

3.5 Proline Kinks

<https://vimeo.com/garlandscience30308032/review/137375772/1c6ef3421f>

3.6 Oligomeric Proteins

<https://vimeo.com/garlandscience30308032/review/136649849/e5c65259ca>

3.7 Disulfide Bonds

<https://vimeo.com/garlandscience30308032/review/136649299/4d73804a25>

3.8 Lysozyme Structure

<https://vimeo.com/garlandscience30308032/review/136649480/3fd05d3920>

3.9 Lysozyme Reaction

<https://vimeo.com/garlandscience30308032/review/136760864/affbf0e388>

3.10 Aspartate Transcarbamylase

<https://vimeo.com/garlandscience30308032/review/136652227/b7f52f76ef>

3.11 Src Activation

<https://vimeo.com/garlandscience30308032/review/136718549/2fe8bc7514>

3.12 EF-Tu

<https://vimeo.com/garlandscience30308032/review/137482675/2669943e0c>

3.13 The Safe Crackers

<https://vimeo.com/garlandscience30308032/review/136760877/bc8400166f>

Chapter 4: DNA, Chromosomes, and Genomes

4.1 DNA Structure

<https://vimeo.com/garlandscience30308032/review/136649278/a688484b76>

Chapter 5: DNA Replication, Repair, and Recombination

5.1 DNA Polymerase

<https://vimeo.com/garlandscience30308032/review/137183728/eddf86de2d>

5.3 Sliding Camp

<https://vimeo.com/garlandscience30308032/review/136719520/e79cf93d83>

5.5 Replication II

<https://vimeo.com/garlandscience30308032/review/136760934/fc266deef0>

5.6 Telomere Replication

<https://vimeo.com/garlandscience30308032/review/136760935/17e4f5fc40>

Chapter 6: How Cells Read the Genome: From DNA to Protein

6.1 RNA Structure

<https://vimeo.com/garlandscience30308032/review/136719493/1f964ab019>

6.3 RNA Polymerase II

<https://vimeo.com/garlandscience30308032/review/136719892/219c567752>

6.4 TATA Binding Protein

<https://vimeo.com/garlandscience30308032/review/136719927/6728c9e0c2>

6.5 RNA Splicing

<https://vimeo.com/garlandscience30308032/review/136761163/49cad5c6a5>

6.6 tRNA

<https://vimeo.com/garlandscience30308032/review/136720013/5770448f75>

6.7 Translation I

<https://vimeo.com/garlandscience30308032/review/137484656/7f042780e0>

6.8 Translation Atomic View

<https://vimeo.com/garlandscience30308032/review/136936066/715b364270>

6.9 Translation II

<https://vimeo.com/garlandscience30308032/review/136760963/28141cdbdb>

6.10 Polyribosome

<https://vimeo.com/garlandscience30308032/review/136761035/f0a72ee857>

Chapter 7: Control of Gene Expression

7.1 Homeodomain

<https://vimeo.com/garlandscience30308032/review/136726958/e6c3c9e5d2>

7.2 Leucine Zipper

<https://vimeo.com/garlandscience30308032/review/136727383/f98c7a9dec>

7.3 Zinc Finger Domain

<https://vimeo.com/garlandscience30308032/review/136727763/44da129432>

Chapter 8: Analyzing Cells, Molecules, and Systems

8.1 Anatomy of a PDB-File

<https://vimeo.com/garlandscience30308032/review/137482642/0799ecbad3>

8.2 Polymerase Chain Reaction

<https://vimeo.com/garlandscience30308032/review/136760991/95952c1057>

Chapter 9: Visualizing Cells

9.2 Tomography Cell Compartments

<https://vimeo.com/garlandscience30308032/review/137248601/3fc8ba66b1>

9.3 Hair Cells I

<https://vimeo.com/garlandscience30308032/review/136867240/ffd7bb977a>

Chapter 10: Membrane Structure

10.1 Lipids and Lipid Bilayer

<https://vimeo.com/garlandscience30308032/review/136727525/542a3feb80>

10.2 Fluidity of the Lipid Bilayer

<https://vimeo.com/garlandscience30308032/review/136867020/4862593e92>

10.4 Membrane Disruption by Detergent

<https://vimeo.com/garlandscience30308032/review/136867329/0827620a71>

10.5 Bacteriorhodopsin

<https://vimeo.com/garlandscience30308032/review/136728199/39a52e41ec>

10.6 FRAP

<https://vimeo.com/garlandscience30308032/review/137253496/271441a8df>

10.7 Membrane Effects in a Red Blood Cell

<https://vimeo.com/garlandscience30308032/review/136868426/e110982b7e>

Chapter 11: Membrane Transport of Small Molecules and the Electrical Properties of Membranes

