

MUSEUM OF THE MOVING IMAGE

SLOAN
SCIENCE
& FILM

TEACHER'S GUIDE

A Guide to Short Science-Related Films for the Classroom



INTRODUCTION

Museum of the Moving Image's *Sloan Science & Film* initiative provides opportunities for the creation, distribution, exhibition, and discussion of films that amplify understanding of scientific themes. This guide offers a teaching framework for 52 short, narrative (fiction) films, each of which integrates scientific or technological themes. These films are freely available to stream at scienceandfilm.org. The goal of this guide is to help teachers engage elementary, middle, and high school students in STEM learning through film. Some facts about the guide:

- Films range from 5 to 33 minutes, averaging 15 minutes in length.
- Subjects include astronomy, biology, chemistry, climate science, ecology, evolution, genetics, mathematics, physics, psychology, technology, and the history of science. Each film is listed under its primary scientific subject, and in some cases cross-listed with a secondary subject.
- Each film is correlated with Next Generation Science Standards (available [here](#)).
- Included with each film are proposed discussion questions and resources for further engagement.
- We advise teachers to screen all films in advance of sharing them with students, but especially those marked with “mature content advisory.”

The films in this guide were made with support from the Alfred P. Sloan Foundation, whose nationwide film program aims to encourage filmmakers to create more realistic and compelling stories about science and technology and to challenge existing stereotypes about scientists and engineers in the popular imagination. Over the past two decades, Sloan has partnered with leading film schools to support the production of the short films featured in this guide.



KEY

NGSS=Next Generation Science Standards;
NYU=New York University; UCLA=University of California Los Angeles; USC=University of Southern California; CU=Columbia University; AFI=American Film Institute

INDEX OF SUBJECTS

ASTRONOMY *Into the Void; Starry Night*

BIOLOGY *Clarity; Hot Air; A Lucky Man; Sin Dolor; Standing8; Stealth*

CHEMISTRY *The Collector's Gift; Crick in the Holler; Haber; Paprika; Sweet Potatoes; Yellow Rain*

ECOLOGY *Bird in Hand; Concrete; The Loneliest; Passerine; A Bird Duet*

EVOLUTION *Cain; Flood; Wild Love*

GENETICS *Love Chance; Nzara '76; XP; Visible Proof*

HISTORY OF SCIENCE *The Rain Collector; Semmelweis; Skylab; Through the Air to Calais*

MATHEMATICS *Chasing Patterns; Variables*

PHYSICS *For All Mankind; Hardbat; A Hole; Jornada Del Muerto; The Monster and the Peanut; Signal; Stella for Star*

PSYCHOLOGY *Atrocity; Cradle; In Vivid Detail; The Reality Clock; Remembrance; The Witness*

TECHNOLOGY *App; The Chef; The Code of Family; The King's Pawn; Spark; Temma; Three Light Bulbs; Without Fire*

ACKNOWLEDGEMENTS

ASTRONOMY, HISTORY OF SCIENCE

INTO THE VOID ([Click here to watch](#))

2018, 20 minutes

AGE GROUP: Middle school and older

STANDARDS: NGSS: Grades 6-12, Earth's Place in the Universe (ESS1.A: The Universe and Its Stars)

SUMMARY: Budding astronomer, wife, and young mother Vera Rubin prepares to present her new, groundbreaking research to the American Astronomical Society. However, she discovers a prejudice that runs much deeper than she thought.

QUESTIONS TO EXPLORE: What are the most significant discoveries Vera Rubin made about the universe? How did Vera Rubin discover dark matter? How have her revelations contributed to what we know today about the universe? How was Vera Rubin put at a disadvantage by her peers and the scientific community?

RESOURCES:

Seeing dark matter classroom activity guide:

<https://www.jpl.nasa.gov/edu/teach/activity/how-do-we-see-dark-matter/>

How Vera Rubin discovered dark matter:

<https://www.amnh.org/learn-teach/curriculum-collections/cosmic-horizons-book/vera-rubin-dark-matter>

NASA on dark matter and dark energy:

<https://science.nasa.gov/astrophysics/focus-areas/what-is-dark-energy>

Additional information about Vera Rubin:

<https://www.amnh.org/learn-teach/curriculum-collections/cosmic-horizons-book/vera-rubin-dark-matter>



CREDITS:

Written and Produced by Ciara Doll

Directed by Yossera Bouchtia

Edited by Yossera Bouchtia, Cora Siragna

Cast: Abigail Ludrof, Hunter Hoffman, Travis Mitchell

Funded by a Columbia University-Sloan Production Grant

STARRY NIGHT ([Click here to watch](#))

2013, 20 minutes

AGE GROUP: Middle School and higher

STANDARDS: NGSS: Grades 6-12, Earth's Place in the Universe (The Universe and Its Stars, ESS1.A)

SUMMARY: *Starry Night* is the story of Dawn, a teenage girl trying to escape her small town to pursue her passion for astronomy.

QUESTIONS TO EXPLORE: What tools do astronomers use? According to *Starry Night*, what are variable stars? How do astronomers measure the distance between objects in the solar system?

RESOURCES:

An explanation of variable stars and where to find them:

<https://www.aavso.org/variables-what-are-they-why-observe-them>

Facts and classroom activities related to astronomy:

<https://mcdonaldobservatory.org/teachers/classroom>



CREDITS:

Written and Directed by Paxton Farrar

Produced by Paxton Farrar and Katherine Paige

Edited by Paxton Farrar and William Pierce

Cast: Paige Hiskey, Brian Combs, Joe Lambright, Frank Lawler, Shondale Seymour

Funded by an NYU-Sloan Production Grant

CLARITY ([Click here to watch](#))
2015, 20 minutes

AGE GROUP: High school

STANDARDS: NGSS: Grades 9-12 From Molecules to Organisms: Structures and Processes (LS1.A: Structure and Function), Engineering Design (ETS1.B: Developing Possible Solutions, ETS1.C: Optimizing the Design Solution)

SUMMARY: A story of obsession, power, and discovery centering around a maverick neuroscientist, her doting pupil, and an alluring machine that could revolutionize brain science.

QUESTIONS TO EXPLORE: Why were Ana and Samantha having such a difficult time using mice to test their machine? What are neurons and why are they so important? How does the brain interact with the nervous system? What is the challenge with creating a map of the entire human brain?

RESOURCES:

Neuroscience classroom information and activities based on grade level:
<http://brainu.org/neuroscience-concepts-activities-grade-level-high-school-grades-9-12>

Information on the different types of neurons, and their role in the brain and nervous system:
<https://qbi.uq.edu.au/brain/brain-anatomy/types-neurons>

A profile of a documentary film and filmmaker about efforts to map the brain:
<https://www.newyorker.com/culture/annals-of-inquiry/the-appeal-of-scientific-heroism>

General neuroscience information and its different fields:
<https://neuro.georgetown.edu/about-neuroscience/>



CREDITS:

Written and Directed by Dustin Brown

Produced by Jason Smith

Edited by Mengle Han

Cast: Christine Kellogg-Darrin, Sam Buchanan, Lonnie Woodley

Funded by an AFI-Sloan Production Grant

HOT AIR ([Click here to watch](#))
2019, 14 minutes

AGE GROUP: Middle School and older

STANDARDS: NGSS: Grades 6-12 Earth and Human Activity (ESS3.B: Natural Hazards), Ecosystems: Interactions, Energy, and Dynamics (LS2.A: Interdependent Relationships in Ecosystems)

SUMMARY: It was 1856 when Eunice Newton Foote made a monumental discovery in climate science. Today, we know her work, but not her name. This is her story.

QUESTIONS TO EXPLORE: What were the methods Eunice Newton Foote used to conduct her experiments on greenhouse gases? What is Eunice Newton Foote's legacy? What are some of the most significant sources of greenhouse gas emissions today? What can we do to mitigate the effects of greenhouse gases?

RESOURCES:

The legacy of Eunice Newton Foote:

<https://www.climate.gov/news-features/features/happy-200th-birthday-eunice-foote-hidden-climate-science-pioneer>

Greenhouse effect classroom demonstration:

https://mrcc.purdue.edu/resources/guides/HowTo_GreenhouseEffect.pdf

Additional background info about Eunice Newton Foote, and how she conducted her experiments:

<https://www.bbvaopenmind.com/en/science/environment/eunice-newton-foote-pioneer-greenhouse-effect/>

Sources of greenhouse gas emissions:

<https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>



CREDITS:

Written and Directed by Urvashi Pathania

Produced by Liz Lian, Polina Osen

Edited by Grace Park

Cast: Katherine LaVioire, Ethan Averton, Peter Xifo

Funded by a USC-Sloan Production Grant

A LUCKY MAN ([Click here to watch](#))

2014, 16 minutes

AGE GROUP: High school ***Mature Content Advisory***

STANDARDS: NGSS: Grades 9-12, Ecosystems: Interactions, Energy, and Dynamics (LS2.D: Social Interactions and Group Behavior)

SUMMARY: The star quarterback of a college football team wakes up with no memory of what happened during a party the night before. His search yields undesired knowledge about the body of a man—but gives him answers that he ultimately needs to accept.

QUESTIONS TO EXPLORE: What are common side effects linked to PTSD for men? Why is it controversial for a man to be sexually violated by a woman? What is the physiological basis for arousal?

RESOURCES:

Interview with writer/director Anna Gutto:

<http://scienceandfilm.org/articles/2998/a-lucky-man-writer-and-director-anna-gutto>

Physiology of male arousal:

<https://my.clevelandclinic.org/health/articles/10036-erection-ejaculation-how-it-occurs>

Men as victims of sexual assault:

<https://slate.com/human-interest/2014/04/male-rape-in-america-a-new-study-reveals-that-men-are-sexually-assaulted-almost-as-often-as-women.html>

Effects of sexual violence:

<https://www.rainn.org/effects-sexual-violence>



CREDITS:

Written and Directed by Anna Gutto

Produced by Inger Sveberg Dietrichs

Edited by Andrew Napier

Cast: Colin Bates, Chloe Williamson, Xavier Evans

Funded by a Columbia University-Sloan Production Grant

SIN DOLOR ([Click here to watch](#))

2011, 20 minutes

AGE GROUP: High school

STANDARDS: NGSS: Grades 9-12, From Molecules to Organisms: Structures and Processes (LS1.A: Structure and Function), Heredity: Inheritance and Variation of Traits (LS3.B: Variation of Traits)

SUMMARY: A doctor discovers that a patient of his can't feel pain.

