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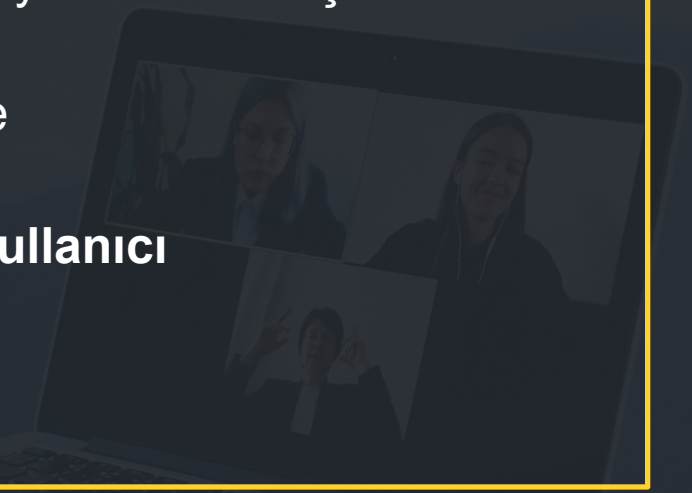

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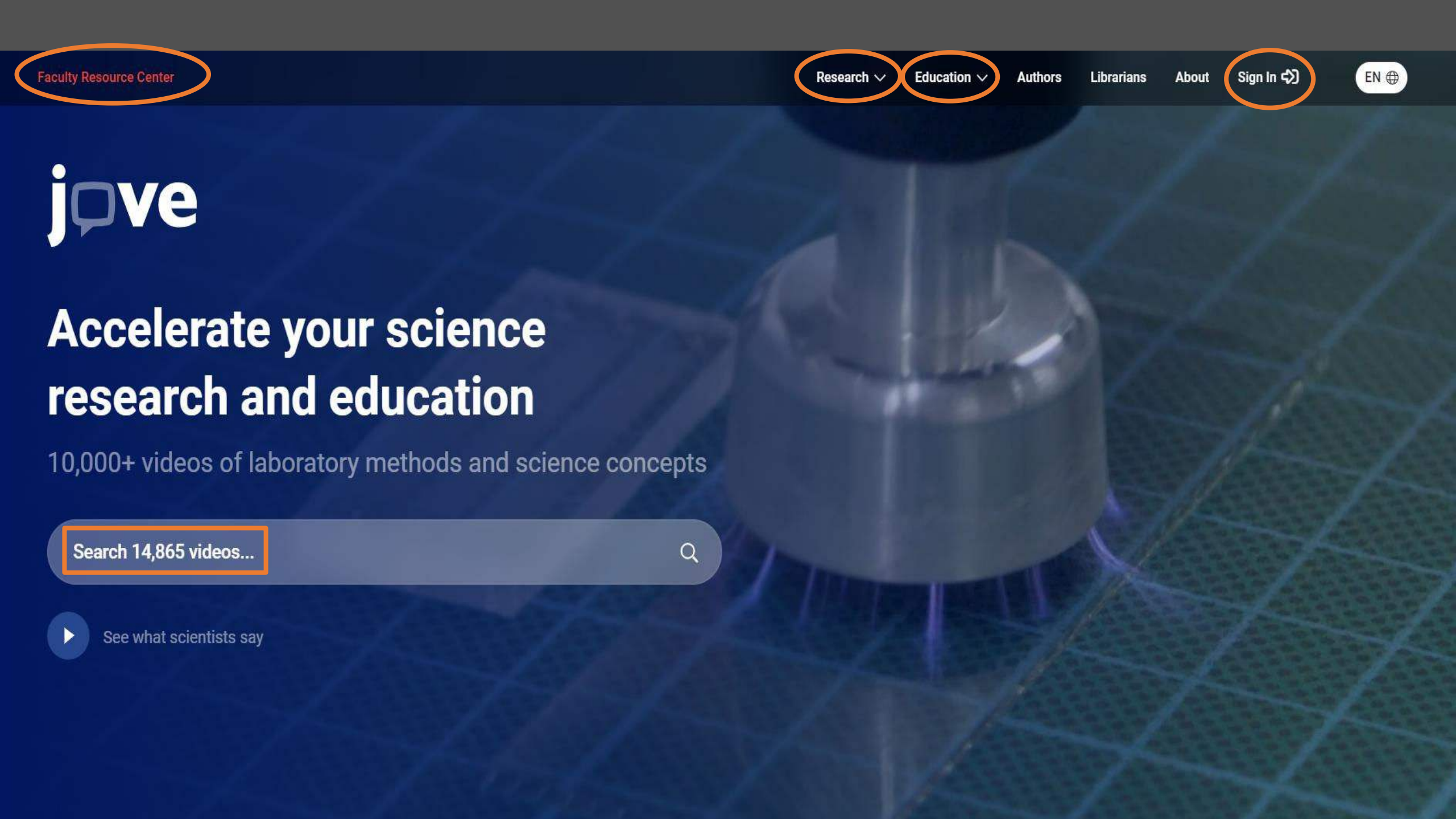
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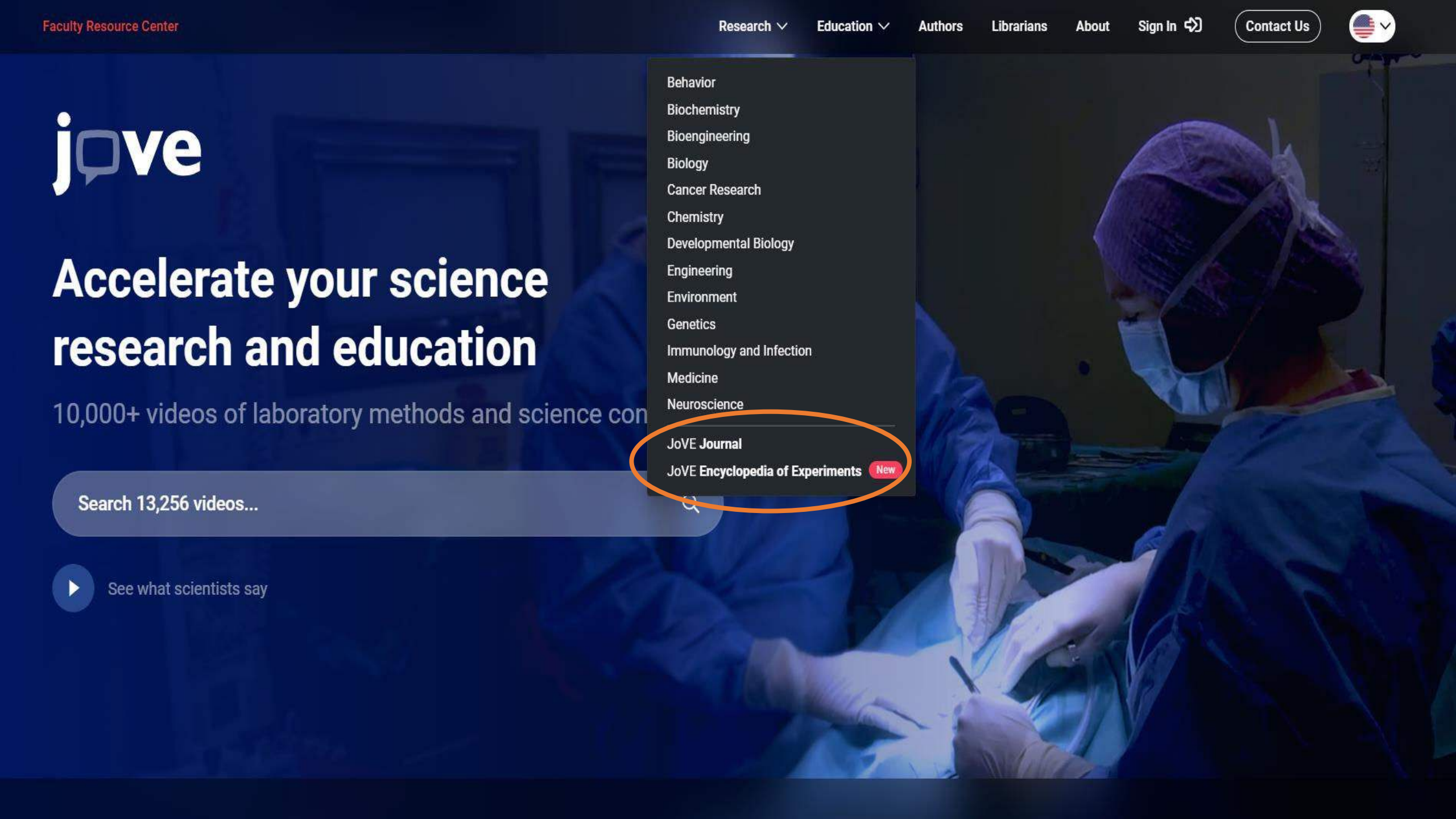

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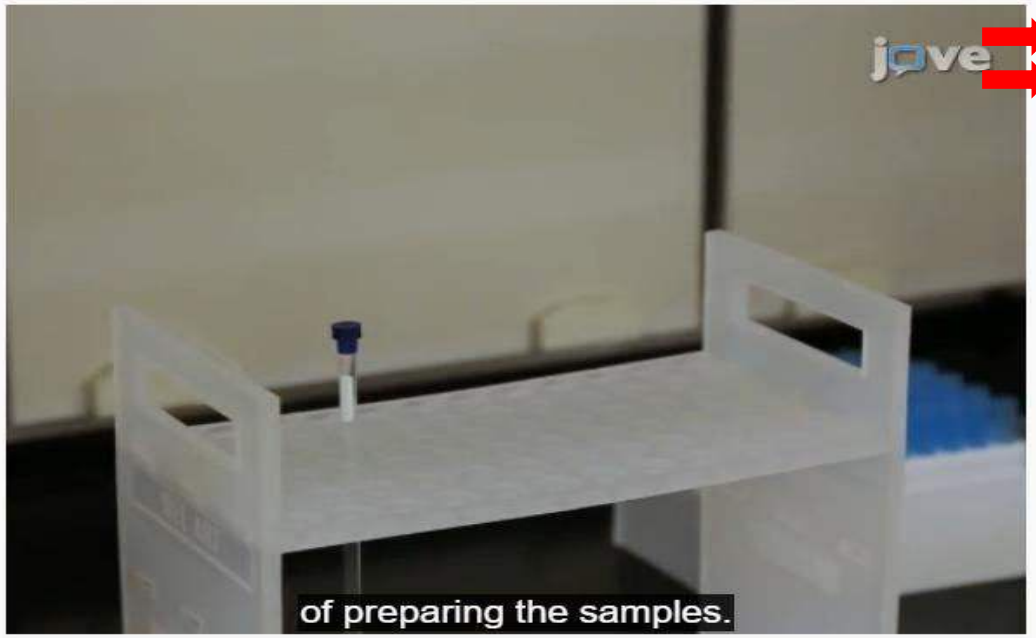

NMR Spectroscopy as a Robust Tool for the Rapid Evaluation of the Lipid Profile of Fish Oil Supplements

DOI: 10.3791/55547

Kathryn Williamson[1], Emmanuel Hatzakis[1,2]

[1]Department of Food Science and Technology, The Ohio State University, [2]Foods for Health Discovery Theme, The Ohio State University

Chapters

Summary

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Here, high-resolution ^{1}H and ^{13}C Nuclear Magnetic Resonance (NMR) spectroscopy was used as a rapid and reliable tool for

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NMR Spectroscopy as a Robust Tool for the Rapid Evaluation of the Lipid Profile of Fish Oil Supplements

doi: 10.3791/55547 Published: May 1, 2017

Kathryn Williamson[1], **Emmanuel Hatzakis**[1,2]

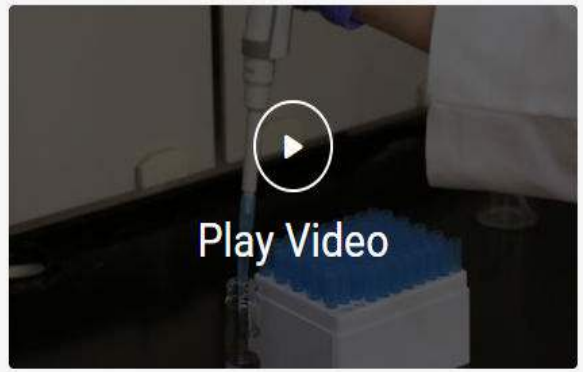
[1]Department of Food Science and Technology, **The Ohio State University**, [2]Foods for Health Discovery Theme, **The Ohio State University**

Summary

Here, high-resolution ^{1}H and ^{13}C Nuclear Magnetic Resonance (NMR) spectroscopy was used as a rapid and reliable tool for quantitative and qualitative analysis of encapsulated fish oil supplements.