11.1 Transport by Carrier Proteins

<https://vimeo.com/garlandscience30308032/review/136761263/1a4d950951>

11.2 Glucose Uptake

<https://vimeo.com/garlandscience30308032/review/136761038/118e586256>

11.3 Ca²⁺ Pump

<https://vimeo.com/garlandscience30308032/review/136842154/1fd2c504d0>

11.4 Na⁺ K⁺ Pump

<https://vimeo.com/garlandscience30308032/review/137509638/53e1a65dce>

11.5 MDR Transporter

<https://vimeo.com/garlandscience30308032/review/136842560/f55845bf7c>

11.6 Aquaporins

<https://vimeo.com/garlandscience30308032/review/137509641/89bd28a6da>

11.7 Mimosa

<https://vimeo.com/garlandscience30308032/review/136842703/97faa02bed>

11.8 K⁺ Channel

<https://vimeo.com/garlandscience30308032/review/137509639/a793fca6c7>

11.9 Hair Cells II

<https://vimeo.com/garlandscience30308032/review/137509640/b2f2538b72>

11.10 Action Potentials

<https://vimeo.com/garlandscience30308032/review/136761039/db42fb369b>

11.11 Optogenetics

<https://vimeo.com/garlandscience30308032/review/136761063/fb90987c59>

11.12 Synaptic Signaling

<https://vimeo.com/garlandscience30308032/review/136761066/c37485d822>

Chapter 12: Intracellular Compartments and Protein Sorting

12.1 Nuclear Import

<https://vimeo.com/garlandscience30308032/review/137483068/54a3556515>

12.2 Nuclear Envelope Assembly

<https://vimeo.com/garlandscience30308032/review/137482665/472b6d8a00>

12.3 Mitochondrial Protein Import

<https://vimeo.com/garlandscience30308032/review/136842103/9a74301326>

12.4 ER Tubules

<https://vimeo.com/garlandscience30308032/review/136867321/4f9dd50432>

12.5 Protein Translocation

<https://vimeo.com/garlandscience30308032/review/136842263/5243661bf5>

12.6 Unfolded Protein Response

<https://vimeo.com/garlandscience30308032/review/136842484/65244b313d>

Chapter 13: Intracellular Membrane Traffic

13.1 Clathrin

<https://vimeo.com/garlandscience30308032/review/137383214/935bc51e0a>

13.2 Constitutive Secretory Pathway

<https://vimeo.com/garlandscience30308032/review/136868450/bb714f4582>

13.3 Receptor Mediated Endocytosis

<https://vimeo.com/garlandscience30308032/review/136842193/aa462314bb>

13.4 Endosome Fusion

<https://vimeo.com/garlandscience30308032/review/136869160/5005806f33>

13.5 Phagocytosis by Neutrophil

<https://vimeo.com/garlandscience30308032/review/137492650/a91cdcc53b>

13.6 Exocytotic Transport

<https://vimeo.com/garlandscience30308032/review/136869259/4588cd5562>

Chapter 14: Energy Conversion: Mitochondria and Chloroplasts

14.1 Mitochondrial Dynamics

<https://vimeo.com/garlandscience30308032/review/136303651/988b24098e>

14.2 Mitochondrial Tomography II

<https://vimeo.com/garlandscience30308032/review/136303656/3da682246a>

14.3 Electron Transport Chain

<https://vimeo.com/garlandscience30308032/review/136761057/b9e3b4cf70>

14.4 The Q Cycle

<https://vimeo.com/garlandscience30308032/review/136842307/531d527e7a>

14.5 ATP Synthase- A Molecular Turbine

<https://vimeo.com/garlandscience30308032/review/137484287/f2aa34dbaf>

14.7 ATP Synthase Dimers in Cristae

<https://vimeo.com/garlandscience30308032/review/136842704/1b3c0378d8>

14.8 Bacterial Flagellum

<https://vimeo.com/garlandscience30308032/review/137483929/702ac546e9>

14.9 Chloroplasts

<https://vimeo.com/garlandscience30308032/review/136842745/baaf414c80>