QUESTIONS TO EXPLORE: What is the neurological basis behind an inability to feel pain? How did Dámaso's "gift" turn out to be a curse? Why is pain important?

RESOURCES:

Medical description of Dámaso's condition:

<https://rarediseases.info.nih.gov/diseases/12267/congenital-insensitivity-to-pain>

How an inability to feel pain is harmful to people across the world:

<https://www.bbc.com/future/article/20170426-the-people-who-never-feel-any-pain>

How the body and the brain interpret pain:

<https://southernpainclinic.com/blog/how-the-nervous-system-detects-and-interprets-pain/>



CREDITS:

Written by Derek Simon

Directed by Joseph Greco

Produced by Morgan P. Collins, Zoe Salicrup-Junco

Edited by Joe Greco

Cast: Sean Martin, Randall McNeal, Luis Gonzaga

Funded by an NYU-Sloan Production Grant

STANDING8 ([Click here to watch](#))

2014, 15 minutes

AGE GROUP: High School ***Mature Content Advisory***

STANDARDS: NGSS: Grades 9-12, Heredity: Inheritance and Variation of Traits (Structure and Function, LS1.A)

SUMMARY: In the months between beating an opponent to death in the ring and battling for the next title, a journeyman boxer, Abdul Gillings, is forced to examine if he can survive the sport. Abdul is preparing for the biggest fight of his career. But, when a neurologist suspects a chronic brain injury, she hesitates to sign Abdul's health certificate, threatening his chances of becoming a champion.

QUESTIONS TO EXPLORE: What are the symptoms of Chronic Traumatic Encephalopathy (CTE)? Why is CTE so difficult to diagnose? What areas of the brain are affected in CTE?

RESOURCES:

An overview Chronic Traumatic Encephalopathy (CTE):

<http://www.bu.edu/alzresearch/ctecenter/chronic-traumatic-encephalopathy-faqs/>

How CTE affects the brain:

<http://www.pbs.org/wgbh/frontline/article/the-four-stages-of-cte/>

Premiere of Standing8:

<http://scienceandfilm.org/articles/2735/premiere-michael-molina-minards-standing8>



CREDITS:

Written and Directed by Michael Molina Minard

Produced by Ophelia Harutyunyan and Michel Stolnicki

Cast: Jon Michael Hill, Alfie Fuller, Germar Gardner

Funded by a CU-Sloan Production Grant

STEALTH ([Click here to watch](#))

2013, 22 minutes

AGE GROUP: Middle school and higher

STANDARDS: NGSS: Grades 6-12, Heredity: Inheritance and Variation of Traits (LS3.A: Inheritance of Traits)

SUMMARY: A transgender girl undergoing hormone therapies is simultaneously trying to make friends at a new middle school.

QUESTIONS TO EXPLORE: What challenges does Sammy face with her friends? How does the medication Sammy is taking affect her body? What is the difference between sex and gender? How are puberty blockers used?

RESOURCES:

Gender-Inclusive Biology: Framework in Action

<https://www.nsta.org/science-teacher/science-teacher-septemberoctober-2021/gender-inclusive-biology-framework-action>

Resources for educators on trans youth:

<http://www.transyouthequality.org/for-educators>

How to support gender-diverse students:

https://eoss.asu.edu/sites/default/files/Trans_Guide_Revised_S21_.pdf

The basics of gender identity and expression:

<https://www.hrc.org/resources/transgender-children-and-youth-understanding-the-basics>

Explanation of puberty blockers:

<https://www.mayoclinic.org/diseases-conditions/gender-dysphoria/in-depth/pubertal-blockers/art-20459075>

New research into puberty blockers:

<https://www.nytimes.com/2022/11/14/health/puberty-blockers-transgender.html>



CREDITS:

Written by Melissa Hoppe

Directed by Bennett Lasseter

Produced by Melissa Hoppe

Edited by Leo Chan

Cast: Kristina Hernandez, Liana Arauz, Keely Alona, Asia Aragon

Funded by an AFI-Sloan Production Grant

THE COLLECTOR'S GIFT ([Click here to watch](#))

2011, 8 minutes

AGE GROUP: Elementary School and higher

STANDARDS: NGSS: Grades K-12, Matter and Its Interactions (Structures and Properties of Matter, PS1.A)

SUMMARY: A young girl pieces together the journey of a man who once tried to gather all of the elements of the periodic table.

QUESTIONS TO EXPLORE: What is a chemical element? What distinguishes one element from another on the periodic table? Who are some of the key people who discovered the elements?

RESOURCES:

The stories of people who helped develop the periodic table:

<http://www.rsc.org/periodic-table/history/about>

A program about where the elements on the periodic table come from:

<http://www.pbs.org/wgbh/nova/physics/hunting-elements.html>

A lesson plan and educational videos about the elements:

<http://www.pbs.org/wgbh/nova/education/physics/hunting-the-elements-collection.html#lesson>

A free App that lets players build and explore elements:

<http://www.pbs.org/wgbh/nova/physics/elements-ipad-app.html>



CREDITS:

Written, Animated, Produced, and Directed by Ryan Kravetz
Funded by a USC-Sloan Production Grant

CRICK IN THE HOLLER ([Click here to watch](#))

2016, 18 minutes

AGE GROUP: High school

STANDARDS: NGSS: Grades 9-12, Earth's Systems (ESS2.C: The Roles of Water in Earth's Surface Processes), Earth and Human Activity (ESS3.C: Human Impacts on Earth Systems)

SUMMARY: During West Virginia's 2014 Elk River chemical spill, a first-generation college student charged with the care of her rebellious younger sister instead becomes consumed by an issue with their water supply.

QUESTIONS TO EXPLORE: What is MCHM and why is it harmful? What are the symptoms and effects of ingesting MCHM? What is MCHM typically used for? What are the ways in which water can be contaminated, chemically or otherwise? What are the methods of preventing contaminants from entering water supply?

RESOURCES:

Information about MCHM:

<https://www.scientificamerican.com/article/how-dangerous-is-the-chemical-spilled-in-west-virginia/>

Learning chemical compounds classroom activity:

<https://www.acs.org/content/dam/acsorg/education/outreach/kidschemistry/activities/chemistry-name-game.pdf>

Information and background on the Elk River Chemical Spill:

<https://www.cwp.org/why-we-should-remember-the-elk-river-spill/>

Additional information regarding drinking water contaminants:

<https://www.epa.gov/cc1/types-drinking-water-contaminants>

Article about PFAS in water:

<http://www.scienceandfilm.org/articles/3275/chemicals-in-dark-waters>



CREDITS:

Written and Directed by Ursula Ellis

Produced by Nadia Zoe, Emerson Nosek, Benjamin Gojer

Edited by Russell Yaffe

Cast: Rebeca Robles, Chloe Roe, Van Hansis

Funded by a Columbia University-Sloan Production Grant

CHEMISTRY, HISTORY OF SCIENCE

HABER ([Click here to watch](#))

2008, 33 minutes

AGE GROUP: High School

STANDARDS: NGSS: Grades 9-12, Matter and Its Interactions (Structure and Properties of Matter, PS1.A; Chemical Reactions, PS1.B); Ecosystems: Interactions, Energy, and Dynamics (Cycles of Matter and Energy Transfer in Ecosystems, LS2.B); Earth and Human Activity (Natural Resources, ESS3.A; Human Impacts on Earth Systems, ESS3.C; Developing Possible Solutions, ETS1.B)

SUMMARY: Fritz Haber was a brilliant German-Jewish chemist with one of the most amazing dual legacies in history. His revolutionary process for creating synthetic fertilizers averted the greatest overpopulation crisis the world has ever known and won him a Nobel Prize in 1918. However, Haber used his genius to create the first chemical weapon, which was used during World War I.

QUESTIONS TO EXPLORE: How is ammonia made and what are some of its practical uses? What were Fritz Haber's contributions to the military? What is Fritz Haber's legacy?

RESOURCES:

A teacher's guide to Haber:

<http://www.haberfilm.com/PDFs/HABER-TeacherResources.pdf>

A radio interview about the life and legacy of Fritz Haber:

<http://www.radiolab.org/story/180132-how-do-you-solve-problem-fritz-haber/>

Fritz Haber's acceptance speech for the Nobel Prize:

http://www.nobelprize.org/nobel_prizes/chemistry/laureates/1918/press.html

A brief history of chemical warfare:

<https://www.chemheritage.org/distillations/article/brief-history-chemical-war>



CREDITS:

Written and Directed by Daniel Ragussis

Produced by Ragussis, Shannon Factor, Brian Hwang, and Chris Spanos. .

Edited by Sara Corrigan

Cast: Christian Berkel, Juliane Köhler, Wolf Kahler, Mark Margolis, Ted Pejovich

Funded by a CU-Sloan Production Grant

CHEMISTRY, HISTORY OF SCIENCE

PAPRIKA ([Click here to watch](#))

2004, 7 minutes

AGE GROUP: Elementary School and higher

STANDARDS: NGSS: Grades K-12, Matter and Its Interactions (Chemical Reactions, PS1.B; Structure and Properties of Matter, PS1.A; Optimizing the Design Solution, ETS1.C); From Molecules to Organisms: Structures and Processes (Organization for Matter and Energy Flow in Organisms, LS1.C; Growth and Development of Organisms, LS1.B)

SUMMARY: *Paprika* celebrates the Hungarian scientist Albert Szent-Györgyi who received a Nobel Prize in 1937 for his work on the isolation of Vitamin C.

QUESTIONS TO EXPLORE: Who was Albert Szent-Györgyi? How does the body digest Vitamin C? Why is Vitamin C important for healthy bodily functions?

RESOURCES:

The biography of Albert Szent-Györgyi:

http://www.nobelprize.org/nobel_prizes/medicine/laureates/1937/szent-gyorgyi-bio.html

A factsheet about Vitamin C:

<https://ods.od.nih.gov/factsheets/VitaminC-HealthProfessional/>

The history of the discovery of Vitamin C:

<https://www.acs.org/content/acs/en/education/whatischemistry/landmarks/szentgyorgyi.html>

A book, *Vitamina: How Vitamins Revolutionized the Way We Think About Food*, about the history of vitamins:

<http://thepenguinpress.com/book/vitamina-our-obsessive-quest-for-nutritional-perfection/>



CREDITS:

Directed and Animated by Katalin Nivelt Anguelov

Produced by Sharon Barnes

Cast: Philip Proctor, Damian Mordano, Caroline King

Funded by a USC-Sloan Production Grant

CHEMISTRY, HISTORY OF SCIENCE

SWEET POTATOES ([Click here to watch](#))

2018, 30 minutes

AGE GROUP: High school

STANDARDS: NGSS: Grades 9-12 From Molecules to Organisms: Structures and Processes (LS1.A: Structure and Function), Engineering Design (ETS1.B: Developing Possible Solutions, ETS1.C: Optimizing the Design Solution)

SUMMARY: Mexico City, 1951. After synthesizing the main component of the contraceptive pill, young scientist Luis Miramontes deals with the religious and personal consequences of his groundbreaking invention.