Abstract

The western diet is poor in *n*-3 fatty acids, therefore the consumption of fish oil supplements is recommended to increase the intake of these essential nutrients. The objective of this work is to demonstrate the qualitative and quantitative analysis of encapsulated fish oil supplements using high-resolution ^{1}H and ^{13}C NMR spectroscopy utilizing two different NMR instruments; a 500 MHz and an 850 MHz



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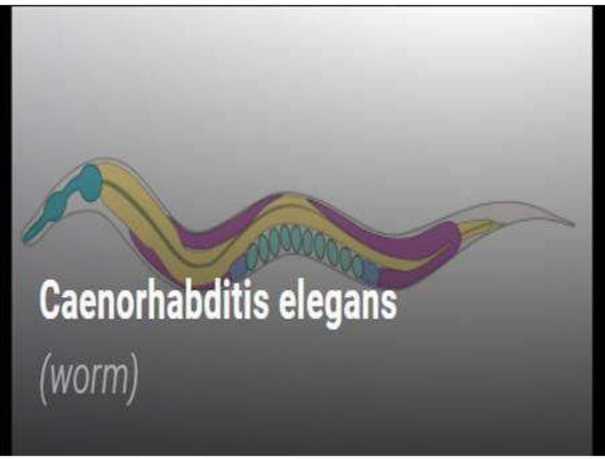

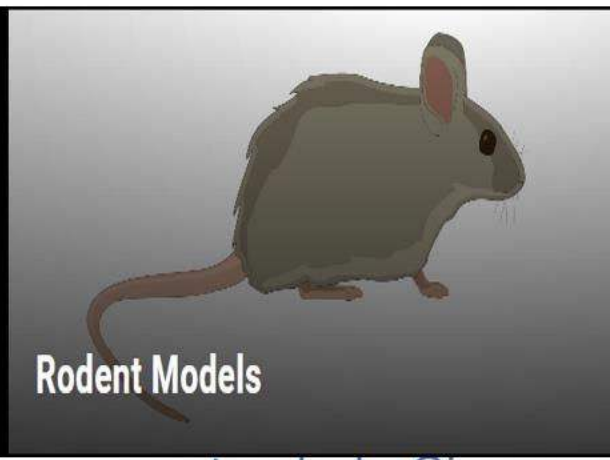

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Encyclopedia of Experiments

Drosophila melanogaster (fruit fly)

This collection features research methods using the model organism *Drosophila melanogaster* at each stage of its life cycle to explore a wide range of physiological and behavioral questions.

Embryo

Microinjection of *Drosophila* Nurse Cells
A Method of Intracellular Delivery

Drosophila Egg Collection and Dechorionation
A Method to Remove the Outermost Egg Layer

Preparation of Fixed *Drosophila* Oocytes for Immunostaining
A High-Throughput Method to Fix and Remove the Outer Membrane

Chorion and Vitelline Membrane Mechanical Removal
A Method to Prepare *Drosophila* Oocytes for Direct Observation

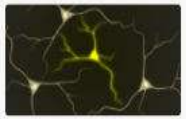
Microinjection of Live *Drosophila* Embryos
Early Delivery of Reagents to the Developing Embryo

Larva

Drosophila Burrowing and Tunneling Assay
A Method to Assess Tissue Hypoxia in Fly Larvae

Drosophila Larva Imaginal Disc Dissection
A Method to Observe Developing Epithelia

Drosophila Neuromuscular Junction (NMJ) Quantification
A Method to Assess Synaptic Morphology and Function



Two-Photon Laser-Induced Neural Injury
A Method to Observe Axon Degeneration and Regeneration in *Drosophila* Larvae

Larval Fillet Preparation
A Method to Visualize Intact Sensory Neurons and Associated

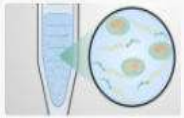
Cuticle Disruption
A Method to Collect Hemolymph from *Drosophila* Larvae

Encyclopedia of Experiments

Caenorhabditis elegans (worm)

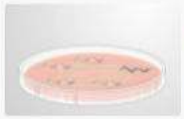
This collection features research techniques for the metazoan *Caenorhabditis elegans*. This nematode worm is a powerful model system due to its transparent body, defined developmental plan, robust genetic tools, and neuro-behavioral paradigms.

Basic Methods

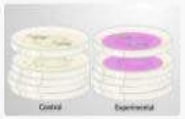


Nematode Synchronization
A Method to Obtain Populations of Worms in Identical Stages of Development

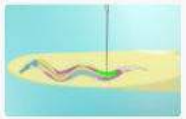
Single Worm PCR
A Method to Extract and Amplify Genomic DNA



Lifespan Analysis
Measuring *C. elegans* Longevity



Egg Laying Assay
A Method to Quantify the Egg-Laying Behavior of *C. elegans*

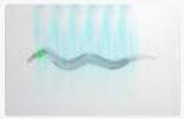


Gonad Microinjection
A Method of Compound Delivery Directly into the Germline of *C. elegans*

Microscopy

Freeze-Cracking of Nematodes
A Method to Expose Interior Worm Tissues for Staining

Nematode Slide Preparation
A Method to Mount Animals on an Agar Pad



Calcium Imaging
A Method to Visualize Neural Activity in Live *C. elegans*

Behavior

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Danio rerio (zebrafish)

This collection features research methods using the model organism *Danio rerio* in its embryo, larva, and adult stages to explore physiological and behavioral questions and create disease models for screening various chemicals.

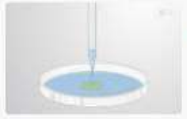
Embryo

Embryo-Based Chemical Toxicity Screen
Assessing Effects on Developing Zebrafish Embryos

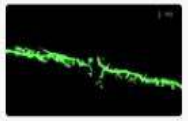
Mating and Egg Staging
A Method to Generate Embryos and Sort Them by Developmental Stage

Light Sheet Microscopy Sample Preparation
Mounting Live Zebrafish Embryos for Long-Term Imaging

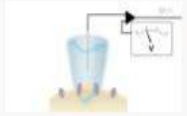
Layered Agar Mounting
Preparing Live Zebrafish Embryos for Long-Term Imaging with an Inverted Microscope



Agar Mounting
A Basic Method of Mounting Live Zebrafish Embryos for Long-Term Imaging



Two-Photon Laser Axotomy
A Method to Injure Axons in Zebrafish Embryos and Observe Axonal Recovery



Whole-Cell Patch Clamp Electrophysiology
A Method to Study Electrical Properties of Neurons

Embryo Microinjection
A Technique to Deliver a Compound into the Zebrafish Yolk

Larva

Photomotor Response Assay
A Method to Measure the Behavioral Response of Larval Zebrafish to a Sudden Change in Lighting Condition

Prey Capture Assay
A Method to Study the Prey Capture Behavior of Zebrafish Larva

Escape Response Assay

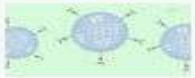
Zebrafish Avoidance and Thigmotaxis Assay

Encyclopedia of Experiments

Rodent Models

This collection features research methods using rodent models in embryonic, neonatal, and adult stages. The techniques include in vitro and in vivo organ perfusion, tissue and organ isolation, microbial culturing, biochemical studies, organ transplant methodologies, behavioral tests, and surgical procedures.

Embryo



Injection of Microbubbles into Isolated Mouse Embryos
A Technique to Deliver Microbubble Contrast Agents into the Vasculature of Living Murine Embryos

Prenatal Mouse Embryos Retrieval
A Procedure to Harvest Embryos from Pregnant Mouse

Methylene Blue Dye Injection in Mouse Embryonic Urinary Tract
A Method To Assess the Congenital Obstruction in the Urinary Tract

Modeling Transuterine Fetal Tracheal Occlusion in Murine Model
A Surgical Procedure for Ligation of the Fetal Trachea Within a Pregnant Mouse

Neonate

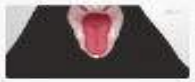
Neonatal Mouse Ovary Isolation
A Surgical Procedure to Harvest Pair of Ovaries from Neonatal Mouse Model

White and Brown Adipose Depot Collection from Mouse Pup
A Surgical Procedure to Harvest the White Adipose Tissue and Brown Adipose Tissue from Mouse Pup

Apical Resection Neonatal Mouse Model
A Surgical Procedure to Amputate the Ventricular Apex to Study Regenerative Potential in a Neonate Mouse Heart

Adult

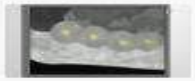
Dissection of Palate Tissue from Adult Murine Model
A Surgical Procedure to Harvest Hard Palate and Soft Palate from Oral Cavity of Adult Mouse



Isolation of Circumvallate Papillae (CVP) Epithelium from Mouse Model
An Enzymatic Procedure to Separate CVP Epithelium from Mouse Tongue

Mouse Antral Oocyte Isolation
A Method to Isolate Antral Oocytes from Freshly Harvested Mouse Ovaries

Exertional Heat Stroke Mouse Model
A Protocol to Study Mechanisms Underlying Exertional Heat Stroke



High-frequency Ultrasonography Based Early Pregnancy Characterization
A Technique to Study Embryo Implantation and Pregnancy Progression in Pregnant Murine Model

Cardiopulmonary Complex Decellularization
A Technique for Decellularizing Heart and Lungs from Murine Model

Generating Murine Model of Myocardial Infarction
A Surgical Procedure for Permanent Ligation of Left Anterior Descending Coronary Artery in Mouse Model

Swab-based Conjunctival Commensal Bacteria Isolation

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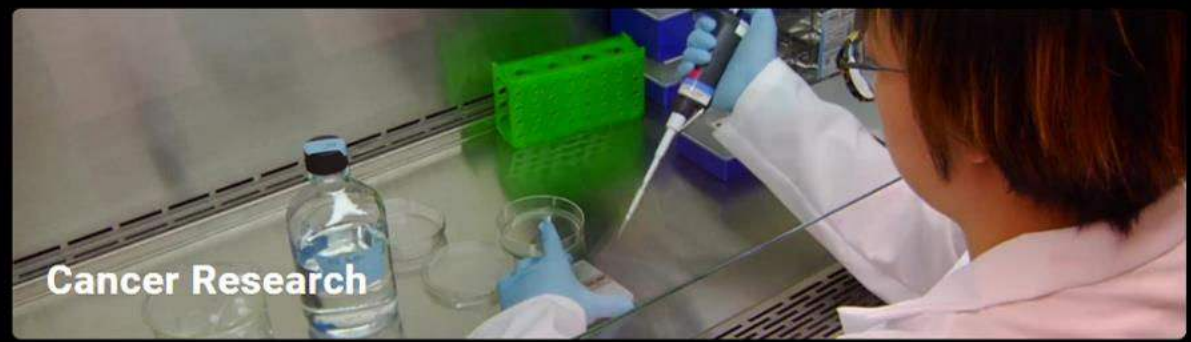

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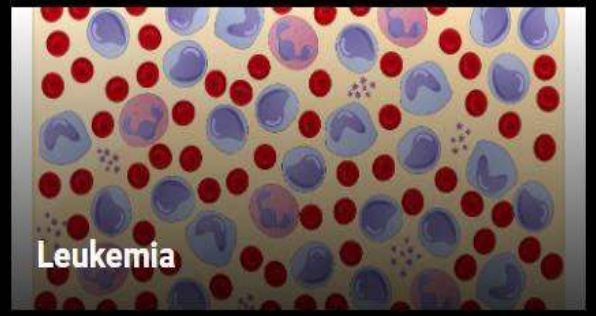
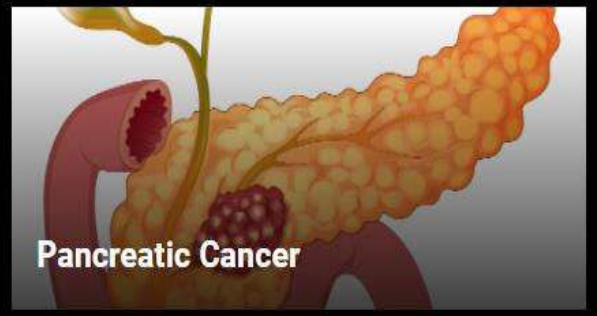
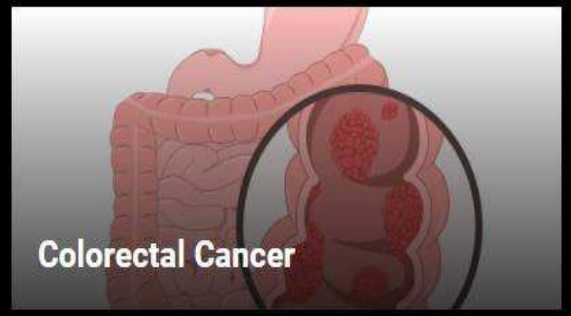
Cancer Research







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Breast Cancer

This collection features biomedical research methods employed in research laboratories to advance breast cancer prevention, detection, and treatment.