14.10 Light Harvesting

<https://vimeo.com/garlandscience30308032/review/137529496/4fa2000600>

14.11 Photosynthetic Reaction Center

<https://vimeo.com/garlandscience30308032/review/136727528/ca23f76a57>

14.12 Mitochondrial Fission and Fusion

<https://vimeo.com/garlandscience30308032/review/137483462/0932d0e068>

Chapter 15: Cell Signaling

15.1 G Protein Signaling

<https://vimeo.com/garlandscience30308032/review/136842624/3224d30f1b>

15.2 cAMP Signaling

<https://vimeo.com/garlandscience30308032/review/136842658/04761e2247>

15.3 IP Signaling

<https://vimeo.com/garlandscience30308032/review/136842706/6667a98488>

15.5 Calcium Wave During Fertilization

<https://vimeo.com/garlandscience30308032/review/136869343/304bfab10f>

15.6 Calmodulin

<https://vimeo.com/garlandscience30308032/review/136727284/2d5747f5ef>

15.7 Ras

<https://vimeo.com/garlandscience30308032/review/136728598/68fcdcf1ca>

15.8 Growth Hormone Receptor

<https://vimeo.com/garlandscience30308032/review/136728379/e9b9e1a7d0>

Chapter 16: The Cytoskeleton

16.1 Neutrophil Chase

<https://vimeo.com/garlandscience30308032/review/137392081/94a172e308>

16.2 Crawling Actin

<https://vimeo.com/garlandscience30308032/review/136931903/c86448e7f7>

16.3 Myosin

<https://vimeo.com/garlandscience30308032/review/137484159/f7b09b6b4a>

16.4 Optical Tweezers

<https://vimeo.com/garlandscience30308032/review/136842604/5990826126>

16.5 Muscle Contraction

<https://vimeo.com/garlandscience30308032/review/136842711/46f52fb5cd>

16.6 Beating Heart Cell

<https://vimeo.com/garlandscience30308032/review/136931936/b3b641b35c>

16.7 Dynamic Instability of Microtubules

<https://vimeo.com/garlandscience30308032/review/136931953/d9c7668874>

16.8 Microtubule Dynamics in vivo

<https://vimeo.com/garlandscience30308032/review/136932024/3e48f3c6ef>

16.9 Kinesin

<https://vimeo.com/garlandscience30308032/review/137484182/ad63266dce>

16.10 Organelle Movement on Microtubules

<https://vimeo.com/garlandscience30308032/review/136932201/14d76e5555>

16.11 Microtubule and ER Dynamics

<https://vimeo.com/garlandscience30308032/review/136869151/47253f3ade>

16.12 Intermediate Filaments

<https://vimeo.com/garlandscience30308032/review/136842747/b9414845f0>

16.13 Keratocyte

<https://vimeo.com/garlandscience30308032/review/137484433/84abb49374>

Chapter 17: The Cell Cycle

17.1 Cdk2

<https://vimeo.com/garlandscience30308032/review/136728768/eef36cbc00>

17.2 Animal Cell Division

<https://vimeo.com/garlandscience30308032/review/136932385/ea7768ebb5>

17.3 Plant Cell Division

<https://vimeo.com/garlandscience30308032/review/136932377/a763daa6cb>

17.4 Mitosis

<https://vimeo.com/garlandscience30308032/review/137526137/cb6da8cb18>

17.5 Interpretive Mitosis

<https://vimeo.com/garlandscience30308032/review/137400716/98f941c57b>

17.6 Mitotic Spindles in a Fly Embryo

<https://vimeo.com/garlandscience30308032/review/136932634/e0f8d44c21>

17.7 Meiosis

<https://vimeo.com/garlandscience30308032/review/136842708/ee46da6be2>

17.8 p53 DNA Complex

<https://vimeo.com/garlandscience30308032/review/136728825/fb17d919e7>

Chapter 18: Cell Death

18.1 Apoptosis

<https://vimeo.com/garlandscience30308032/review/137400853/dba27fc15f>