QUESTIONS TO EXPLORE: What was the role of sweet potatoes in Luis's discovery? Why didn't Luis receive proper recognition for his work? How do contraceptive pills work?

RESOURCES:

Information on Luis Miramontes and why he didn't receive the appropriate credit for his work:

<https://www.sciencenews.org/article/luis-miramontes-chemistry-birth-control-pill-ingredient-sexual-revolution>

How the pill works:

<https://www.pbs.org/wgbh/americanexperience/features/pill-how-pill-works/>

Hispanic and Latino chemists who contributed to the birth control pill:

<https://cen.acs.org/people/profiles/Hispanic-Latino-chemists-should-know/99/web/2021/09>



CREDITS:

Written and Directed by Rommel Villa Barriga

Produced by Damon Laguna, Andrea Porras Madero

Edited by Rommel Villa Barriga, Sebastian Silva

Cast: Jorge Adrian Espindola, Daniel Pinte, Azucena Acevedo

Funded by a USC-Sloan Production Grant

CHEMISTRY, BIOCHEMISTRY

YELLOW RAIN ([Click here to watch](#))

2014, 21 minutes

AGE GROUP: High School

STANDARDS: NGSS: Grades 9-12, Matter and Its Interactions (Chemical Reactions, PS1.B) ; Earth and Human Activity (Human Impacts on Earth Systems, ESS3.C)

SUMMARY: Near the end of the Cold War, the U.S. government received numerous reports from Southeast Asia of chemical weapons being used against democratic insurgents. After investigating, the U.S. accused the Soviets of supplying chemical weapons to the communist governments in the area. Matthew Meselson, a Harvard molecular biologist, reviewed samples of the substance but was unconvinced that what the U.S. government found was a weapon. Meselson traveled to Thailand with Thomas Seeley, a renowned animal behaviorist, to prove that the yellow substance falling from the sky was not a chemical weapon but a natural phenomenon.

QUESTIONS TO EXPLORE: What is the difference between a virus, bacteria, and toxin? How are biological weapons used and detected? Who was Matthew Meselson and what was his most important scientific contribution?

RESOURCES:

A history of biological warfare:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1326439/>

Information about the "Yellow Rain" controversy:

<http://www.nonproliferation.org/wp-content/uploads/npr/81tucker.pdf>

Matthew Meselson's program on chemical and biological weapons:

<https://infinite.mit.edu/video/matthew-s-meselson-history-and-future-biological-weapons%E2%80%9D-whitehead-lecture-series-biology-and>



CREDITS:

Written by Christopher Sachs

Directed by L. Warren Thompson

Produced by Thompson, Sachs, Badrish Patil, and Chris Roessner.

Cast: Peter McGlynn, Fred Ochs, Emmanuel Todorov, Danielle Taddei

Funded by a USC-Sloan Production Grant

ECOLOGY, ORNITHOLOGY

BIRD IN HAND ([Click here to watch](#))

2004, 17 minutes

AGE GROUP: High School

STANDARDS: NGSS: Grades 9-12, Ecosystems: Interactions, Energy, and Dynamics (Interdependent Relationships in Ecosystems, LS2.A; Social Interactions and Group Behavior, LS2.D) ; Biological Evolution: Unity and Diversity (Natural Selection, LS4.B)

SUMMARY: A struggling adolescent draws inspiration for her own music from working in a laboratory that studies how birds learn their songs.

QUESTIONS TO EXPLORE: Why do birds sing? What happens when a bird is raised in isolation? How do scientists record birdcalls?

RESOURCES:

The Cornell Lab Bird Academy on bird songs:

<https://academy.allaboutbirds.org/birdsong/>

A study of Zebra Finches raised in isolation:

http://www.eurekaalert.org/pub_releases/2009-05/cshl-ssf043009.php

Information about the Wildlife Sound Recording Society:

<https://www.wildlife-sound.org/membership/about-wsrs>



CREDITS:

Written, Directed, and Edited by Janet McIntyre

Produced by Liz Foley and Dan Meisel

Cast: Eden Durbin Schwartz, Greg Shamie

Funded by an NYU-Sloan Production Grant

ECOLOGY, BOTANY

CONCRETE ([Click here to watch](#))

2000, 14 minutes

AGE GROUP: Elementary School and higher

STANDARDS: NGSS: Grades K-12, Ecosystems: Interactions, Energy, and Dynamics (Interdependent Relationships in Ecosystems, LS2.A) ; From Molecules to Organisms: Structures and Properties (Organization for Matter and Energy Flow in Organisms, LS1.C) ; Earth's Systems (Biogeology, ESS2.E) ; Earth and Human Activity (Human Impacts on Earth Systems, ESS3.C; Biological Evolution: Unity and Diversity (Ecosystem Dynamics, Functioning, and Resilience, LS2.C; Adaptation, LS4.C)

SUMMARY: The juxtaposition of New York City's concrete with lush greenery inspired *Concrete*, a film about a botanist who decides to make a garden behind his apartment building.

QUESTIONS TO EXPLORE: What does a botanist study? What kinds of plants thrive in a city and why? What are some negative impacts humans have on the environment where plants grow?

RESOURCES:

A selection of lesson plans about plants growing in a variety of environments:

<http://www.nybg.org/edu/teacher/lesson-plans.php>

A working list of all plant species:

<https://wfoplantlist.org/plant-list>

An outline of the field of botany:

<http://www.botany.org/bsa/careers/car-what.html>

An explanation of phytoremediation:

https://www.epa.gov/sites/default/files/2015-04/documents/a_citizens_guide_to_phytoremediation.pdf



CREDITS:

Written and Directed by Andy Watts

Produced by Gaye Lirot and Betsy Alton

Cast: Willie C. Carpenter, Jasmyn Ledford, Ephriam, Martell

Funded by a CU-Sloan Production Grant

THE LONELIEST ([Click here to watch](#))

2014, 10 minutes

AGE GROUP: Middle School and higher

STANDARDS: NGSS: Grades 6-12, Inheritance and Variation of Traits (Variation of Traits, LS3.B); Waves And Their Applications in Technologies for Information Transfer (Wave Properties, PS4.A)

SUMMARY: A filmmaker and a marine biologist go looking for the loneliest whale in the world, that has a voice too high for other whales to hear.

QUESTIONS TO EXPLORE: What is the benefit to whales living in pods? How do sound waves travel through water? What is the relationship between a wavelength and its frequency?

RESOURCES:

Facts and classroom activities about whales:

<http://kids.nceas.ucsb.edu/index.html>

A curriculum guide to whales:

https://www.amnh.org/content/download/54513/849161/version/4/file/whales_educators_guide.pdf

An explanation of why whales make sounds:

<https://oceanservice.noaa.gov/facts/whalesounds.html>



CREDITS:

Written, directed, produced, and edited by Lilian Mehrel

Cast: Madeline Wise, Gabriele Schafer, Thomas Burns Scull

Funded by an NYU-Sloan Production Grant

ECOLOGY, ORNITHOLOGY

PASSERINE: A BIRD DUET ([Click here to watch](#))

2011, 15 minutes

AGE GROUP: High School

STANDARDS: NGSS: Grades 9-12, Ecosystems: Interactions, Energy, and Dynamics (Interdependent Relationships in Ecosystems, LS2.A; Biodiversity and Humans, LS4.D)

SUMMARY: On a hike in the woods, Darius, a noisy day-hiker, finds himself unwittingly at odds with The Baz, a crusty loner who claims to be an ornithologist in the midst of a delicate experiment.

QUESTIONS TO EXPLORE: Where are passerines found and what makes them ecologically significant? How does noise pollution affect bird behavior? How does one become a birder?

RESOURCES:

An overview of passerine birds:

<http://assets.press.princeton.edu/birds/unwin/passerines.pdf>

An article about noise pollution and how it affects birds:

<https://bentonswcd.org/effects-of-urbanization-on-birds/>

A lesson plan exploring birds' nest-building:

<https://ny.pbslearningmedia.org/resource/nat15.sci.lisci.nests/birds-designers-engineers-and-builders-of-nests/>



CREDITS:

Written, Directed, and Edited by Denise Iris

Produced by Chip Hourihan and Veronica Nickel

Cast: Jason Odell Williams, Liam Mitchell

Funded by an NYU-Sloan Production Grant

EVOLUTION, EVOLUTIONARY GENETICS

CAIN ([Click here to watch](#))

2013, 18 minutes

AGE GROUP: High School ***Mature Content Advisory***

STANDARDS: NGSS: Grades 6-12, Hereditary: Inheritance and Variation of Traits (Growth and Development of Organisms, LS1.B; Inheritance of Traits, LS3.A; Variation of Traits, LS3.B); Biological Evolution: Unity and Diversity (Evidence of Common Ancestry and Diversity, LS4.A; Adaptation, LS4.C)

SUMMARY: Ixtao has always been the most curious Neanderthal in his tribe, so when he comes across an injured creature that he has never seen before—a human child—Ixtao doesn't hesitate to take him under his wing, much to his tribe's chagrin.

QUESTIONS TO EXPLORE: What are the similarities and differences between humans and Neanderthals? What are some of the pre-linguistic forms of communication and what made them effective? What tools did the Neanderthals use?

RESOURCES:

An exploration of ancient DNA and Neanderthals:
<https://humanorigins.si.edu/evidence/genetics/ancient-dna-and-neanderthals>

A collection of lesson plans and learning resources about human evolution:
<https://ny.pbslearningmedia.org/collection/hs11/#.WZyWeZOGN0s>

An overview of Neanderthals:
<https://www.nhm.ac.uk/discover/who-were-the-neanderthals.html>



CREDITS:

Written by Zijian Yan and Ajani Jackson

Directed and Edited by Zijian Yan

Produced by Miroslav Macala

Cast: Janyl Dobson, C.J. Bane, Jovan Davis, Derek Johnson, Christopher Stadulis

Funded by a CU-Sloan Production Grant

FLOOD ([Click here to watch](#))

2016, 14 minutes

AGE GROUP: Middle School and higher ***Mature Content Advisory***

STANDARDS: NGSS: Grades 6-12, Hereditary: Inheritance and Variation of Traits (Structure and Function, LS1.A); Biological Evolution: Unity and Diversity (Adaptation, LS4.C); Earth's Place in the Universe (The History of Planet Earth, ESS1.C)

SUMMARY: Miriam is an unemployed journalist who has a beat on a story that could turn her bad luck around. For ten years, her dad, Gordon, has lived in the Mojave Desert running a paleontology museum, but Gordon believes that the earth was made in days, people and dinosaurs coexisted, and the fossil record is a result of Noah's Flood. Miriam ventures west to interview Gordon about what made him a creationist.

