



NOVA 3.0 Explore/Educate/Engage

Presented by: Thea Sahr, Jen Larese, and
Howard Lurie

Tuesday, May 25, 2010

Today's Presenters



Thea Sahr
Associate Director,
Educational
Outreach



Jen Larese
Outreach
Coordinator,
NOVA



Howard Lurie
Associate Director,
Educational
Programming



- NOVA 3.0 Overview
- **New** Web Site
- **New** Teachers Page
- **New** Relationship with Teachers' Domain
- **New** Classroom-based Interactives
- **New** Web-only Series: Secret Lives of Scientists and Engineers

NOVA

Tonight on NOVA



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 Corporate funding provided by:   [Airing soon!](#)
[Storm that Drowned a City](#) 

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MYSTERY OF THE MEGAVOLCANO

Researchers unearth clues to the greatest volcanic eruption of the last 100,000 years.



THE NEXT BIG ONE

What could we expect if a supereruption were to occur today?



WHY TOBA MATTERS

NASA's Drew Shindell reflects in this interview on the lessons we can learn.



A SUPERSIZED VOLCANO

As this interactive shows, Toba's upheaval dwarfs all eruptions of recorded history.



BLASTS FROM THE PAST

Explore a map of supereruptions around the world.



WATCH A PREVIEW

Researchers from Indonesia to Greenland unearth clues to the greatest volcanic eruption of the last 100,000 years.

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Do you use NOVA resources in your classroom?

- A. Not at all
- B. A little bit
- C. Regularly

NOVA

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BROWSE TOPICS
Anthropology

NOVA SITES
NOVA scienceNOWNOVA teachersTHE SECRET LIFE of SCIENTISTSIN+SIDE NOVA

In pulvinar sapien a libero ultricies bibendum. Fusce nec pellentesque nisl. Nullam a turpis risus. Ut nec felis quis magna egestas congue et id lorem.

Listen to the story.

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NOVA TOPICS

THE ANCIENT WORLD	(94)
BODY + BRAIN	(54)
EVOLUTION	(32)
MILITARY + ESPIONAGE	(120)
NATURE	(180)
PHYSICS + MATH	(96)
PLANET EARTH	(45)

WATCH ONLINE

See all

Becoming Human Part 1
First Steps: Six million years ago, what set our ancestors on the path from ape to human?

Becoming Human Part 2
First Steps: Six million years ago, what set our ancestors on the path from ape to human?

Becoming Human Part 3
First Steps: Six million years ago, what set our ancestors on the path from ape to human?

TV SCHEDULE

Check local listings

Ghosts of Machu Picchu
Tuesday, August 11 at 8 pm on PBS

AUG 11

NOVA investigates the worst aviation accident of all time

NOVA

New Web Site



NOVA beta

THE ANCIENT WORLD | BODY & BRAIN | EVOLUTION | MILITARY & ESPIONAGE | NATURE | PHYSICS & MATH | **PLANET EARTH** | SPACE & FLIGHT | TECH & ENGINEERING

planet earth

In pulvinar sapien
a libero ultricies bibendum

Fusce nec pellentesque risa.
Nullam a turpis risus. Ut nec
felis quis magna egestas
congue et id lorem. [Go](#)



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ExxonMobil
Taking on the world's toughest energy challenges.

PLANET EARTH

Article (18)
Ask the Expert (4)
Audio Slide Show (2)
Audio Story (8)
Inquiry (4)
Interactive (25)
Interview (21)
Producer's Story (2)
Program Video (17)
Quiz (1)
Slide Show (7)
Video Short (4)

EDITOR'S PICKS



Perferendis doloribus
At vero eos et accusamus et iusto
odio dignissimos. ■



Itaque earum rerum
Et harum quidem rerum facilis est
et expedita distinctio. Nam libero
tempore, cum soluta nobis est
aliquid. ■



NEWS | **LINKS** | **BOOKS**

Vestibulum consequat sollicitudin mattis
[www.humanongene.edu](#)
Et harum quidem rerum facilis est et expedita
distinctio. Nam libero tempore, cum soluta nobis
est eligendi optio cumque nihil impedit quo
minus id quod maxime placeat facere possimus,
omnis voluptas assumenda est.

Blanditibus praesentium
[www.pbs.org/humanpark](#)
Temporibus autem quibusdam et aut officiis
debilis aut rerum necessitatibus saepe eveniet
ut et voluptates repudiandae sint et molestiae
non recusandae. Itaque earum rerum hic tenetur
a sapiente delectus, ut aut reiciendis voluptati-
bus maiores alias consequatur aut perferendis
doloribus asperiores.

NOVA

New Teacher Page







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Find standards-based resources to use in the classroom from NOVA, NOVA scienceNOW, Teacher's Domain and beyond.