Procedures and techniques

In vitro studies

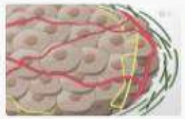
Procedures and techniques

Orthotopic Injection into the Mammary Fat Pad
Establishing Breast Cancer in Mice

Orthotopic Injection
Implanting Tissue Specific Cancer Cells into an Adult Mouse

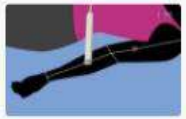
Intraductal Injection
Delivering Injection Mix into the Ducts of the Mouse Mammary Gland

Portal Vein Injection
A Method to Study Cancer Metastasis to the Liver



Spatial Measurement of Tumor Interstitial Fluid Pressure
A Method to Measure the Interstitial Fluid Pressure

Mechanical Dissociation
A Method to Obtain Viable Cells from a Tissue

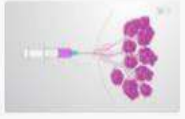


Lymphedema Ultrasonography
A Technique to Measure the Change in Thickness of an Affected Tissue

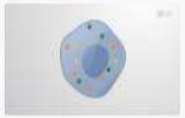
Radical Mastectomy
Surgical Removal of the Entire Mammary Gland from a Mouse to Study Cancer Progression

zPDX-Analysis of Invasiveness
Investigating Invasive Behavior of Metastatic Cancer Cells in Zebrafish Embryo Xenografts

India Ink Inflation
A Staining Method to Visualize Tumor Nodules



Rabbit Intraductal Injection
Localized Delivery of Solution of Interest into the Rabbit Mammary Gland



Sample Preparation for Metabolomics
A Method to Prepare Cell Samples for Metabolite Profiling

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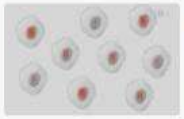
Lung Cancer

This collection highlights some of the latest protocols in lung cancer research. The collection covers techniques relating to the generation of lung cancer animal models, cancer cell characterization, treatment and detection strategies, in vitro culture studies, assays and isolation techniques that facilitate lung cancer research.

In vitro study

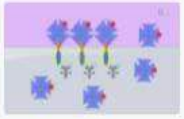
In Vitro Phototoxicity Assay
A PDT-based Method to Evaluate the Phototoxic Potential of a Photosensitizer in Lung Cancer Cells

Exosome Isolation
A Technique to Separate Exosomes from the Plasma of Non-small Cell Lung Cancer Patients

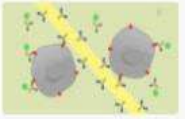


Cell Cycle Analysis
An Approach to Study Cell Cycle Regulation of miRNA-transfected Lung Cancer Cells

3D Co-culture of Lung Cancer Cells with CAFs
An In Vitro Model System to Study Tumor Progression



Antibody Microarray
A Technique to Study the Protein Expression of miRNA Treated Lung Cancer Cells



Immunofluorescence Assay
A Method to Identify Tumor Cells Captured on a Medical Wire

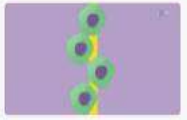
3-Dimensional Culture of Lung Carcinoma Cells
A Method To Study Cell-Matrix Interactions

Dose Escalation
A Method for Developing Drug Resistance in Cancer Cells

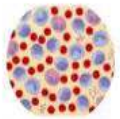
RNA Extraction Assay
A Method to Extract RNA from miRNA Transfected Lung Cancer Cells

Colony Formation Assay
Assessing the Efficacy of Anticancer Agents on Colony-Forming Lung Cancer Cells

miRNA Extraction
A Method to Extract miRNA from Plasma Sample



3D DNA FISH
A Technique to Locate a Specific Gene on a Chromosome

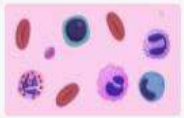


Encyclopedia of Experiments

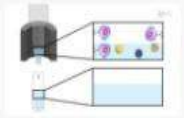
Leukemia

Leukemia reflects cancer primarily resulting from an elevated number of white blood cells in the body. This collection features a set of in vitro assay techniques to analyze leukemic cell growth and metabolism, cell isolation and culture methods, approaches to characterize and study cellular morphology, and genetic manipulation procedures.

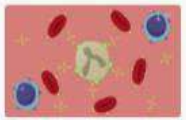
Cell isolation & characterization



May-Grunwald Giemsa Staining
A Method to Stain Bone Marrow Cells



Magnetic-Activated Cell Sorting
A Method to Isolate c-Kit Positive Cells



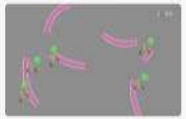
Density Gradient Centrifugation
A Method to Isolate CLL Cells from Peripheral Blood

Leukemic Subpopulation Harvest
A Method for Spatial Separation of Leukemic Cell Subpopulations from 2D Co-culture

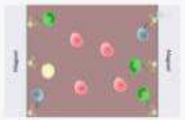
Retro-Orbital Blood Sampling
A Method for Isolating Mononuclear Cells from the Retro-Orbital Sinus of a Mouse

Bone Marrow Harvest from Mouse Hind Limb

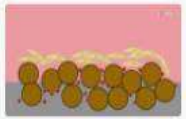
T-Cell Enrichment
A Technique to Isolate T-Cells from Mixed Cell Population by Magnetic Separation



BrdU Immunofluorescence Staining
A Technique to Identify Cells in Different Phases of Cell Cycle



Negative Immunomagnetic Selection
A Method to Purify B-cells from Peripheral Blood Mononuclear Cells



G-10 Column Based Leukemia Cell Sorting
A Method to Purify Acute Lymphoblastic Leukemia Cells from Bone Marrow Stromal Cells

Bone Marrow Aspiration
A Method to Obtain Bone Marrow to Examine Cell Morphology

Bone Marrow-Derived Dendritic Cells Generation
A Method to Generate Dendritic Cells from Mouse Bone Marrow

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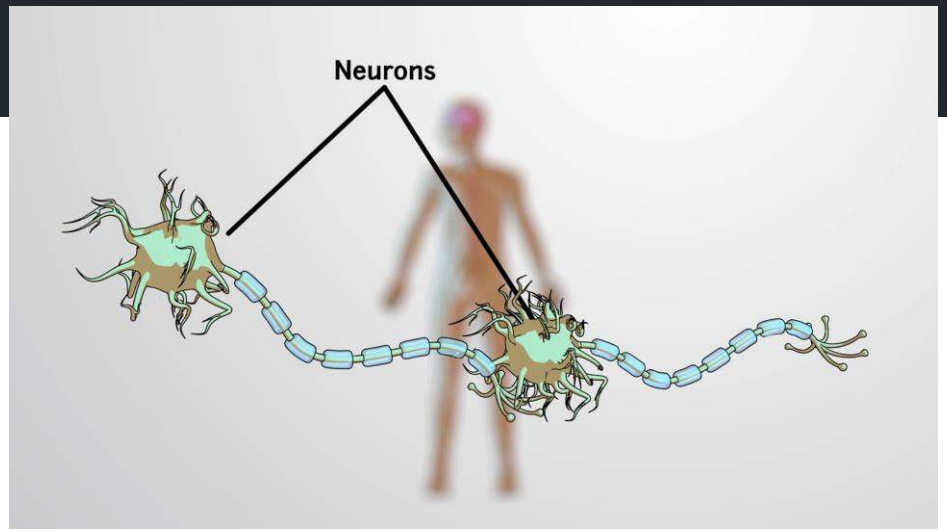
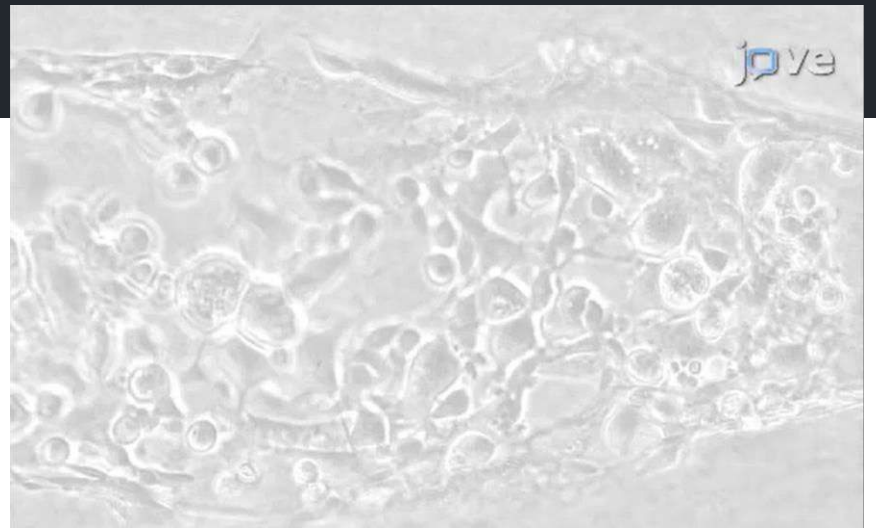


Yüksek kaliteli animasyonlar



Laboratuvar düzeninde biliminsanlarının kendileri tarafından uygulanan deneyler

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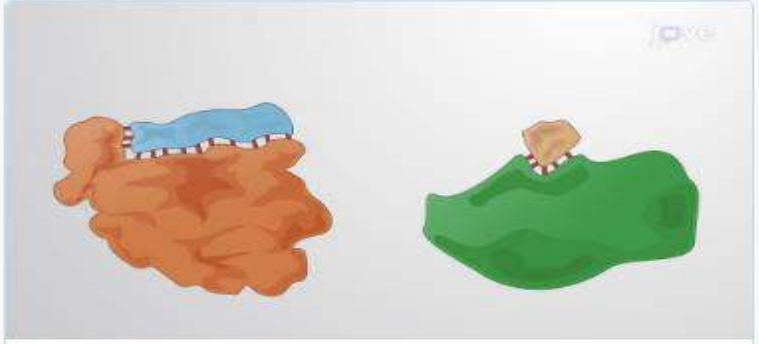
JoVE Core Molecular Biology showcases the molecular processes of the cell through clear and concise animated video lessons. Additionally, in scientist-in-action videos, these concepts' application is demonstrated through real experiments in modern laboratories.

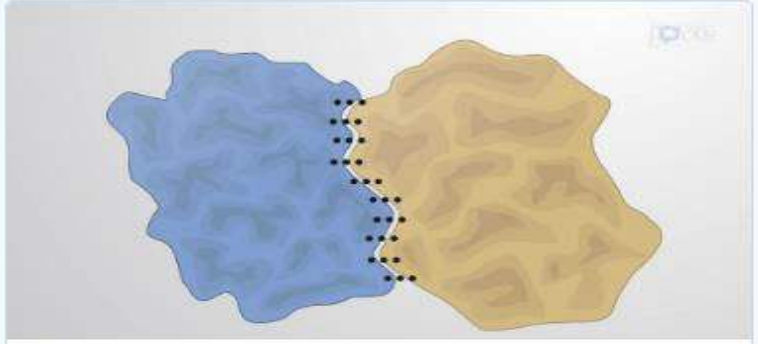
CHAPTER 4

Protein Function



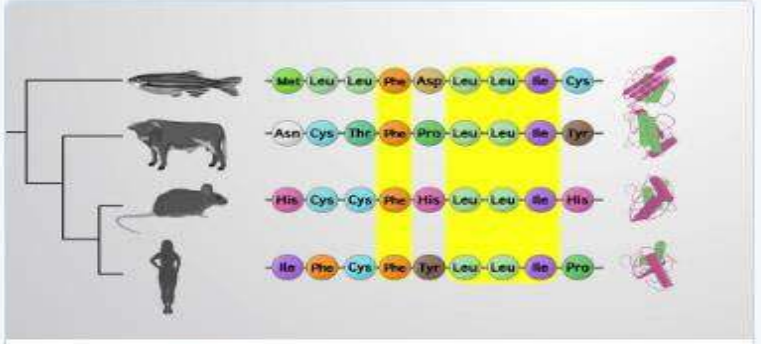
Ligand Binding Sites

Proteins are dynamic macromolecules that carry out a wide variety of essential processes; however, the activities of most proteins depend on their...