QUESTIONS TO EXPLORE: What is the job of a paleontologist? How did the dinosaurs become extinct? How do scientists study the origins of the universe?

RESOURCES:

A museum guide to fossil and geology collections:

<https://www.fieldmuseum.org/science/research/area/fossils-meteorites>

Multi-media educational resources about paleontology:

<https://paleosoc.org/educators/educational-resources/>

Classroom lessons about evolution and science for high-school teachers:

<https://ensiweb.bio.indiana.edu/>



CREDITS:

Written and directed by Katy Scoggin

Produced by Isabella Wing-Davey

Edited by Danielle Morgan

Cast: Rosie Benton, Paul Klementowicz, and Mary B. McCann

Funded by a NYU-Sloan Production Grant

WILD LOVE ([Click here to watch](#))

2014, 15 minutes

AGE GROUP: Middle School and higher ***Mature Content Advisory***

STANDARDS: NGSS: Grades 6-12, From Molecules to Organisms: Structures and Processes (Growth and Development of Organisms, LS1.B); Heredity: Inheritance and Variation of Traits (Growth and Development of Organisms, LS1.B); Ecosystems: Interactions, Energy, and Dynamics (Social Interactions and Group Behavior, LS2.D)

SUMMARY: *Wild Love* juxtaposes the social lives of a group of wild capuchin monkeys with the behaviors of the primatologists who study them.

QUESTIONS TO EXPLORE: What tools does a primatologist need in the field? What role does competition play in evolution? How does the behavior of female capuchin monkeys differ from that of males?

RESOURCES:

Teaching materials from the American Society of Primatologists:
<https://www.asp.org/asp-education/teaching-materials/>

Information about the wild capuchin monkey population in Costa Rica:

<http://capuchinfoundation.org/research/traditions.html>



CREDITS:

Written, directed, edited, and produced by Eben Portnoy

Cast: Kelsey Siepser, Javier Bosques, Catherine Leong, Gabriel Castro, Matthew Hartman

Funded by a UCLA-Sloan Production Grant

LOVE CHANCE ([Click here to watch](#))

2005, 26 minutes

AGE GROUP: High School

STANDARDS: National/NGSS: Grades 9-12, Heredity: Inheritance and Variation of Traits (Inheritance of Traits, LS3.A; Variation of Traits, LS3.B); From Molecules to Organisms: Structures and Processes (Growth and Development of Organisms, LS1.B)

SUMMARY: In *Love Chance*, a pregnant genetic counselor and a young couple on the verge of getting married all face the unhappy potentialities inherent in their genes.

QUESTIONS TO EXPLORE: What can genetic sequencing predict? What is Cystic Fibrosis and Huntington's Disease? What effect can the environment have on genes?

RESOURCES:

An article about the role of genetic counselors:

<https://americanpregnancy.org/getting-pregnant/genetic-counseling/>

Overview of genetic testing for Huntington's Disease:

<https://health.ucdavis.edu/huntingtons/files/Genetic%20Testing%20letter%20COE%202016.pdf>

Prenatal screening for Cystic Fibrosis FAQs:

<https://www.acog.org/womens-health/faqs/cystic-fibrosis-prenatal-screening-and-diagnosis>



CREDITS:

Written by Mary F. Unser

Directed by Gregory Lehane

Produced by Shirley J. Saldamarco

Edited by Ralph Vituccio

Cast: Lissa Brennan, Daniel Krell, Stephen Schellhardt, Aimée DeShayes, Nicholas Lehane

Funded by a CMU-Sloan Production Grant

GENETICS, EPIDEMIOLOGY

NZARA '76 ([Click here to watch](#))

2014, 19 minutes

AGE GROUP: High School

STANDARDS: NGSS: Grades 9-12, Heredity: Inheritance and Variation of Traits (Structure and Function, LS1.A); Biological Evolution: Unity and Diversity (Developing Possible Solutions, ETS1.B)

SUMMARY: 1976. A deadly disease spreads in people on the border of Zaire and Sudan. The responding team of doctors find themselves caught between local cultural customs and the extreme measures needed to stop the diseases' spread.

QUESTIONS TO EXPLORE: What are the similarities between Ebola and the disease depicted in *Nzara '76*? What is the difference between a virus and a bacterial infection? What is the role of the World Health Organization?

RESOURCES:

Overview of infectious diseases:

<https://my.clevelandclinic.org/health/diseases/17724-infectious-diseases>

Information about the Ebola Virus:

<https://www.cdc.gov/vhf/ebola/about.html>

Classroom activities related to epidemiology:

<https://www.nationalgeographic.org/lesson/theres-outbreak/print/>



CREDITS:

Written and Directed by Jon Noble

Produced by Bernardo Duran Jr., Micaela Colman, and Meenakshi Ramamurthy

Edited by Saira Haider

Cast: Tad Shafer, Neil Ellice, Gladys Nyoth, Ratidzo Mambo

Funded by a USC-Sloan Production Grant

XP ([Click here to watch](#))

2002, 10 minutes

AGE GROUP: Middle School and higher

STANDARDS: NGSS: Grades 9-12, Heredity: Inheritance and Variation of Traits (Inheritance of Traits, LS3.B); Earth's Systems (Weather and Climate, ESS2.D)

SUMMARY: In *XP*, a young boy is afflicted with xeroderma pigmentosum rendering him unable to venture outside into the sunlight or endure any sources of UV radiation in the home. He is torn between the admonitions of his mother and doctor, and his wish to live a normal boyhood.

QUESTIONS TO EXPLORE: What is xeroderma pigmentosum (XP)? How is XP transmitted? What are some ways to stay protected from UV radiation?

RESOURCES:

The causes and symptoms of xeroderma pigmentosum:
<https://rarediseases.info.nih.gov/diseases/7910/xeroderma-pigmentosum>

A classroom activity on UV radiation:
<https://scied.ucar.edu/activity/learn/ultraviolet-light-tonic-water>

A lesson on sunburn and UV exposure:
https://www.redcross.org/content/dam/redcross/atg/PDFs/Take_a_Class/Too_much_sun_is_no_fun.pdf



CREDITS:

Written and Directed by David Barba

Produced by James Pellerito

Edited by David Barba

Cast: Blake Coelho, Jennifer Elise Gould, Roberto Garcia

Funded by a CU-Sloan Production Grant

GENETICS, BIOLOGY

VISIBLE PROOF ([Click here to watch](#))

2011, 23 minutes

AGE GROUP: High School ***Mature Content Advisory***

STANDARDS: NGSS: Grades 9-12, Inheritance and Variation of Traits (Structure and Function, LS1.A)

SUMMARY: Based on the true story of the first murder solved by fingerprint evidence.

QUESTIONS TO EXPLORE: Who were Juan Vucetich and Eduardo Alvarez and what was their major scientific contribution? What can forensic practitioners tell from a fingerprint that they cannot tell from a DNA test, and vice versa? How are fingerprints recorded and classified?

RESOURCES:

History of the fingerprint:

<https://www.ojp.gov/pdffiles1/nij/225321.pdf>

A lesson plan on using DNA as evidence:

https://ny.pbslearningmedia.org/resource/tdc02.sci.life.gen.lp_dnamysteries/dna-fingerprints/

Issues with using fingerprints as evidence:

<https://californiainnocenceproject.org/issues-we-face/fingerprint-analysis/>



CREDITS:

Written and Directed by Gabil Sultanov

Produced by Drew Diamond and Evan Cook

Cast: Ezequiel Stremiz, Francisco Garat, Erika Macke, Natalia Adame, Anibal Silveyra, Juan Monsalvez, JP Perat

Funded by a USC-Sloan Production Grant

HISTORY OF SCIENCE

THE RAIN COLLECTOR ([Click here to watch](#))

2013, 13 minutes

AGE GROUP: Middle school and older

STANDARDS: NGSS: Grades 6-12, Earth's Systems
(ESS2.C: The Roles of Water in Earth's Surface Processes,
ESS2.D: Weather and Climate)

SUMMARY: A young woman in Victorian England finds purpose and maybe even love through science. Based on the work of the British Rainfall Organization in 19th Century England.

QUESTIONS TO EXPLORE: Why did the British Rainfall Organization call for volunteers of "both sexes; all ages and all classes"? What information does rain collection give us about our climate and weather? What is citizen science?

RESOURCES:

Contemporary tools for measuring rainfall:
<https://olc.worldbank.org/sites/default/files/sco/E7B1C4DE-C187-5EDB-3EF2-897802DEA3BF/Nasa/chapter2.html>

History of the British Rainfall Organization:
<https://www.rmets.org/sites/default/files/hist05.pdf>

Create your own rain gauge:
<https://www.education.com/science-fair/article/DIY-rain-gauge/>

Information on the Community Collaborative Rain, Hail and Snow Network citizen science project:
<https://www.cocorahs.org/Content.aspx?page=aboutus>



CREDITS:

Written and Directed by Isabella Wing-Davey
Produced by Isabella Wing-Davey, Theodora Dunlap, Emilia Reid
Edited by Matthew C. Hart
Cast: Celine Buckens, Hermione Norris, Max Bennett
Funded by an NYU-Sloan Production Grant

HISTORY OF SCIENCE, MICROBIOLOGY

SEMMELEWEIS ([Click here to watch](#))

2001, 21 minutes

AGE GROUP: High School

STANDARDS: NGSS: Grades 9-12, From Molecules to Organisms: Structures and Processes (Structure and Function, LS1.A); Ecosystems: Interactions, Energy, and Dynamics (Social Interactions and Group Behavior, LS2.D; Developing Possible Solutions, ETS1.B)

SUMMARY: In 1847, the Hungarian physician Ignaz Semmelweis discovered that many cases of childbirth fever had been caused by the fact that doctors weren't washing their hands before treating pregnant women. His findings were spurned by the medical community.