Chapter 19: Cell Junctions and the Extracellular Matrix

19.2 Rolling Leukocytes

<https://vimeo.com/garlandscience30308032/review/136869373/57dd6bce86>

Chapter 20: Cancer

20.2 Contact Inhibition

<https://vimeo.com/garlandscience30308032/review/137418812/0d0c87d673>

20.3 Metastasis I: Colony Foundation

<https://vimeo.com/garlandscience30308032/review/137418828/7b973b447b>

20.4 p53 and Tumor Growth

<https://vimeo.com/garlandscience30308032/review/137419303/4d1a41046d>

20.5 Metastasis II Requirements for Colony Expansion

<https://vimeo.com/garlandscience30308032/review/136761190/973cac46d6>

20.6 Intestinal Crypts

<https://vimeo.com/garlandscience30308032/review/137418898/852262f75d>

Chapter 21: Development of Multicellular Organisms

21.3 Drosophila-Development

<https://vimeo.com/garlandscience30308032/review/136932981/45c19ffd52>

21.4 Spemann Organizer

<https://vimeo.com/garlandscience30308032/review/137484753/1a95881fd5>

21.6 Neurite Outgrowth

<https://vimeo.com/garlandscience30308032/review/136932931/95fb26b84a>

21.7 Neuronal Pathfinding

<https://vimeo.com/garlandscience30308032/review/137296109/fdf612f358>

Chapter 22: Stem Cells and Tissue Renewal

22.1 Wound Healing

<https://vimeo.com/garlandscience30308032/review/136932269/ff7e5aec13>

22.2 Angiogenesis

<https://vimeo.com/garlandscience30308032/review/137509592/3abeaf9d6d>

22.3 Leukocyte Homing

<https://vimeo.com/garlandscience30308032/review/136932476/241bd22945>

22.5 Embryonic Stem Cells

<https://vimeo.com/garlandscience30308032/review/136842764/e4a29a2a52>

Chapter 23: Pathogens and Infection

23.1 Conjugation

<https://vimeo.com/garlandscience30308032/review/137509524/109c2e9655>

23.2 Cholera Toxin

<https://vimeo.com/garlandscience30308032/review/136303655/4a7bfbb0ab>

23.4 Type III Secretion System

<https://vimeo.com/garlandscience30308032/review/136842779/160ff1fbb0>

23.5 Virus Entry Mechanisms

<https://vimeo.com/garlandscience30308032/review/136313290/0e47e60500>

23.6 Toxoplasma gondii

<https://vimeo.com/garlandscience30308032/review/136842833/73c56b7fbc>

23.8 Hemagglutinin

<https://vimeo.com/garlandscience30308032/review/137402417/0d7e88a163>

Chapter 24: The Innate and Adaptive Immune Systems

24.1 Pathogen Recog Receptors

<https://vimeo.com/garlandscience30308032/review/137536209/b4cdc88344>

24.2 Natural Killer Cell

<https://vimeo.com/garlandscience30308032/review/136313288/35b5634780>

24.3 The Immune Response

<https://vimeo.com/garlandscience30308032/review/137494439/8a4cbf6787>

24.4 Phagocytosis

<https://vimeo.com/garlandscience30308032/review/137494438/4fb448fa3a>

24.5 Antibodies

<https://vimeo.com/garlandscience30308032/review/136645670/07658ff0dc>

24.6 Germinal Centers

<https://vimeo.com/garlandscience30308032/review/137535588/b823a3b733>

24.8 MHC Class I

<https://vimeo.com/garlandscience30308032/review/136647694/d6c60fbcdb>

24.9 MHC Class II

<https://vimeo.com/garlandscience30308032/review/136648783/c4ee0431a0>

24.11 Immunological Synapse

<https://vimeo.com/garlandscience30308032/review/137523033/74073ea6ba>

24.13 T Cell Granule Release

<https://vimeo.com/garlandscience30308032/review/137535586/16dc948483>

24.14 TCR

<https://vimeo.com/garlandscience30308032/review/137535584/630122d620>