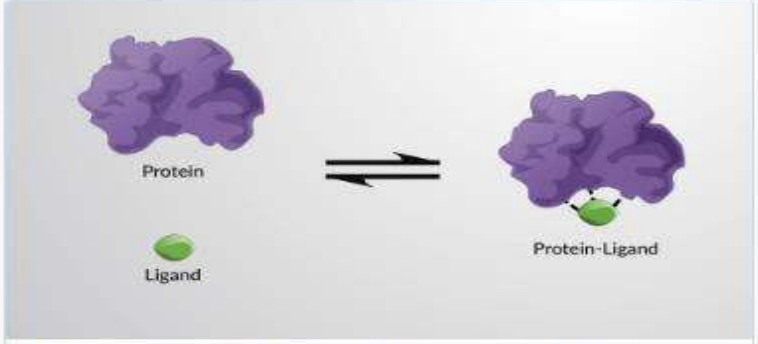
Protein-protein Interfaces

Many proteins form complexes to carry out their functions, making protein-protein interactions (PPIs) essential for an organism's survival. Most...



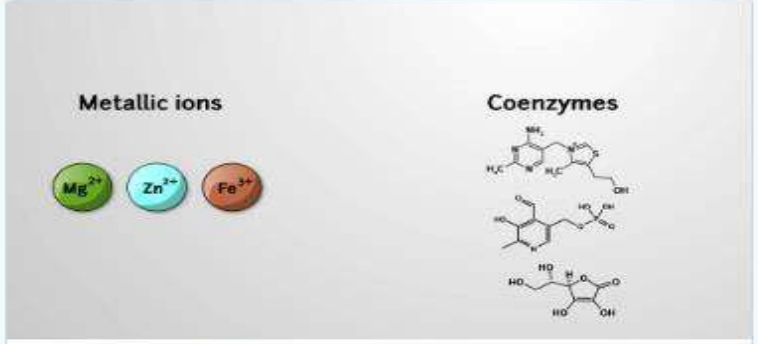
Conserved Binding Sites

Many proteins' biological role depends on their interactions with their ligands, small molecules that bind to specific locations on the protein...



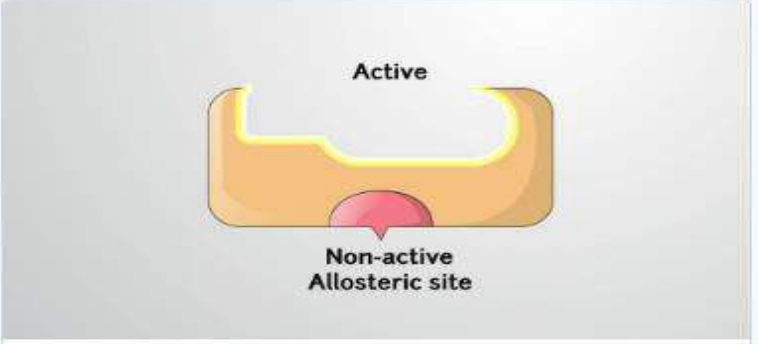
The Equilibrium Binding Constant and Binding Strength

The equilibrium binding constant (Kb) quantifies the strength of a protein-ligand interaction. Kb can be calculated as follows when the reaction is...



Cofactors and Coenzymes

Enzymes require additional components for proper function. There are two such classes of molecules: cofactors and coenzymes. Cofactors are metallic...



Allosteric Regulation

Allosteric regulation of enzymes occurs when the binding of a molecule to a different location from the active site causes a change in enzymatic...

CHAPTER 4

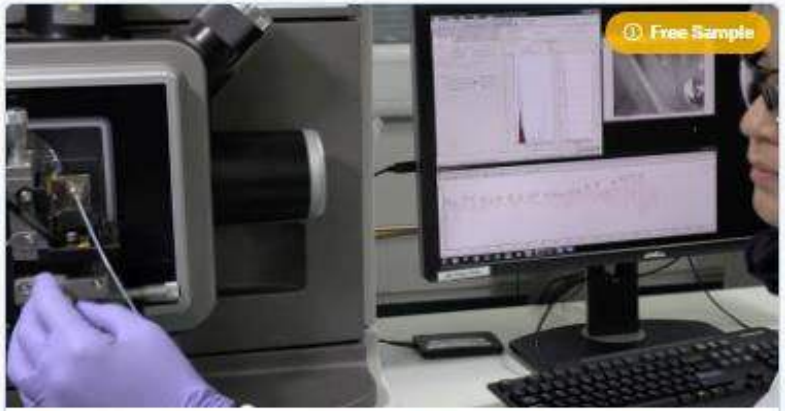
Protein Function

KEY TERMS AND CONCEPTS

SCIENTISTS IN ACTION

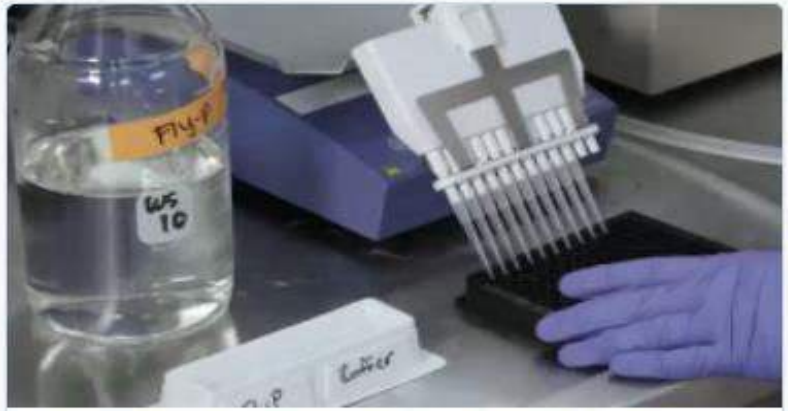
Assaying Protein Kinase Activity with Radiolabeled ATP

Protein kinases are able to govern large-scale cellular changes in response to complex arrays of stimuli, and much effort has been directed at...



Analyzing Protein Architectures and Protein-Ligand Complexes by Integrative Structural Mass Spectrometry

Proteins are an important class of biological macromolecules that play many key roles in cellular functions including gene expression, catalyzing...



Quantification of Protein Interaction Network Dynamics using Multiplexed Co-Immunoprecipitation

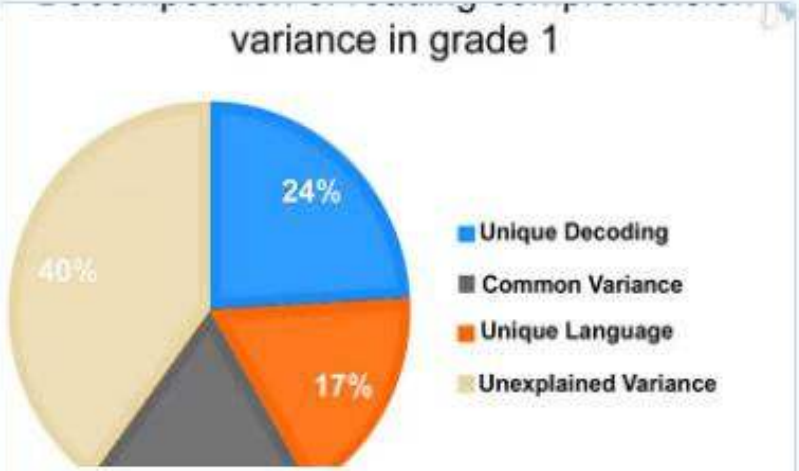
Dynamic protein-protein interactions control cellular behavior, from motility to DNA replication to signal transduction. However, monitoring dynamic...

CHAPTER 2

Summarizing and Visualizing Data

KEY TERMS AND CONCEPTS

SCIENTISTS IN ACTION

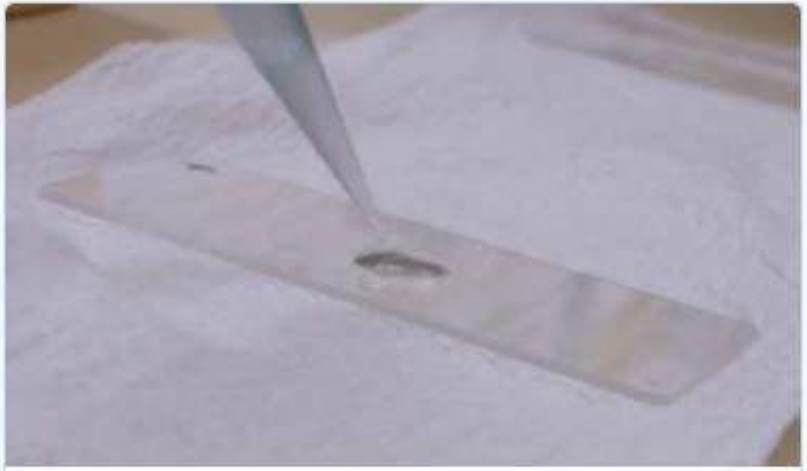


Decomposing the Variance in Reading Comprehension to Reveal the Unique and Common Effects of Language and Decoding

The Simple View of Reading is a popular model of reading that claims that reading is the product of decoding and language, with each component...

Measuring Light-Switching Behavior Using an Occupancy and Light Data Logger

Due to discrepancies between self-reported and observed pro-environmental behavior, researchers suggest the use of more direct measures of behavior....



Observation and Analysis of Blinking Surface-enhanced Raman Scattering

From a single molecule at a silver nanoaggregate junction, blinking surface-enhanced Raman scattering (SERS) is observed. Here, a protocol is...

JoVE Lab Manual

Curriculum-focused video resources that support teaching and learning of commonly taught introductory labs.

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Step-by-step instructions for each lab experiment from 3 perspectives ...

Instructor Preparation

Concepts

Student Protocol

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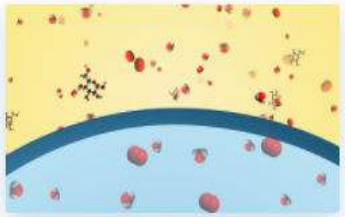
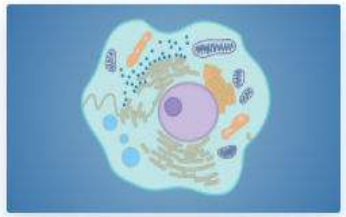
Fundamentals