QUESTIONS TO EXPLORE: What is the germ theory of disease? Why is hand-washing important? How have hospitals changed since the late 19th century?

RESOURCES:

Overview of germs:

<https://my.clevelandclinic.org/health/articles/24495-germs>

Why handwashing is important:

<https://www.cdc.gov/handwashing/why-handwashing.html>

Interview with filmmaker Jim Berry:

<https://scienceandfilm.org/articles/3303/ignaz-semmelweis-and-the-origins-of-hand-washing>

Radio episode about Semmelweis:

<https://www.npr.org/sections/health-shots/2015/01/12/375663920/the-doctor-who-championed-hand-washing-and-saved-women-s-lives>



CREDITS:

Written and Directed by Jim Berry

Produced by Berry, Sam Riegel, and Fritz Michel

Edited by Jessica Sharzer

Cast: Fritz Michel, Eden Riegel, Keiko Agena

Funded by an NYU-Sloan Production Grant

HISTORY OF SCIENCE, AERONAUTICS

SKYLAB ([Click here to watch](#))

2005, 12 minutes

AGE GROUP: Middle School and higher

STANDARDS: NGSS: Grades 6-12, Earth's Place in the Universe (Earth and the Solar System, ESS1.B); Engineering Design (Defining and Delimiting Engineering Problems, ETS1.A)

SUMMARY: An 11-year-old spends the summer of 1979 certain that Skylab, America's First Space Station—then falling back to Earth, though no expert could say where—is about to land on top of him. It might almost make him less miserable if it did; he is spending the summer with his mother who is planning a second marriage to a guy he can't stand.

QUESTIONS TO EXPLORE: What were the goals of the Skylab Space Station? What were some of the engineering challenges that the Skylab Space Station faced? What is the International Space Station and what sorts of experiments are conducted on board?

RESOURCES:

History of Skylab:

https://www.nasa.gov/missions/shuttle/f_skylab1.html

Skylab crash:

<https://www.history.com/news/the-day-skylab-crashed-to-earth-facts-about-the-first-u-s-space-stations-re-entry>

Teaching resources related to Skylab:

<https://www.txstate-epdc.net/skylab-from-space-to-your-classroom/>



CREDITS:

Written and Directed by Mark Landsman

Produced by Shani M. Rotkowitz

Edited by Brad Schwartz

Cast: Dennis Bendersky, Joe Marinelli, Dorian Frankel, Adam Riancho

Funded by an AFI-Sloan Production Grant

HISTORY OF SCIENCE, AERODYNAMICS

THROUGH THE AIR TO CALAIS [\(Click here to watch\)](#)

2008, 17 minutes

AGE GROUP: High School

STANDARDS: NGSS: Grades 9-12, Motion and Stability: Forces and Interactions (Forces and Motion, PS2.A); Energy (Relationship Between Energy and Forces, PS3.C); Engineering Design (Defining and Delimiting Engineering Problems, ETS1.A; Developing Possible Solutions, ETS1.B)

SUMMARY: January 7th, 1785. The birds have dominated the skies and gone relatively unchallenged as rulers of the aerial kingdom...until now. Eccentric French Inventor, Jean-Pierre Blanchard and his American financier, Dr. John Jeffries, are embarking on a journey to become the first men to cross the English Channel in a hydrogen balloon. This unlikely pair is bringing: a set of wings to row through the air, the first bag of international airmail, and a bottle of cognac to celebrate their success. However, before these pioneers of aviation can celebrate, they'll need to survive the crossing.

QUESTIONS TO EXPLORE: Who was Jean-Pierre Blanchard? What is buoyancy? What are the advantages and disadvantages of using hydrogen for a balloon?

RESOURCES:

An entry on the life and inventions of Jean-Pierre Blanchard:

<http://www.bbml.org.uk/ballooning-history/jean-pierre-blanchard/>

A classroom activity building a hot air balloon:

https://www.nasa.gov/pdf/544372main_PS1_Bag%20Balloon_C1_Final.pdf

An explanation of buoyancy:

<https://howthingsfly.si.edu/gravity-air/buoyancy>



CREDITS:

Written by Joseph Mauceri and Jonathan Eisen

Directed by Joseph Mauceri

Produced by Seth Kamphuijs

Edited by Mechan Hernandez

Cast: Casper van Dien, Joseph Benmiloud

Funded by an AFI-Sloan Production Grant

CHASING PATTERNS [\(Click here to watch\)](#)

2003, 16 minutes

AGE GROUP: Elementary School and higher

STANDARDS: NGSS: Grades K-12, From Molecules to Organisms: Structures and Processes (Structure and Function, LS1.A)

SUMMARY: The young hero of *Chasing Patterns* is lucky enough to have a teacher who encourages his fascination with the patterns he sees in sunflowers and pine cones—a passion that dovetails with his love of narrative, especially a book of Arthurian legends that belonged to his late mother.

QUESTIONS TO EXPLORE: What is the Fibonacci Sequence? Where is the Fibonacci Sequence in nature? Why does the Fibonacci Sequence occur so often in the environment?

RESOURCES:

How the Fibonacci Sequence was first invented, plus many examples of it in nature:

<https://plus.maths.org/content/life-and-numbers-fibonacci>

How to count spirals:

<http://momath.org/home/fibonacci-numbers-of-sunflower-seed-spirals/>



CREDITS:

Written and Directed by Monika Hennig

Produced by Hennig and John Halbert

Edited by Hennig and Nancy Wang

Cast: Danny McCarthy, Donal O'Sullivan, Neil Fournier, King Stuart

Funded by a USC-Sloan Production Grant

VARIABLES [\(Click here to watch\)](#)

2017, 24 minutes

AGE GROUP: High school

STANDARDS: NGSS: Grades 9-12, Statistics and Probability (S-ID: Interpreting Categorical and Quantitative Data)

SUMMARY: In the middle of the Bosnian War, a 15-year-old math whiz is given a way out of the bloodshed when his math club gets an invitation to compete at the International Math Olympiad in Canada. Inspired by a true story.

QUESTIONS TO EXPLORE: Why was Nikola hesitant to stay in Canada? Why did Nikola have so much trouble leaving Bosnia and passing through the tunnel? Who qualifies for the Math Olympiad?

RESOURCES:

More information about the International Math Olympiad:

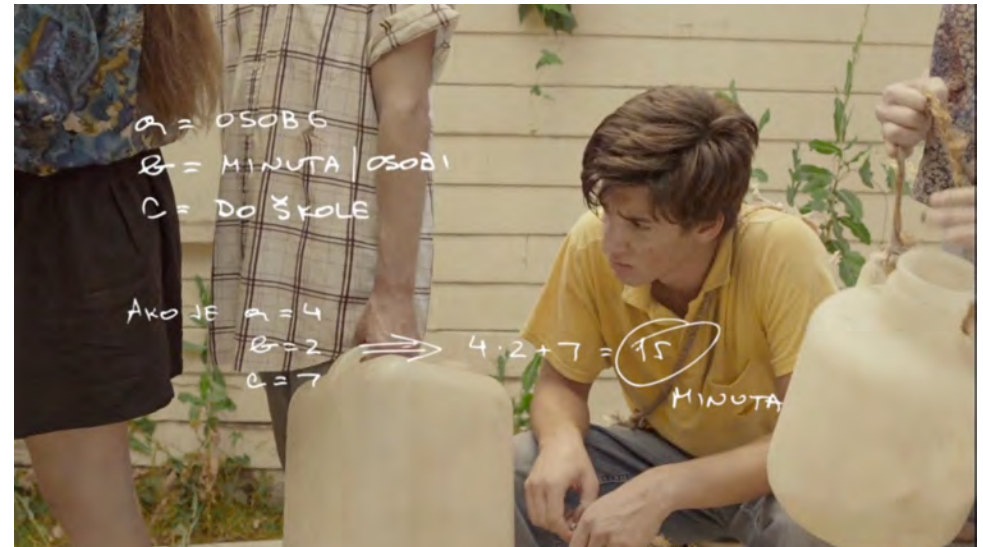
<https://www.international-maths-olympiad.com/about-the-olympiad/>

About the Bosnian War:

https://www.newworldencyclopedia.org/entry/Bosnian_War

Effects of Olympiad training on students:

<https://dash.harvard.edu/bitstream/handle/1/37367698/Mila%20Martynovsky%20%284.2.1%29%20thesis%20Girls%27%20Confidence%20in%20Knowledge%20.pdf?sequence=1&isAllowed=y>



CREDITS:

Written and Directed by Sabina Vajraca

Produced by Miles Alva, Wes Akwuobi

Edited by Thomas Mendolia

Cast: Mira Furlan, Leona Paraminski, Haris Turcindodzic

Funded by a USC-Sloan Production Grant

FOR ALL MANKIND ([Click here to watch](#))

2009, 16 minutes

AGE GROUP: High School

STANDARDS: NGSS: Grades 9-12, Energy (Relationship Between Energy and Forces, PS3.C; Defining and Delineating Engineering Problems, ETS1.A); Earth and Human Activity (Developing Possible Solutions, ETS1.B)

SUMMARY: Johnny Red always wanted to be a scientist and work for NASA. After several academic mishaps, he ends up stuck in his suburban Pennsylvania town. Johnny decides to build a functioning time machine. Instead of using correct science, Johnny decides to base all of his research on action-adventure films of the 1980s and 1990s.

QUESTIONS TO EXPLORE: What is the speed of light? How is it measured? How does the speed of light relate to time travel?

RESOURCES:

Video and supporting materials about measuring the speed of light:

<https://ny.pbslearningmedia.org/resource/lsp07.sci.phys.energy.light-speed/speed-of-light/>

NASA explains time travel:

<https://spaceplace.nasa.gov/time-travel/en/>

The history of measuring the speed of light:

<https://www.space.com/15830-light-speed.html>



CREDITS:

Written and Directed by Daniel Clifton

Produced by Clifton, Amanda Menaker, and Mary-Michael D'Onofrio

Edited by Clifton and Rob Malone

Cast: Josh Gaboian, Haley Bond Peterson, Evander Duck, Nico Bell

Funded by an NYU-Sloan Production Grant

HARDBAT [\(Click here to watch\)](#)

2013, 13 minutes

AGE GROUP: High School

STANDARDS: NGSS: Grades 9-12, Forces and Interactions (Forces and Motion, PS2.A); Engineering Design (Optimizing the Design Solution, ETS1.C)

SUMMARY: A dad's obsession with the physics of ping pong disrupts a pleasant evening.

QUESTIONS TO EXPLORE: Why would a physicist be interested in ping pong? What is the relationship between movement and speed? In *Hardbat*, why does the physicist prefer a sponge paddle?

RESOURCES:

The physics and math of ping pong:

<https://www.liveabout.com/physics-of-table-tennis-3173598>

Classroom demonstration on the spin of a ping pong ball:

https://www.grc.nasa.gov/www/k-12/TRC/Aeronautics/Ping_Pong_Curve.html



CREDITS:

Written, directed, and edited by Zack Schamberg

Produced by Charlotte Rabate

Cast: Ronald Guttman, Jessica Renee Russell, Christina Gausas, Matt Walton, Camille Mazurek, Joseph Huffman

Funded by an NYU-Sloan Production Grant

A HOLE [\(Click here to watch\)](#)

2018, 10 minutes

AGE GROUP: Middle school and older

STANDARDS: NGSS: Grades 6-12, Earth's Place in the Universe (ESS1.A: The Universe and Its Stars)

SUMMARY: The world is about to be swallowed by a black hole and turns to wealthy entrepreneur, Rob Bilford, whose “Escape Lottery” offers the only chance at continuing the human legacy.

QUESTIONS TO EXPLORE: How does a black hole form? How is a black hole able to give off light? How does a black hole interact with stars and other matter in space? How is time affected by black holes?

RESOURCES:

Basic information about black holes:

<https://science.nasa.gov/astrophysics/focus-areas/black-holes>

Answers to questions relating to black holes:

<https://www.wtamu.edu/~cbaird/sq/tag/black-hole/>

Information about recent developments in how scientists can attain information from black holes:

<https://www.quantamagazine.org/the-most-famous-paradox-in-physics-nears-its-end-20201029/>



CREDITS:

Written, Directed, Produced and Animated by Molly Flynn Murphy

Edited by Molly Flynn Murphy

Cast: Mark Rosen, Ana Carolina Estarita Guerrero, Hugh Ross, Liz Buzbee

Funded by a USC-Sloan Animation Grant

JORNADA DEL MUERTO ([Click here to watch](#))

1999, 28 minutes

AGE GROUP: High School

STANDARDS: NGSS: Grades 9-12, Matter and Its Interactions (Nuclear Processes, PS1.C)

SUMMARY: *Jornada del Muerto* is a tale of the psychological cost paid by those who worked on the atomic bomb. A scientist, wracked by guilt over the destruction and death that the bomb will cause, imagines that he has found a poor family living in a shack near the test site's ground zero.

QUESTIONS TO EXPLORE: What types of scientists and/or mathematicians went to work on the atomic bomb? How does an atomic bomb create such a large explosion? Why is Uranium-235 important in nuclear fission?

RESOURCES:

Historical article on Los Alamos and the Manhattan Project:

<https://lps.library.cmu.edu/ETHOS/article/id/35/>

Native Americans and the Manhattan Project:

<https://ahf.nuclearmuseum.org/ahf/history/native-americans-and-manhattan-project/>

Role of Uranium in development of the atomic bomb:

<https://www.cdc.gov/LAHDRA/Content/pubs/reports/sections/Chapters%205%20thru%209.pdf>

Description of how nuclear weapons work:

<https://www.ucsus.org/resources/how-nuclear-weapons-work>



CREDITS:

Directed and written by Matthaeus Szumanski

Produced by Matthaeus Szumanski and Marc Lempert

Edited by Matthaeus Szumanski

Cast: David Bauman, Jason Cole, Bob Thompson, Michael Sheeley, Coleen Nicholas

Funded by a UCLA-Sloan Production Grant

THE MONSTER AND THE PEANUT [\(Click here to watch\)](#)

2004, 22 minutes

AGE GROUP: High School ***Mature Content Advisory***

STANDARDS: NGSS: Grades 9-12,
Motion and Stability: Forces and Interactions (Forces and
Motion, PS2.A)

SUMMARY: *The Monster and the Peanut* is about a man who believes the tragic death of his young daughter can be explained by the rules of traffic flow. It suggests that for some people, science (the repository of reason) becomes a substitute religion, which can explain away the troubling uncertainty of the world.

QUESTIONS TO EXPLORE: What principles of physics can be abstracted to relate to traffic flow? What are some changes to the system of traffic flow that could improve a city?

RESOURCES:

Classroom activity on the science of traffic congestion:
https://www.teachengineering.org/lessons/view/usf_traffic_lesson01

An article about technologies measuring traffic:
<https://news.mit.edu/2022/3-questions-meshkat-botshekan-what-single-car-says-about-traffic-0207>

An article on the science of traffic jams:
<https://blogs.scientificamerican.com/cocktail-party-physics/crosstown-traffic/>



CREDITS:

Written by Albert Crim

Directed by Franklin Jin Rho

Produced by Brian Udovich

Edited by David Kashevaroff

Cast: Bo Foxworth, Anne Ramsey, Dean Haglund, Alyssa Baric, Pablo Moix

Funded by an AFI-Sloan Production Grant

PHYSICS, HISTORY OF SCIENCE

SIGNAL ([Click here to watch](#))

2008, 17 minutes

AGE GROUP: High school ***Mature Content Advisory***

STANDARDS: NGSS: Grades 9-12, Waves and Their Applications in Technologies for Information Transfer (PS4.C: Information Technologies and Instrumentation), Engineering Design (ETS1.B: Developing Possible Solutions)

SUMMARY: Against the backdrop of 19th century wireless telegraph experimentation, a scientist must survive a confrontation with a distraught local who claims the mysterious technology keeps him from contacting his recently departed wife.

QUESTIONS TO EXPLORE: What physics principles are used in wireless telegraph communication? Who was Guglielmo Marconi and what was his most significant scientific contribution? How was wireless communication received by the public at the turn of the 19th century?

RESOURCES:

History of the Marconi Company:

<https://www.mhs.ox.ac.uk/marconi/collection/history.php>

More information on the first radio signal sent across the Atlantic:

<https://www.aps.org/publications/apsnews/201911/history.cfm>

Information about wireless telegraphy:

<https://www.fi.edu/case-files/guglielmo-marconi>

Marconi's Nobel lecture:

<https://www.nobelprize.org/prizes/physics/1909/marconi/lecture/>



CREDITS:

Written and Directed by Chris Farrington

Produced by Chris Farrington, Tess Ortvals

Edited by Amy Reynolds

Cast: Dominic Comperatore, John Henry Canavan, Matt Crabtree

Funded by a USC-Sloan Production Grant

STELLA FOR STAR ([Click here to watch](#))

2017, 11 minutes

AGE GROUP: High school

STANDARDS: NGSS: Grades 9-12, Energy (ETS1.A: Defining and Delimiting Engineering Problems)

SUMMARY: Dr. Marcy Later has devoted her life to nuclear fusion, a long-proposed but never realized renewable energy. At a scientific conference in New Orleans, she meets a group of Furrries staying at the same hotel.

QUESTIONS TO EXPLORE: What is nuclear fusion? How does it fit into the landscape of available energy sources? How is climate change affecting weather patterns?

RESOURCES:

Interview with filmmaker Nick Singer:

<https://scienceandfilm.org/articles/3147/robin-weigert-stars-opposite-a-furry-in-stella-for-star>

Explanation of ITER and nuclear fusion:

<https://www.iter.org/proj/inafewlines>

Teaching resources for different age groups about nuclear energy: <https://www.nei.org/news/2020/lesson-plan-teach-students-nuclear-energy>

Interview with a scientist about different approaches to achieving fusion:

<http://scienceandfilm.org/articles/3484/science-consultant-melanie-windridge-on-the-man-who-fell-to-earth>

A guide to climate change for kids from NASA:

<https://climatekids.nasa.gov/kids-guide-to-climate-change/>



CREDITS:

Written by Nick Singer, Ben Gottlieb

Directed by Nick Singer

Produced by Milo Daemgen and Catherine Rierson

Edited by Nick Singer

Cast: Robin Weigert

Funded by a Columbia University-Sloan Production Grant

PSYCHOLOGY, HISTORY OF SCIENCE

ATROCITY ([Click here to watch](#))

2004, 7 minutes

AGE GROUP: High School

STANDARDS: NGSS: Grades 9-12, Ecosystems: Interactions, Energy, and Dynamics (Social Interactions and Group Behavior, LS2.D)

SUMMARY: An experiment on obedience to authority conducted at Yale University in the early 1960s, by social psychologist Stanley Milgram, was a shock to the public's notion of its own goodness. Researchers were astounded by the results, which showed the extent to which subjects would inflict harm on others at the order of the researcher.

QUESTIONS TO EXPLORE: Why did Stanley Milgram's peers question the ethics of his experiment? What were the lasting psychological effects of Stanley Milgram's experiment on the test subjects? What did the Milgram experiment demonstrate?

RESOURCES:

Stanley Milgram's essay "The Perils of Obedience," which explains his experiment:

<https://web.physics.utah.edu/~detar/phys4910/readings/ethics/PerilsofObedience.html>

Radiolab episode on the Milgram Experiments:

<https://radiolab.org/episodes/180092-the-bad-show>

Interview with a psychologist about Milgram's experiment:

<http://scienceandfilm.org/articles/2527/sundance-2015-the-notorious-milgramand-zimbardo-experiments>



CREDITS:

Written, Directed, and Produced by Adam Kargman

Cast: James Bolt, John Funk, Hollis Doherty, Linda Wilkens, Mitch Lippman, Mario Bickham, Derek Bentley, Jennifer Jessum

Funded by a USC-Sloan Production Grant

PSYCHOLOGY, NEUROSCIENCE

CRADLE ([Click here to watch](#))

2016, 14 minutes

AGE GROUP: Middle School and higher

STANDARDS: NGSS: Grades 6-12, Biological Evolution: Unity and Diversity (Adaptation, LS4.C; Developing Possible Solutions, ETS1.B); Heredity: Inheritance and Variation of Traits (Structure and Function, LS1.A)

SUMMARY: *Cradle* focuses on an army veteran's return home after losing both his arms in Iraq. He has to learn to live with prosthetics and help his wife care for their newborn daughter, but also must adjust to excruciating phantom limb pain.

QUESTIONS TO EXPLORE: What brain areas are involved in generating the perception of a phantom limb? What are some techniques that can help relieve the pain? Why can vision help relieve the pain?