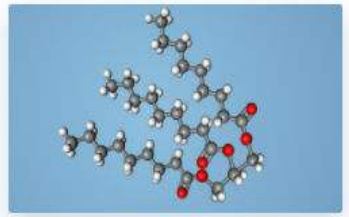
Scientific Method



Diffusion and Osmosis



Cell Structure



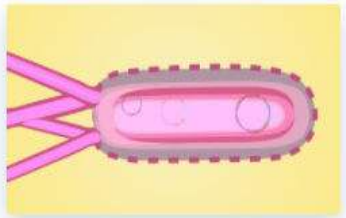
Macromolecules

Physiology of the Circulatory System

Genetics

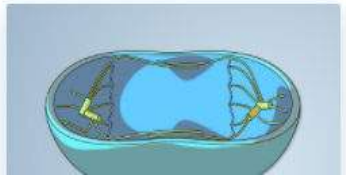
Genetics of Organisms

DNA Isolation and Restriction Enzyme Analysis



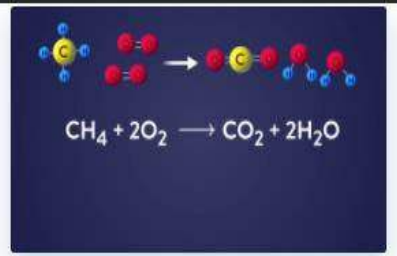
Bacterial Transformation

Cellular Processes

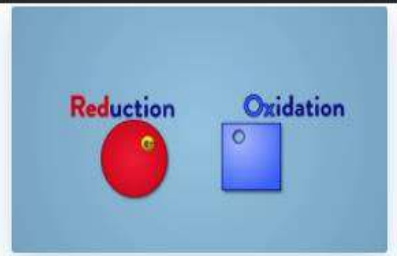


Lab Techniques

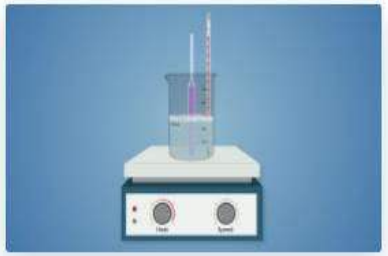
Scientific Measurement and Lab Skills



Stoichiometry, Product Yield, and Limiting Reactants

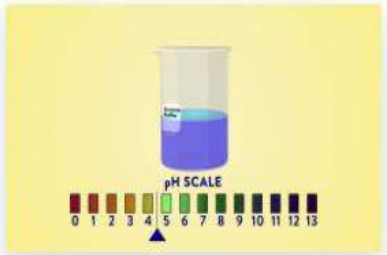


Redox Reactions



Ideal Gas Law

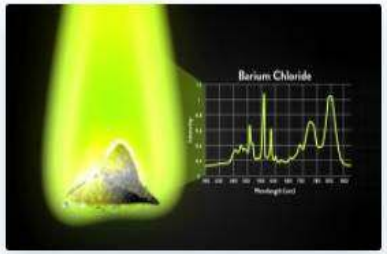
Acid and Base Concentrations



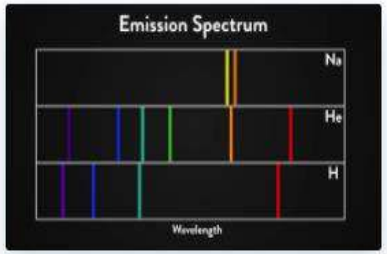
Buffers

Enthalpy of Reaction

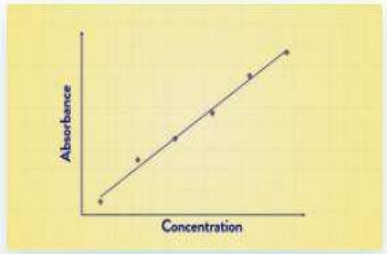
Solubility



Metal Flame Emission

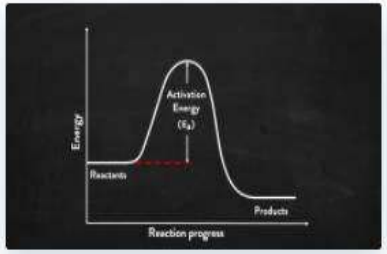


Balmer Series



Beer's Law

Concentration Dependence



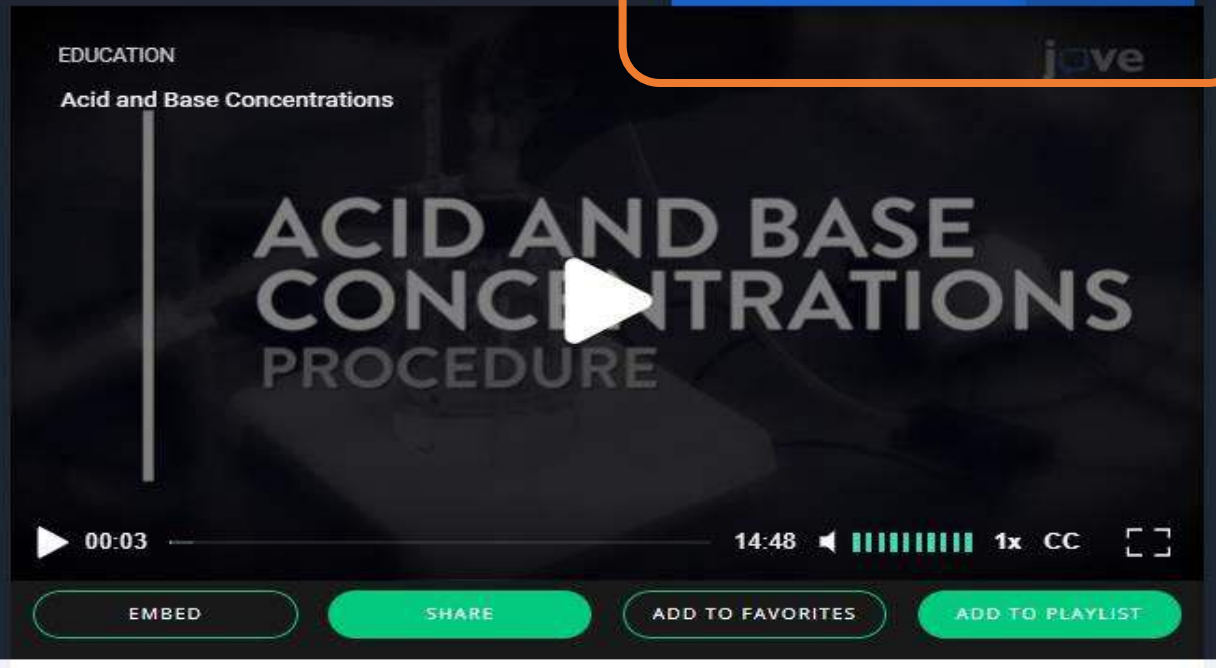
Temperature Dependence

Galvanic Cells

Electrolytic Cells

Acid and Base Concentrations

INSTRUCTOR PREP | CONCEPTS | STUDENT PROTOCOL



PROCEDURE

PRINT PROCEDURE STEPS

Source: Smaa Koraym at Johns Hopkins University, MD, USA

1. Preparation of ~0.1 M NaOH

In the first part of the lab, you will use a 50% w/w solution of NaOH to prepare 500 mL of ~0.1 M. The 50% w/w NaOH is indicative of its weight ratio. For example, if the instructor prepared 150 mL of the 50% w/w NaOH solution, then

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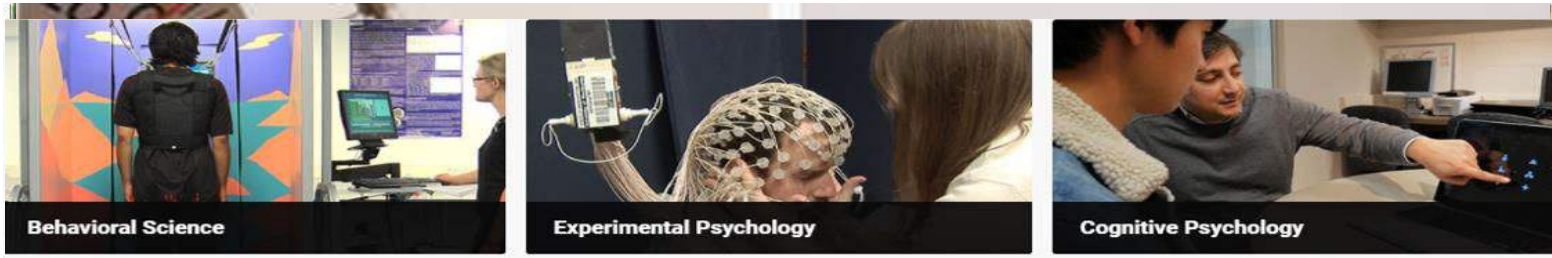
7. **Physics** [2 collections]
8. **Psychology** [7 collections]



This collection presents the fundamentals of behavior neuroscience and focuses on the concepts of learning, memory, cognition, movement, addiction and behavioral disorders.

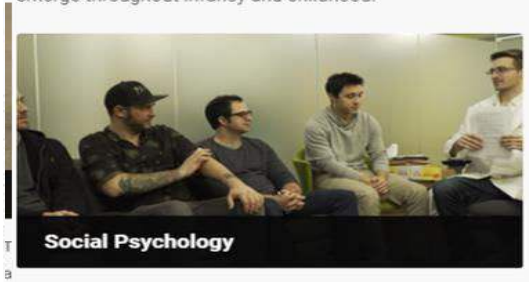
This collection provides a framework for observing how psychological experiments are embedded in the actual research process, starting from the initial research design to arriving at conclusions in a study.

This collection describes a number of influential paradigms used to study complex mental processes underlying attention, perception, learning and memory.

This collection explores the experimental domains of attention and perception, reasoning, social learning and memory processes - highlighting the dynamic changes that emerge throughout infancy and childhood.

This collection presents multidisciplinary techniques in behavior, neurophysiology, anatomy, and functional imaging to help diagnose brain damage and mental disorders.

This collection delves into a variety of procedures to stud how the brain processes our complex sensory world and solves problems confronting conscious awareness and visual, tactile, and auditory perception.



This collection features classical methods used to investigate how social contexts influence people's actions, thoughts, and attitudes and provides a transparent look into social experiments.

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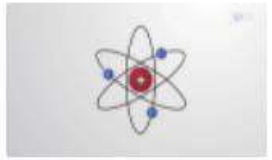
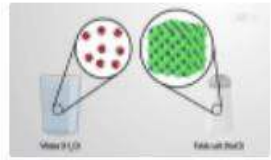
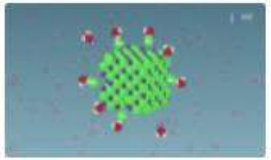
Chapter 1
Matter and Measurement



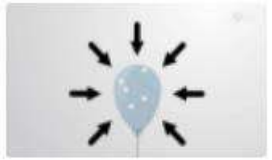
Chapter 2
Atoms and Elements



Chapter 3
Molecules, Compounds, and Chemical Equations

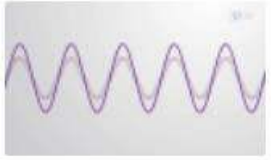


Chapter 4
Chemical Quantities and Aqueous Reactions

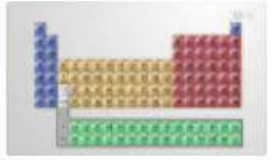


Chapter 5
Gases

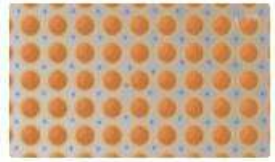
Chapter 6
Thermochemistry



Chapter 7
Electronic Structure of Atoms



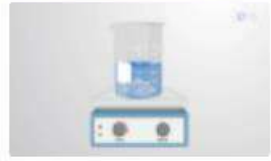
Chapter 8
Periodic Properties of Elements



Chapter 9
Chemical Bonding - Basic Concepts

Chapter 10
Chemical Bonding: Molecular Geometry and Bonding Theories

Chapter 11
Liquids, Solids, and Intermolecular Forces



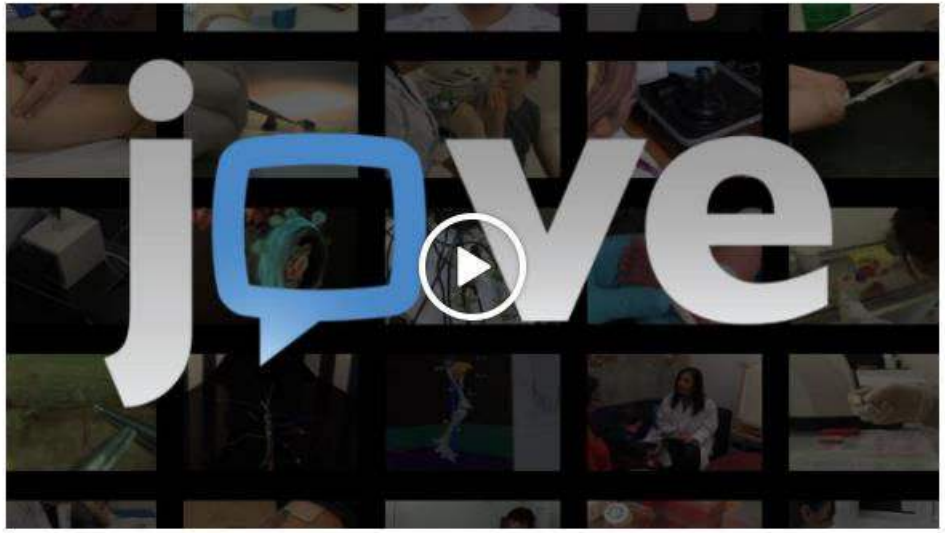
Chapter 12
Solutions and Colloids

Chapter 13
Chemical Kinetics

Chapter 14
Chemical Equilibrium

Chapter 15
Acids and Bases

1.1 Scientific Laws and Theories



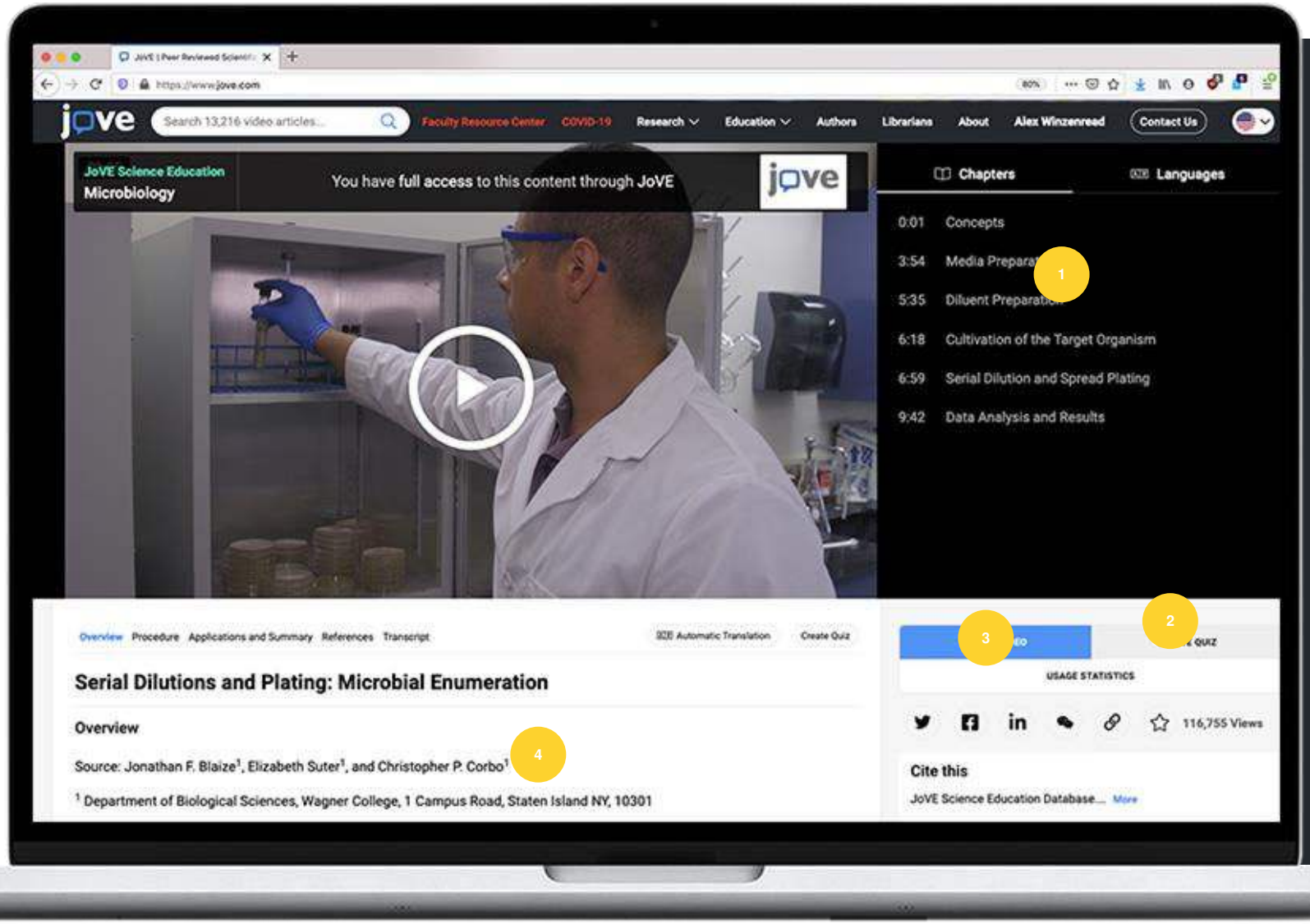
CREATE QUIZ

Throughout human history, people have tried to convert **matter** into more useful forms. For example, our Stone Age ancestors chipped pieces of flint into useful tools and carved wood into statues and toys. These endeavors involved changing the shape of a substance without changing the substance itself. However, as our knowledge increased, humans began to change the composition of the substances as well—clay was converted into pottery, hides were cured to make garments, copper ores were transformed into copper tools and weapons, and grain was made into bread.

Humans began to practice **chemistry** when they learned to control fire and use it for cooking, making pottery, and smelt metals. Subsequently, they began to separate and use specific components of matter. A variety of drugs, such as aloe, myrrh, and opium, were isolated from plants. Dyes, such as indigo and Tyrian purple, were extracted from plant and animal matter. Metals were combined to form alloys—for example, copper and tin were mixed to make bronze—and more elaborate smelting techniques produced iron. Alkalis were extracted from ashes, and soaps were prepared by combining these alkalis with fats. Alcohol was produced by fermentation and purified by distillation.

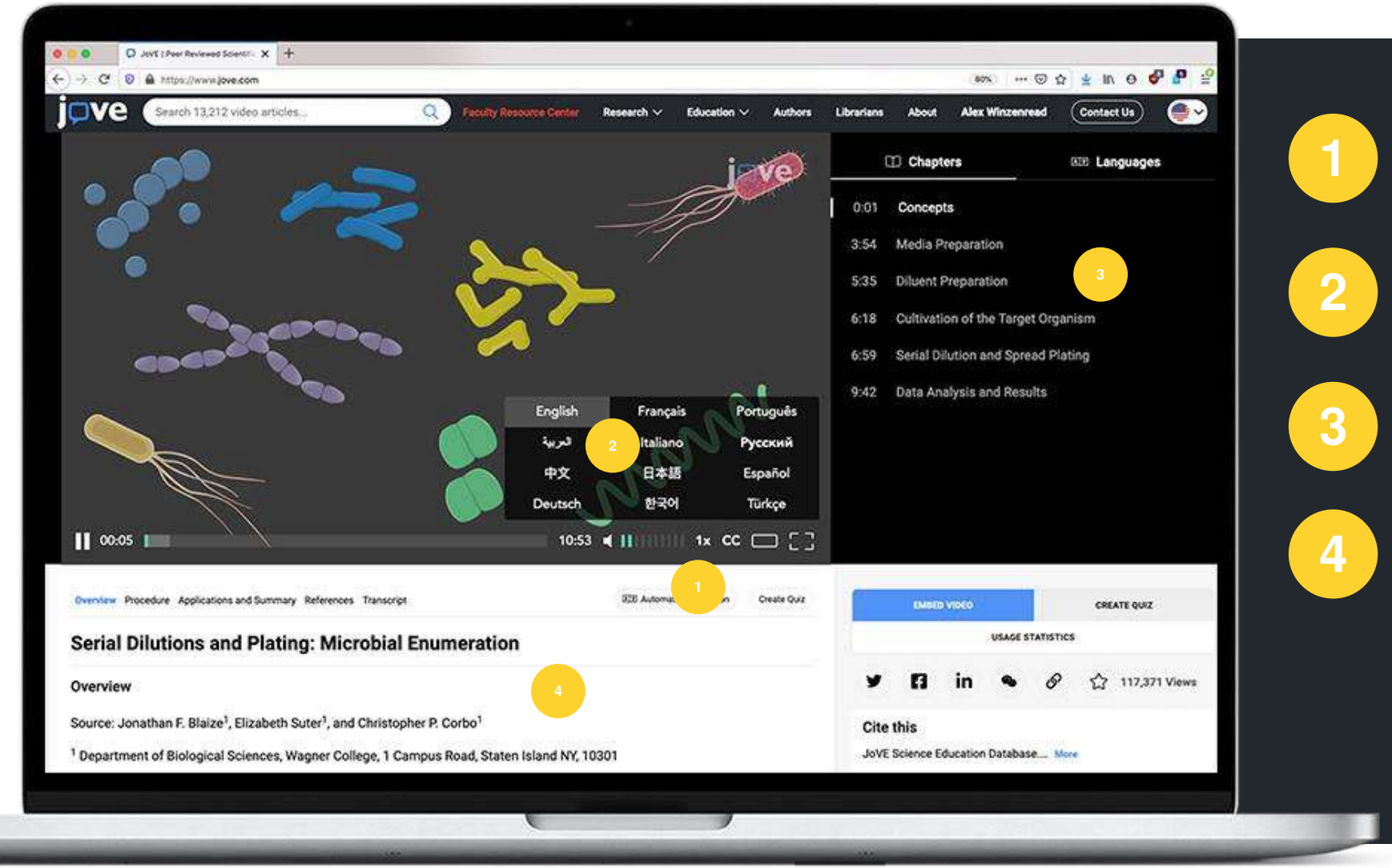
Attempts to understand the behavior of matter extend back for more than 2500 years. As early as the sixth century BC, Greek philosophers discussed a system in which water was the basis of everything. The Greek postulate states that matter consists of four **elements**: earth, air, fire, and water. Subsequently, an amalgamation of chemical technologies and philosophical speculations was spread from Egypt, China, and the eastern Mediterranean by alchemists, who endeavored to transform "base metals" such as lead into "noble metals" like gold and to create elixirs to cure disease and extend life. From alchemy came the

JoVE Education – Eğiticilere yardım eden içerikler



1. Yönlendirme
2. Quiz Oluşturma
3. Video Gömme (embed)
4. Protokol

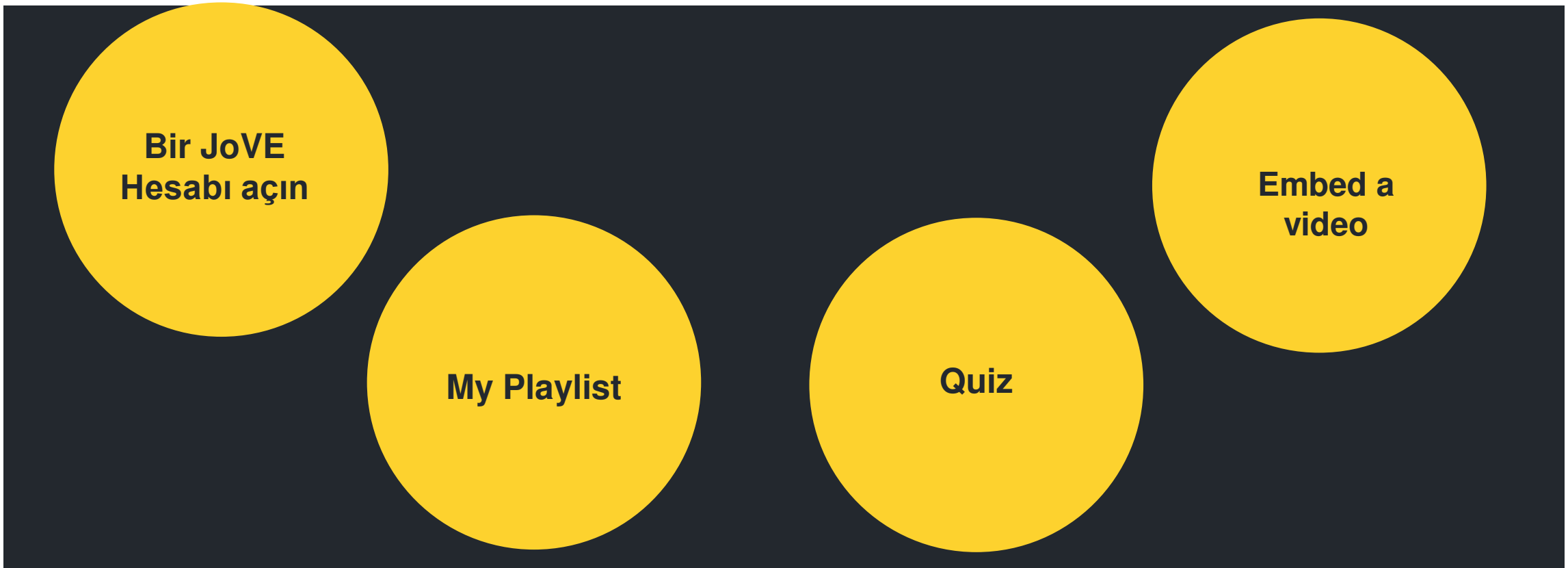
JoVE – Öğrenciler için yardımcı arayüz



1. Hız Ayarlama
2. Altyazılar ya da seslendirme
3. Yönlendirme
4. Protokol

JoVE ile etkileşim !!!

Üniversitenizin sağladığı ayrıcalıktan yararlanın ve öğrencileriniz için sorunsuz bir erişim sağlayın



Neden JoVE kaydı?