RESOURCES:

An NPR broadcast about phantom limb pain and treatments:

<https://www.npr.org/2011/02/14/133026897/v-s-ramachandrans-theses-of-the-tell-tale-brain>

Animation about phantom limb pain:

<https://ed.ted.com/lessons/the-fascinating-science-of-phantom-limbs-joshua-w-pate>

Lesson plan on veterans, including phantom limb pain:

<https://www.pbs.org/newshour/classroom/2022/11/veterans-day/>



CREDITS:

Written and Directed by Devon Manney

Produced by Matthew A. Stewart

Animated by Manney

Cast: Devon Manney, Alexa Nikol Curran, Trevor Larson, Rosie Richards

Funded by a USC-Sloan Production Grant

PSYCHOLOGY, NEUROSCIENCE

IN VIVID DETAIL ([Click here to watch](#))

2007, 19 minutes

AGE GROUP: Middle School and higher

STANDARDS: NGSS: Grades 6-12, Hereditary: Inheritance and Variation of Traits (Variation of Traits, LS3.B)

SUMMARY: *In Vivid Detail* is a love story about Justin—an architect who is face blind—as he begins a new romance.

QUESTIONS TO EXPLORE: What part of the brain is affected in prosopagnosia? What does prosopagnosia reveal about the brain's ability to recognize faces? What is an agnosia?

RESOURCES:

About prosopagnosia:

<https://www.ninds.nih.gov/health-information/disorders/prosopagnosia>

Article about living with prosopagnosia:

<https://www.brainandlife.org/articles/a-quirk-of-the-brain-called-prosopagnosia-makes-it-hard>

Explanation of face-blindness:

<https://www.sciencefriday.com/articles/what-is-face-blindness/>



CREDITS:

Written by Dara Bratt and Kieran Dick

Directed by Dara Bratt

Produced by Sharon Barnes

Edited by Dara Bratt

Cast: John Ventimiglia, Piper Perabo

Funded by an NYU-Sloan Production Grant

PSYCHOLOGY, NEUROSCIENCE

THE REALITY CLOCK ([Click here to watch](#))

2011, 7 minutes

AGE GROUP: Middle School and higher

STANDARDS: NGSS: Grades 6-12, Hereditary: Inheritance and Variation of Traits (Inheritance of Traits, LS3.A)

SUMMARY: *The Reality Clock* is an animated portrait of a watchmakers' struggle to accept the influences of early stage dementia on his identity and sense of time. Autobiographical works by individuals with dementia inspired this impressionistic film.

QUESTIONS TO EXPLORE: What are common symptoms of dementia? How do doctors diagnose people with dementia? What is the relationship between emotion and memory and how can this be used to treat dementia?

RESOURCES:

Information from the National Institutes of Health on Dementia:

<https://www.ninds.nih.gov/Disorders/All-Disorders/Prosopagnosia-Information-Page>

An explanation of the memory loss which is associated with dementia:

https://www.alzheimers.org.uk/site/scripts/documents_info.php?documentID=123

An interview about how music could help people with dementia:

<https://www.npr.org/2019/12/22/790553867/how-music-therapy-could-help-people-with-dementia>



CREDITS:

Animated and Directed by Amanda Tasse

Cast: Marco Tazioli and J. Louis Reid

Funded by a USC-Sloan Production Grant

REMEMBRANCE [\(Click here to watch\)](#)

2015, 5 minutes

AGE GROUP: Elementary school and higher

STANDARDS: National/NGSS: Grades K-12, Heredity: Inheritance and Variation of Traits (LS3.B: Variation of Traits)

SUMMARY: George suffers from face blindness, a disorder that doesn't allow him to recognize one face from another. All his life he has been able to work with it until he falls in love.

QUESTIONS TO EXPLORE: What is prosopagnosia? What strategies does George use in the film to live with it?

RESOURCES:

Prosopagnosia medical information:

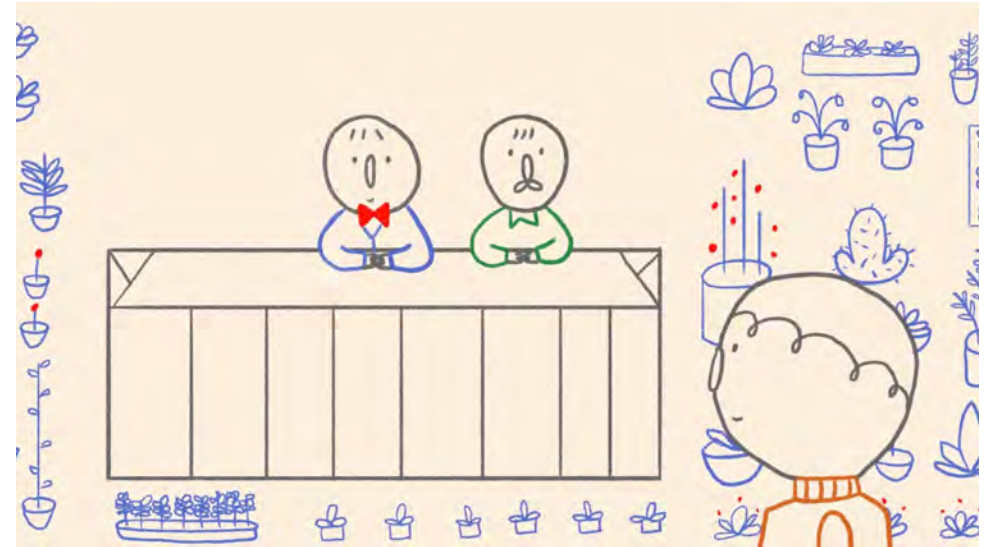
<https://www.ninds.nih.gov/health-information/disorders/prosopagnosia>

Treatment approaches for prosopagnosia:

<https://www.frontiersin.org/articles/10.3389/fnhum.2014.00561/full>

Oliver Sacks on prosopagnosia:

<https://www.newyorker.com/magazine/2010/08/30/face-blind>



CREDITS:

Written, Directed, and Animated by Catalina Matamoros

Produced by Catalina Matamoros

Edited by Catalina Matamoros

Cast: Aaron Gilmartin

Funded by a USC-Sloan Animation Grant

THE WITNESS [\(Click here to watch\)](#)

2012, 16 minutes

AGE GROUP: High School ***Mature Content Advisory***

STANDARDS: NGSS: Grades 9-12, Heredity: Inheritance and Variation of Traits (Structure and Function, LS1.A)

SUMMARY: Sam, a neuroscientist and specialist in neuro-imaging, is called to testify as an expert witness in a criminal trial and becomes caught in a network of intense emotions, which conflict with his scientific findings. Sam's greatest challenge is to separate his emotional allegiances and his professional ones, while staying true to both.

QUESTIONS TO EXPLORE: How can brain images be used in the courtroom? What areas of the brain affect moral decision-making? What are different kinds of brain imaging technologies?

RESOURCES:

Watching decision-making in the brain:

<https://news.stanford.edu/2021/01/25/watching-decision-making-brain/>

Article on the use of neuroscience in the courtroom:

<https://www.discovermagazine.com/mind/why-neuroscience-is-coming-to-courtrooms>

An article on brain scan evidence:

<https://theconversation.com/brain-scan-evidence-in-criminal-sentencing-a-blessing-and-a-curse-113088>



CREDITS:

Written and Directed by Ioana Uricaru

Produced by Andrew C. Richey, Phoebe Shackeroff, Joshua Tate, and Ioana Uricaru

Edited by Michael P. Shawwe

Cast: Patrick Lander, Aric Cushing, Baadja Lyne, Mo Hine, Maeva Asare

Funded by a USC-Sloan Production Grant

TECHNOLOGY, COMPUTER SCIENCE

APP ([Click here to watch](#))

2013, 22 minutes

AGE GROUP: High School ***Mature Content Advisory***

STANDARDS: NGSS: Grades 9-12, Engineering Design
(Developing Possible Solutions, ETS1.B)

SUMMARY: Normally, you wouldn't catch shy software developer Paul at a trendy club. But tonight is different. Paul's new mobile dating app is ready for beta testing, but if he doesn't pay his bills by the next day, his "Siri on steroids" will be deleted. Desperate, Paul tracks down suave venture capitalist, Mike, and begs him to invest in his app. Mike takes one look at Paul and devises the perfect plan to put the app to the test: if Paul can use the app to get a date with Zoey, Mike will invest.

QUESTIONS TO EXPLORE: What is an algorithm? How do facial recognition technologies work, and how are they being used? What are the algorithms that govern dating apps based on?

RESOURCES:

How dating apps use data:

<https://hbr.org/2022/01/to-make-a-profit-dating-apps-must-leverage-data-differently>

Article on facial recognition technology:

<https://www.nytimes.com/2019/07/13/technology/databases-faces-facial-recognition-technology.html>

Overview of dating apps and their algorithms:

<https://medium.com/swlh/dating-data-an-overview-of-the-algorithm-afb9f0c08e2c>



CREDITS:

Written and Directed by Alexander Berman

Produced by Edouard de Lachomette

Edited by Jeremy Lerman

Cast: Braden Lynch, Sara Sanderson, J.R. Cacia, Ashley Lambert

Funded by an AFI-Sloan Production Grant

THE CHEF ([Click here to watch](#))

2018, 20 minutes

AGE GROUP: High school

STANDARDS: NGSS: Grades 9-12, Engineering Design (ETS1.A: Defining and Delimiting Engineering Problems, ETS1.C: Optimizing the Design Solution)

SUMMARY: An aging Chinese chef is ordered to pass on his cooking skills to a humanoid robot.

QUESTIONS TO EXPLORE: Why are robots threatening to the labor market? Why are they appealing? How and why is Chef Pu able to develop a good relationship with William, the humanoid robot? What social capacities do robots currently have?

RESOURCES:

Overview of the history and development of humanoid robots, and how they can be implemented in society:

<https://robotics.kawasaki.com/ja1/xyz/en/2101-01/index.htm>

Information on the progression of humanoid technology:

<https://www.smithsonianmag.com/science-nature/how-humanlike-do-we-really-want-robots-to-be-180980234/>

Interviews about social robotics:

<https://scienceandfilm.org/articles/2948/robot-friends-interview-with-dr-selma-sabanovic-on-her>

<http://scienceandfilm.org/articles/2431/c-3po-and-modern-robotics>



CREDITS:

Written by Vanessa Leqi Kong, Ithaca Yixian Deng

Directed by Hao Zheng

Produced by Ithaca Yixian Deng

Edited by Guangwei Du

Cast: Jim Lau, Quinn Von Hoene

Funded by an AFI-Sloan Production Grant

THE CODE OF FAMILY ([Click here to watch](#))

2020, 15 minutes

AGE GROUP: Middle School and older

STANDARDS: NGSS: Grades 6-12, Engineering Design (ETS1.B: Developing Possible Solutions, ETS1.C: Optimizing the Design Solution)

SUMMARY: After the death of her husband, a 63-year-old Asian grandma decides to learn computer science to fulfill his last wish, but almost jeopardizes the relationship with the rest of her family as she tries to keep it a secret.