Üniversitenize ait içerikleri aktifleştirir

1. Kampüs dışında da videolara erişiminiz olur
2. Video Gömme işlemini yapabilirsiniz (embed)
3. JoVE Quizleri
4. JoVE Oynatma Listeleri
5. Makalelere Sorular ve Yorumlar Yazabilirsiniz

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Chandra *

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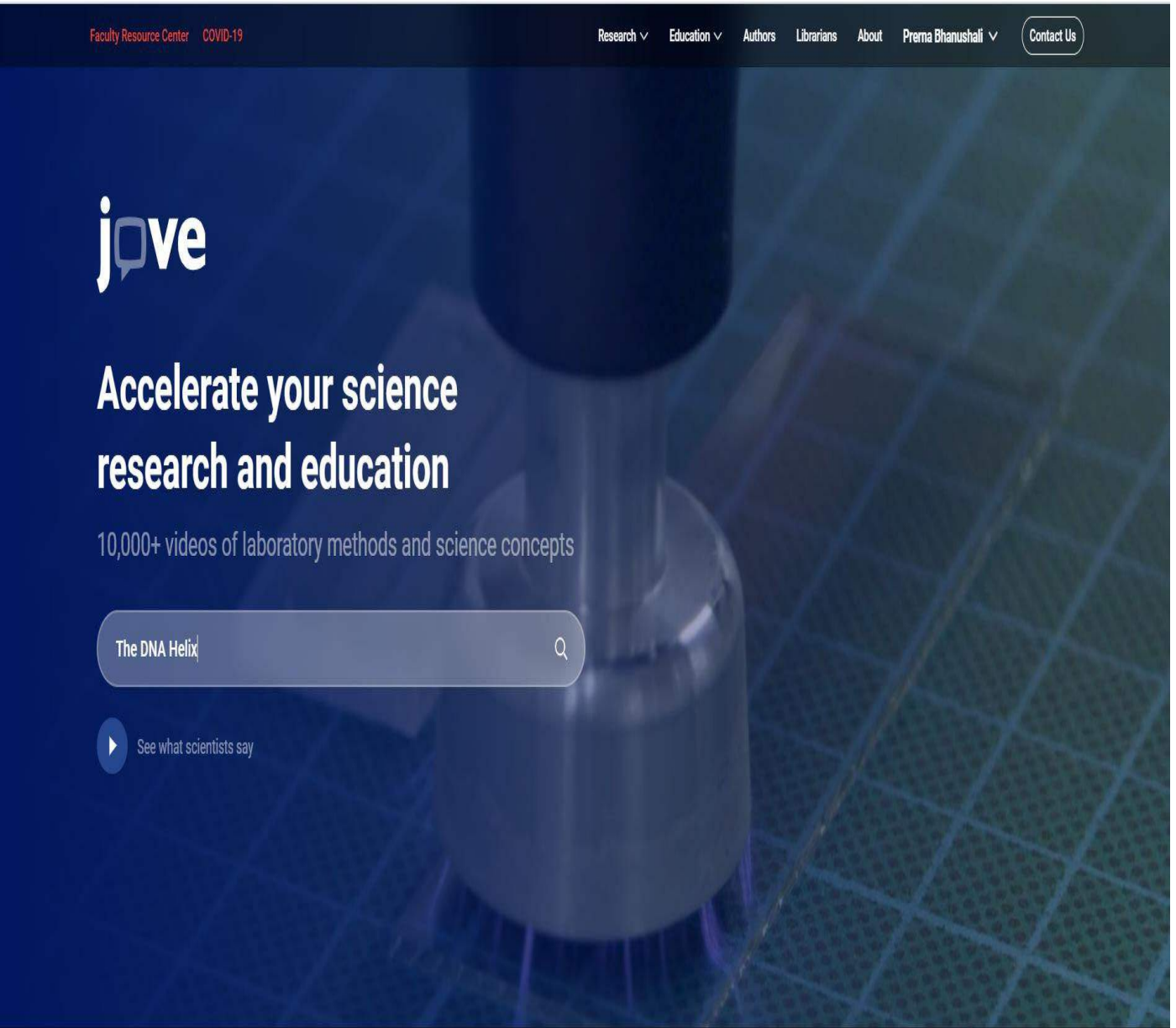
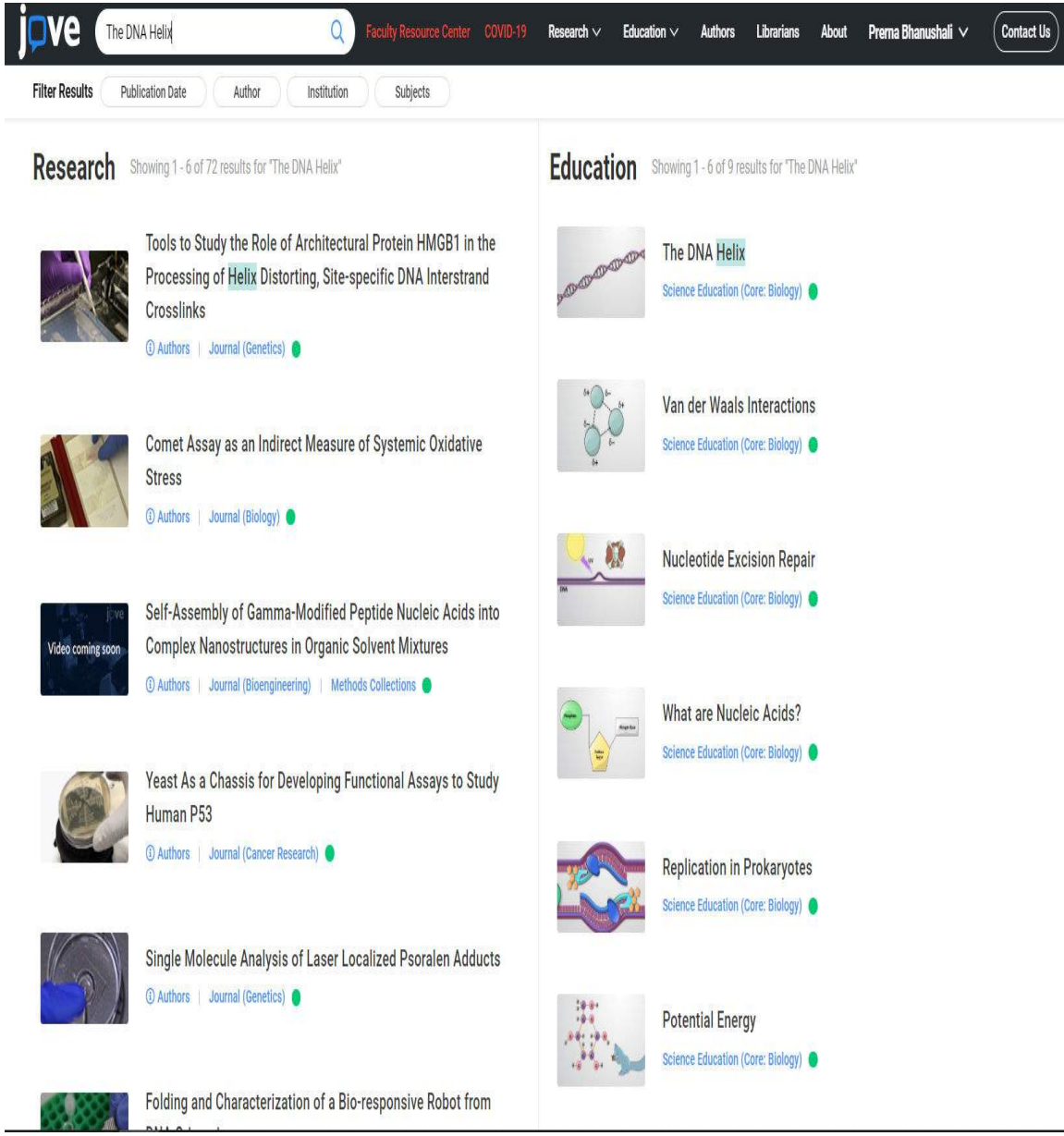
SAVE CHANGES

İlgili JoVE İçeriğini Bulma





Öğrencilerin Erişiminin Sağlanması

İçerik Seçimi:
Müfredat Uzmanımız yardımı ile Dersiniz ile içeriğin eşleştirilmesi

Entegrasyon Desteği:
Üniversitenizin Uzaktan Eğitim Sistemine Oynatma Listesi Ekleme Fırsatı

Source: Jaideep S. Talwalkar, MD, Internal Medicine and Pediatrics, Yale School of Medicine, New Haven, CT

Through auscultation, the clinician is able "to eavesdrop on the workings of the body" to gain important diagnostic information.[1] Historically, the term "auscultation" was synonymous with "immediate auscultation," in which...

Go back to Video Page

show this article's:

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- [ ] Chapters
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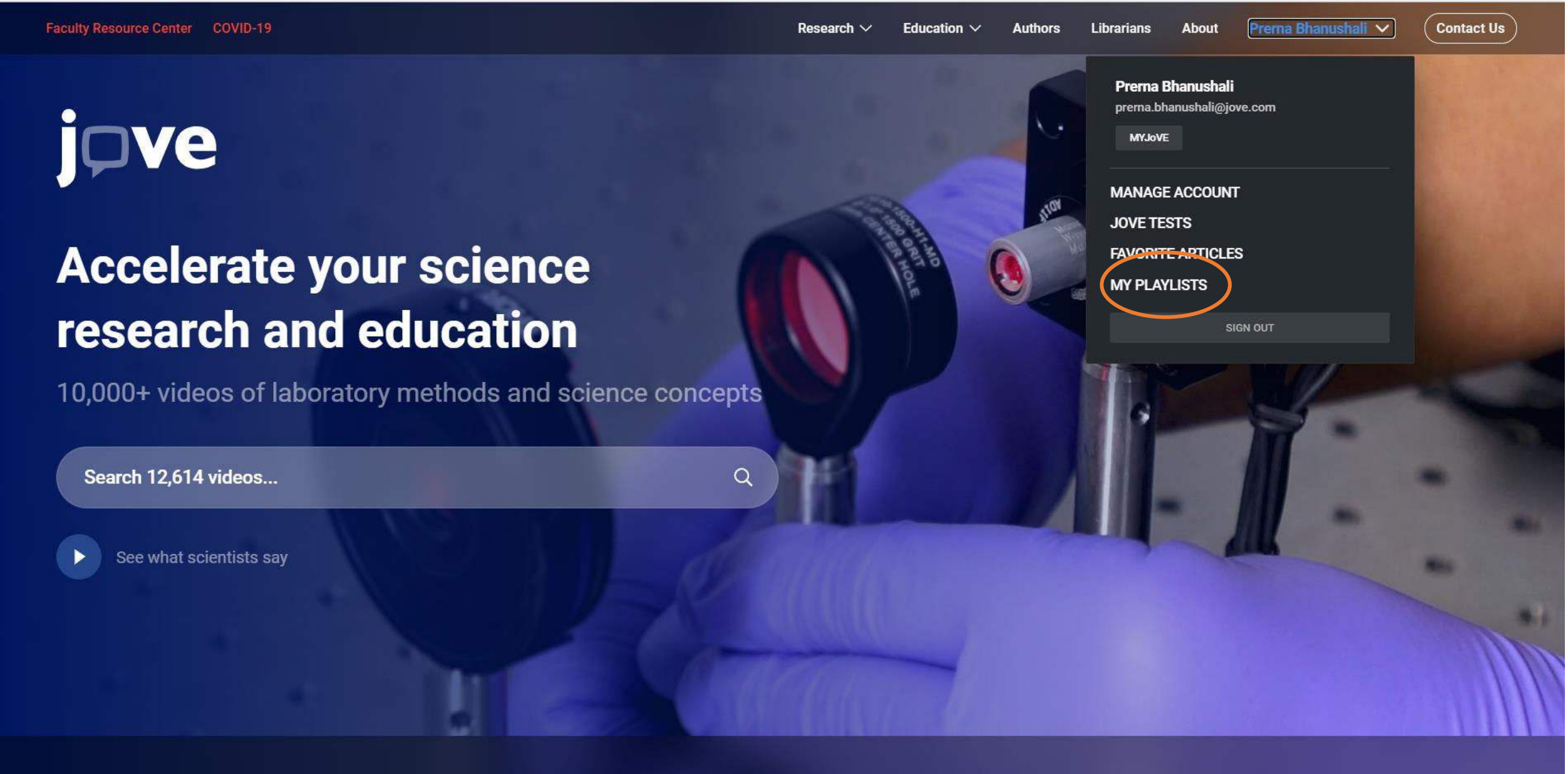
Kendi Oynatma Listenizi Yapın!!



Ya Da

Ders programınızı ya da araştırma alanınızı bizimle paylaşın !!!

Dünya çapında bir yardımlaşma ağı

STEM Geçmişi olan yüksek eğitimli personel

Üyeliğinizin en verimli şekilde kullanılmasını amaçlıyorlar

JoVE Müfredat Uzmanı

murat.cenkcelen@jove.com

JoVE Quizleri
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· Statistics

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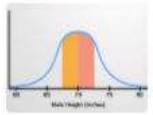
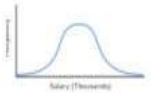
The calculation and understanding of descriptive statistics of a sample for a continuous or discrete quantitative variable and for a qualitative variable



Education: Core: Psychology

Variation: Normal Distribution, Range, and Standard Deviation



Education: Core: Psychology

Measures of Central Tendency

Education: Core: Psychology

Statistical Significance

The graphic representation of a univariate distribution (histogram)/or a bivariate distribution

Education: Lab Bio

Scientific Method- Concept

Education: Lab: Chemistry

Proper Lab Notebook Keeping- Concept

Education: Lab: Chemistry

Scientific Measurement and Lab Skills- Concept

Not Started

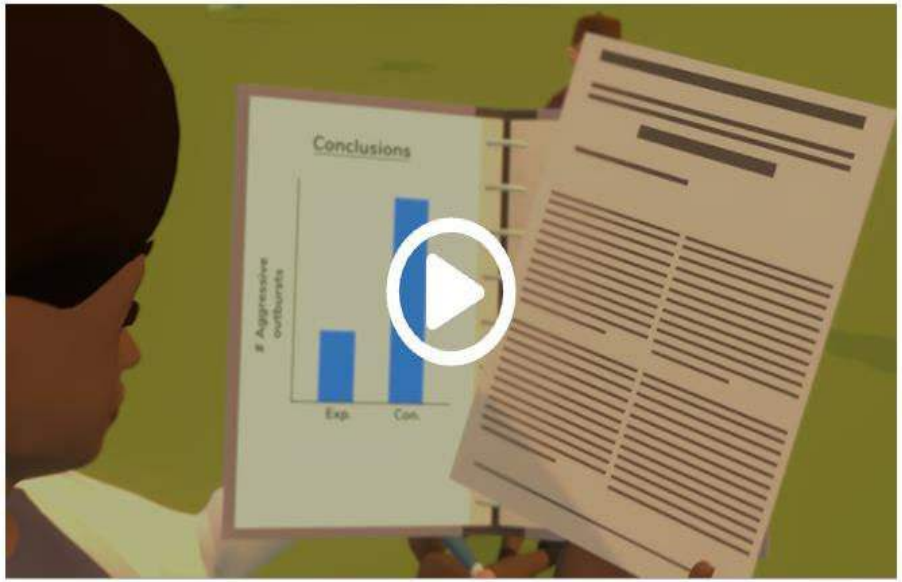
Deadline

10/11/2021 11:59 PM EDT

Activities

Activity 1

The Scientific Method



QUESTION

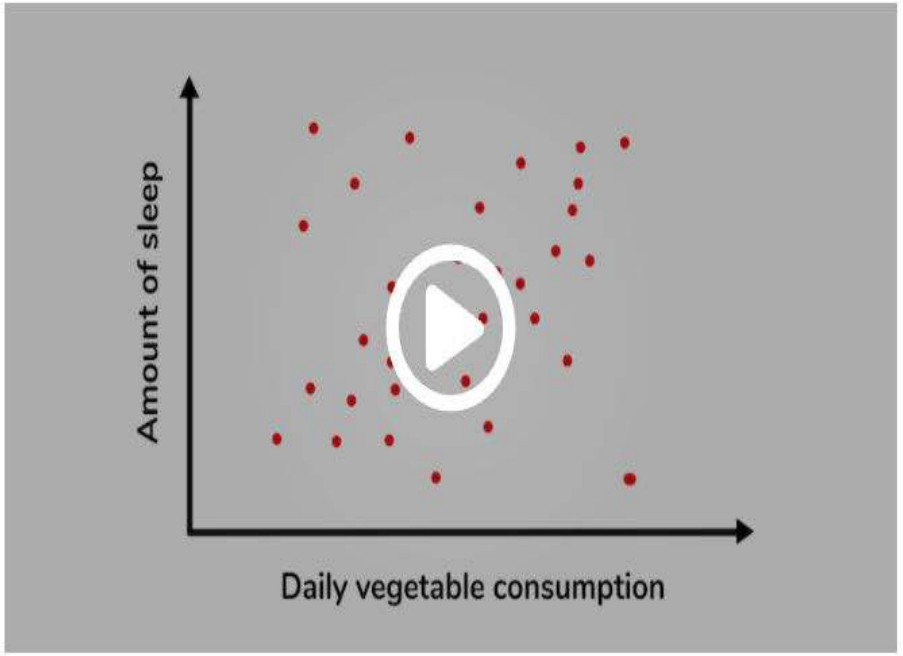
Which of the following terms refer to the item being intentionally manipulated or changed in an experiment?

- Only valid variables
- The independent variable
- Only operative variables
- The dependent variable

QUESTION

The control group is exposed to the same features as the experimental group except for:

Correlations



QUESTION

What does it mean when two variables are correlated?

- Researchers had to manipulate the behaviors to observe the particular outcome.
- A relationship exists between the two variables.
- Negative changes in one variable must cause positive changes in the other variable.
- There is no true relationship between the two variables.

Back to Assessments

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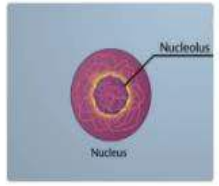
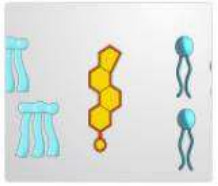
Introduction to Biology

General Biology Lab



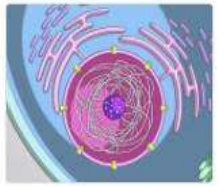
Cell Biology

Anatomy and Physiology



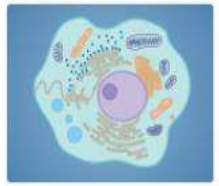
Molecular Biology

Molecular Biology Lab



Genetics

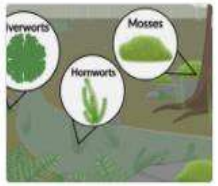
Microbiology



Microbiology Lab

Immunology

Introduction to Neuroscience



Plant Biology

Neurobiology

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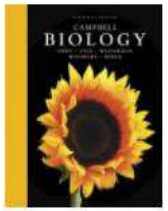

Urry, Lisa A., et al. *Campbell Biology*. 12th ed., Pearson, ©2021.

Flowers, Paul, et al. *Chemistry 2e*. OpenStax, 2021.

Parker, Nina, et al. *Microbiology*. OpenStax, 2021.

Betts, Gordon J., et al. *Anatomy and Physiology*. OpenStax, 2021.

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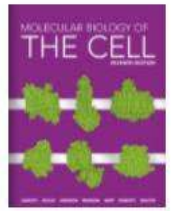
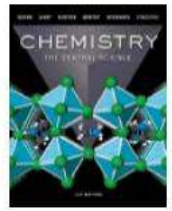
Nelson, David L., and Cox, Michael M. *Lehninger Principles of Biochemistry*. 8th ed., Macmillan International Higher Education, ©2021.



Alberts, Bruce, et al. *Molecular Biology of the Cell*. 7th ed., W. W. Norton & Company, ©2022.



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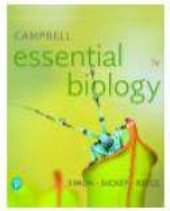

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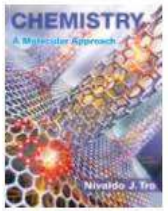

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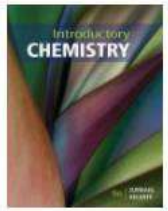

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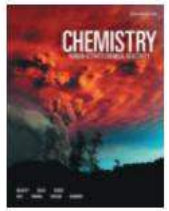
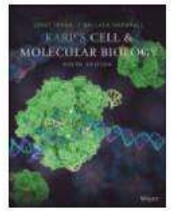


Mahaffy, Peter G., et al. *Chemistry: Human Activity, Chemical Reactivity (International Edition)*. 2nd ed. (AZ/NZ), Cengage Learning, ©2021.



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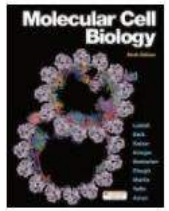

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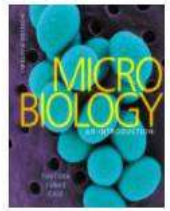

Tortora, Gerard J., et al. *Microbiology: An Introduction*. 12th ed., Pearson, ©2016.

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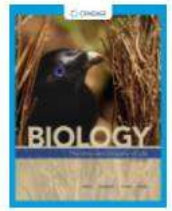

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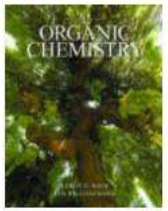

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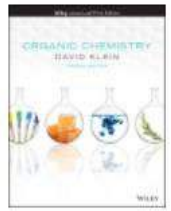

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Müfredat Uzmanı

(Curriculum Specialist)

murat.cenkcelen@jove.com

JoVe ile Sizin Aranızda

Müfredat Uzmanı

Köprü

1. Destek, Eğitim Webinarları ve 1:1 Oturumlar

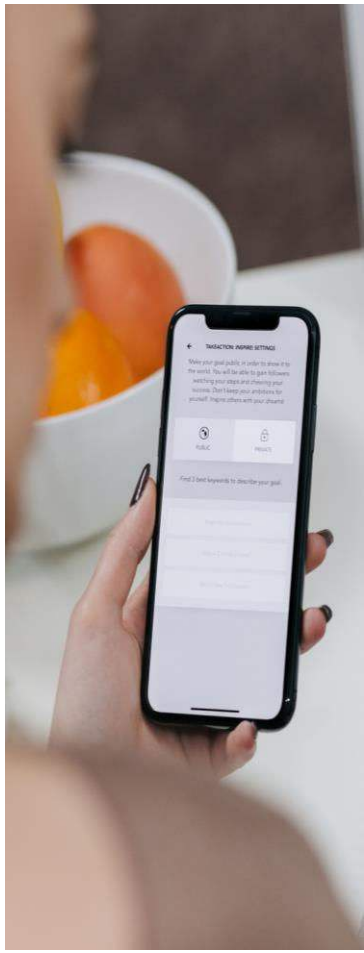
2. Sizin isteklerinizi anlayabilme

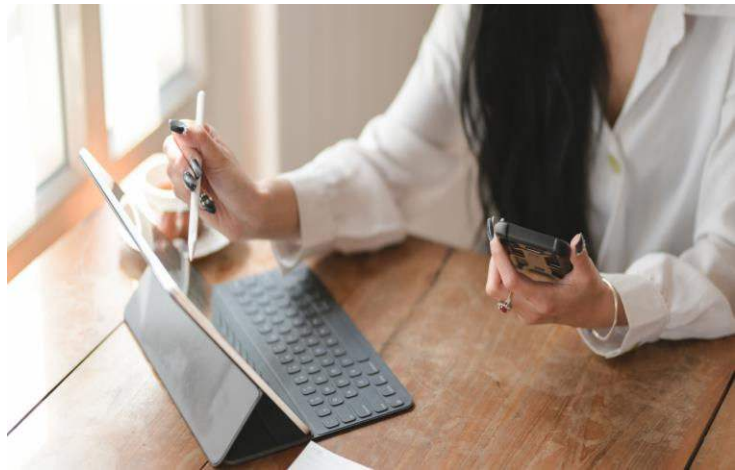
3. JoVE Oynatma Listeleri için en uygun içeriğin bulunması

    - ✓ Yeni gelen içerik ile oynatma Listesi zenginleştirme
    - ✓ Bölüm genelinde düzenlemeler
    - ✓ Bireysel Dersler
    - ✓ Araştırma Oynatma Listesi

4. İçeriğe erişim ve dersiniz ile bütünleştirilmesi konusunda yardım

5. Herhangi bir problemde hızlı çözüm yardımı





TIP FAKÜLTESİNDE KURUL KOMİTE SİSTEMİ ve JoVE UYGULAMALARI

- Kurul sorumlusu Öğretim Üyesi ve Dönem Koordinatörü Öğretim Üyesi ile birlikte çalışarak ilgili kurula özel video playlist oluşturulması.

- O kurulda dersi olan ilgili Öğretim Üyeleri video playlist içeriğinin paylaşılması ve geri bildirimlere göre düzenlenmesi.

- Dönem boyu hızlı erişilebilir teknik destek sağlanması.

Teşekkürler

Sorular?

Lütfen sorunuz varsa sorun.

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Müfredat Uzmanı, JoVE
murat.cenkcelen@jove.com
Tel: 531 010 87 05