QUESTIONS TO EXPLORE: How does the grandmother's desire to learn coding affect her relationship with her family? What is coding? How does coding differ from programming? Why is coding important today?

RESOURCES:

Definition of coding versus programming:

<https://www.freecodecamp.org/news/difference-between-coding-and-programming/>

Basic coding exercises for beginners:

<https://pynative.com/python-basic-exercise-for-beginners/>

Addressing the gender gap in coding:

<https://girlswhocode.com/about-us/research>



CREDITS:

Written and Directed by Kayla Sun

Produced by Daniel Sheahan, Kay Niuyue Zhang

Edited by Lisa Xiaojia Li, Kayla Sun

Cast: Ling Zhi, Briana Liu, Eon Song

Funded by a USC-Sloan Production Grant

TECHNOLOGY, COMPUTER ENGINEERING

THE KING'S PAWN [\(Click here to watch\)](#)

2015, 17 minutes

AGE GROUP: Middle School and higher

STANDARDS: NGSS: Grades 6-12, Engineering Design (Defining and Delimiting Engineering Problems, ETS1.A; Developing Possible Solutions, ETS1.B; Optimizing the Design Solution, ETS1.C)

SUMMARY: *The King's Pawn* follows a former chess prodigy who challenges the world-champion with a super computer he spent his life designing. With so much media attention and such high stakes surrounding the event, is it possible that someone from the computer's side might have interfered with the match's outcome?

QUESTIONS TO EXPLORE: What defines a turn-taking game and why are those the easiest games to program? What happened in the 1997 Gary Kasparov vs. Deep Blue tournament? What are recent advances in the field of computer versus human gaming?

RESOURCES:

The history of computer chess programs:

<http://illumin.usc.edu/188/deep-blue-the-history-and-engineering-behind-computer-chess/>

The history of computer chess at the Computer History Museum:

<https://www.computerhistory.org/chess/introduction/>

An interview on the history and future of artificial intelligence and chess:

<https://towardsdatascience.com/the-history-and-future-of-artificial-intelligence-through-the-lenses-of-computer-chess-and-legal-a-i-a7b7327f8800>



CREDITS:

Directed by Jonah Bleicher

Written by Bleicher and Darren Anderson

Produced by Rob Cristiano and Josh Cohen

Cast: Collin Ware, Jakob von Eichel, Shanga Parker, Julian Murdoch, Logan Riley Bruner

Funded by a CU-Sloan Production Grant

TECHNOLOGY, COMPUTER ENGINEERING

SPARK

[\(Click here to watch\)](#)

2014, 19 minutes

AGE GROUP: High School

STANDARDS: NGSS: Grades 9-12, Grades 9-12, Waves and Their Applications in Technologies for Information Transfer (PS4.C: Information Technologies and Instrumentation), Engineering Design (ETS1.A: Defining and Delimiting Engineering Problems, ETS1.B: Developing Possible Solutions)

SUMMARY: A young Venezuelan student overcomes censorship in his country and sparks a social-media movement using a cellphone app.

QUESTIONS TO EXPLORE: How do wireless mesh networking apps like Spark work differently than online social networks like Instagram and Twitter? Without an internet connection, how would you seek out current news and information? How have wireless networks been used worldwide during social unrest?

RESOURCES:

Internet usage in Venezuela:

<https://www.csis.org/analysis/internet-venezuelas-lifeline>

Background on government internet shutdowns:

<https://carnegieendowment.org/2022/03/31/government-internet-shutdowns-are-changing-how-should-citizens-and-democracies-respond-pub-86687>

Interview with *Spark* director Juan Martinez Vera:

<http://scienceandfilm.org/articles/2912/spark-on-hbo-interview-with-juan-martinez-vera>

Classroom resources and lesson plans about news literacy:

<https://www.commonsense.org/education/articles/news-literacy-resources-for-classrooms>



CREDITS:

Written and Directed by Juan Martínez Vera

Produced by Tim Hautekiet, Diego Najera

Edited by Angelica Lopez

Cast: Gabriel Tarantini, Carlos Montilla, Ileana Simancas

Funded by a USC-Sloan Production Grant

TEMMA [\(Click here to watch\)](#)

2009, 17 minutes

AGE GROUP: Middle School and higher

STANDARDS: NGSS: Grades 6-12, Engineering Design (Developing Possible Solutions, ETS1.B)

SUMMARY: As her body succumbs to a degenerative disease, renowned neuro-programmer Temma Baumgarten tries to complete a computational model of her own mind.

QUESTIONS TO EXPLORE: What are some of the benefits and drawbacks of creating a computerized brain simulation? Why are neuroscientists interested in modeling the human brain?

RESOURCES:

An article on a neuroscientist's attempt to simulate the human brain:

<https://www.newyorker.com/culture/annals-of-inquiry/the-appeal-of-scientific-heroism>

The challenges of creating a simulation of the brain:

<https://www.nature.com/articles/d41586-019-02209-z>

The case for brain simulators:

<https://neurosciencenews.com/brain-simulators-14178/>

The history of simulation in neuroscience:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6513977/>



CREDITS:

Written and Edited by Anya Meksin and William Gerrard

Directed by Anya Meksin

Produced by Kristie Lutz

Cast: Karen Young, Richard Bekins, Samantha Bilinkas

Funded by a CU-Sloan Production Grant

THREE LIGHT BULBS [\(Click here to watch\)](#)

2012, 15 minutes

AGE GROUP: Middle School and higher

STANDARDS: NGSS: Grades 6-12, Energy (Defining and Delimiting Engineering Problems, ETS1.A); Waves and Their Applications in Technologies for Information Transfer (Energy in Chemical Processes, PS3.D)

SUMMARY: A girl returns to her hometown, which is a remote village in China where most young people have left for big opportunities in the city. The town has a power shortage, which she tries to alleviate by installing a solar panel. However, introducing this new technology proves more difficult than imagined.

QUESTIONS TO EXPLORE: How is electricity produced? How do solar panels draw energy from the sun? What causes power outages? What are the benefits and drawbacks of solar energy?

RESOURCES:

Classroom exercises about electricity:

https://www.fi.edu/sites/default/files/EducatorGuides_edguide-electricity.pdf

The basics of solar energy:

<https://www.energy.gov/eere/solar/how-does-solar-work>

Article about the transition to renewables:

<https://www.un.org/en/climatechange/raising-ambition/renewable-energy>

An interview about energy storage issues as related to renewables:

<https://www.npr.org/2022/11/17/1137334846/the-crucial-need-for-energy-storage-is-key-to-the-future-of-clean-energy>



CREDITS:

Written by Min Ding and Yen-Chiao Huang

Directed by Min Ding.

Produced by Cindy Hu

Edited by Wei-Hsin Yang

Cast: Wen-Ying Tan, Yu-Zhi Tan, Man Yang, Ning Yuan, Di An

Funded by a CU-Sloan Production Grant

WITHOUT FIRE ([Click here to watch](#))

2012, 20 minutes

AGE GROUP: Middle School and higher

STANDARDS: NGSS: Grades 6-12, Matter and Its Interactions (Definitions of Energy, PS3.A; Structure and Properties of Matter, PS1.A; Developing Possible Solutions, ETS1.B); Energy (Defining and Delineating an Engineering Problem, ETS1.A; Energy in Chemical Processes and Everyday Life, PS3.D; Conservations of Energy and Energy Transfer, PS3.B)

SUMMARY: A young Navajo girl must find a way to heat her home in order to save her asthma-stricken mother from a bitter winter storm.

QUESTIONS TO EXPLORE: How is energy converted into heat? How do solar panels work? In addition to solar energy, what are some ways of producing energy that do not require fossil fuels?

RESOURCES:

A middle-school guide to solar energy:

https://www1.eere.energy.gov/education/pdfs/solar_exploringsolarenergystudent.pdf

A TED talk about how solar panels work:

<https://ed.ted.com/lessons/how-do-solar-panels-work-richard-komp>

Student activities related to renewable energy:

<https://www.nrel.gov/docs/gen/fy01/30927.pdf>



CREDITS:

Written and Directed by Eliza McNitt

Produced by McNitt, Jordan Fein, Garrett Yazzie, Hunter Baker

Cast: Misty Upham and Magdalena Begay

Funded by an NYU-Sloan Production Grant

ACKNOWLEDGEMENTS

Museum of the Moving Image (MoMI) is the only institution in the United States that deals comprehensively with the art, technology, enjoyment, and social impact of film, television, and digital media. In its acclaimed facility in Astoria, New York, the Museum presents exhibitions; screenings; discussion programs featuring actors, directors, and creative leaders; and education programs. It houses the nation's largest collection of moving image artifacts and screens over 500 films annually. Its exhibitions—including the core exhibition *Behind the Screen* and *The Jim Henson Exhibition*—are noted for their integration of material objects, interactive experiences, and audiovisual presentations. For more information about MoMI, visit movingimage.us.

The Alfred P. Sloan Foundation is a New York-based, philanthropic, not-for-profit institution that makes grants in three areas: research in science, technology, and economics; quality and diversity of scientific institutions; and public engagement with science. Sloan's program in Public Understanding of Science and Technology, directed by Doron Weber, supports books, radio, film, television, theater and new media to reach a wide, non-specialized audience and to bridge the two cultures of science and the humanities. Sloan's Film Program encourages filmmakers to create more realistic and compelling stories about science and technology and to challenge existing stereotypes about scientists and engineers in the popular imagination. The Foundation also supports screenplay development programs with the Sundance Institute, SFFILM, Film Independent, the Black List, and the Athena Film Festival. The Sloan Film Program has supported over 750 narrative film projects and has helped develop over 30 feature films. For more information visit sloan.org or follow @SloanPublic on Twitter or Facebook.

Created by Sonia Shechet Epstein, MoMI Curator of Science and Technology. Special thanks to Program Associate Sarah Luciano for her input and assistance. Thanks also to intern Luke McGuire.

For questions or feedback, please contact sloanfilm@movingimage.us

You can [subscribe](#) to Sloan Science & Film's mailing list for monthly updates on the initiative.