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ANTHROPOLOGY (73)	FORENSIC SCIENCE (57)	PALEONTOLOGY (42)
ARCHEOLOGY (41)	GEOGRAPHY (21)	PHYSICAL SCIENCE (71)
EARTH SCIENCE (219)	HEALTH SCIENCE (104)	SCIENCE & SOCIETY (8)
ENGINEERING (75)	HISTORY (7)	SPACE SCIENCE (157)
ENVIRONMENTAL SCIENCE (81)	LIFE SCIENCE (214)	TECHNOLOGY (75)
	MATH (95)	

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NOVA^{beta} THE ANCIENT WORLD BODY & BRAIN EVOLUTION MILITARY & ESPIONAGE NATURE PHYSICS & MATH PLANET EARTH SPACE & FLIGHT TECH & ENGINEERING

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NARROW RESULTS
Add filters to refine your search

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TOPIC
The Ancient World (10)
Body + Brain (11)
Evolution (11)
Military + Espionage (12)
Nature (2)
Physics + Math (21)
Planet Earth (5)
Space + Flight (10)
Tech + Engineering (11)

TEACHER SUBJECT
Anthropology (19)
Forensic Science (11)
Health Science (2)
Life Science (21)


MEDIA TYPE
Text (35)
Multimedia (24)
Audio (3)
Video (56)

FORMAT
Article (18)
Ask the Expert (4)
Audio Slide Show (2)
Audio Story (6)


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RESULTS: 1-12 of 20 [View 12](#) | [View 36](#) [PREV](#) **1** [2](#) [NEXT](#)




Regulating Genes
Learn the mechanisms that determine how genetic mutations influence an organism's development.
02/24/2010




Sharks and Rays
These video segments from *Nature* illustrate the adaptations that have helped sharks and rays survive.
11/18/2008




Our Family Tree
Play a card game to learn how selective pressures can affect an organism's evolution (i.e. how all dogs are descended from a gray wolf).
11/18/2008




Evolution in Your Life
From flu to food—hear five researchers discuss how evolution affects your day-to-day life.
10/26/2008




Mirror Neurons
This video segment, adapted from NOVA scienceNow, introduces the latest research on a system of neurons that plays a part in how people
04/19/2007




Bones of Contention
Do the work of scientists and use a database to classify actual fossil records of human ancestors and related species.
01/17/2010



Cancer Warrior
Judah Folkman and other researchers



Genetically Engineering the Avian Flu



Biomechanical Engineering
In this video from ThinkTV Dayton, a



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THE ANCIENT WORLD
BODY & BRAIN
EVOLUTION
MILITARY & ESPIONAGE
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Mirror Neurons

Teacher's Resource | Posted 12.14.09 | NOVA

TEACHER PICKS

Mauris tincidunt arcu ipsum. Sed ut rhoncus nisi ultrices. Vestibulum consequat sollicitudin mattis. Aliquam semper dapibus posuere.

Tincidunt arcu a ipsum. Sed ut rhoncus nisi ultrices. Vestibulum consequat sollicitudin mattis. Aliquam semper dapibus posuere.

This video segment, adapted from NOVA scienceNOW, describes the recent discovery and implications of mirror neurons, a specific kind of brain cell that fires both when performing an action and when observing someone else perform the same action. It turns out that mirror neurons, which are normally associated with physical activities, might also be responsible for signaling the human brain's emotional system, which in turn allows us to empathize with other people. Their failure to work normally might explain why some people, including autistic people, do not interact well with others.

Permitted user: Download, Share, and Remix
 Alternate media available: [Transcript \(PDF Document\)](#)
 Accessibility features: [Captions](#), [Audio Descriptions](#), [Transcripts](#), [Text Descriptions](#)

Media Type: Video
 Running Time: 04:35
 Size: 12.2 MB
 Level: Grades 6-12

To download, share, rate, and save to a folder, view this resource on Teachers' Domain (log-in required).

The media asset was adapted from NOVA scienceNOW: "Fastest Glacier".

RELATED TOPIC RESOURCES

TEXT (10)
[Interview with Ben Livermore](#)
 In this interactive, learn more about the evolution of gliding and flight and database schemas

MULTIMEDIA (7)
[Stone Age tools](#)
 In this interactive, learn more about the evolution of gliding and flight and database schemas

AUDIO (20)
[Eco-Impact](#)
 In this interactive, learn more about the evolution of gliding and flight and database schemas

VIDEO (34)
[Flying its not just for birds](#)
 In this interactive, learn more about the evolution of gliding and flight and database schemas



Tincidunt arcu a ipsum dictum at rhoncus nisi ultricies. Vestibulum consequat sollicitudin mattis. Aliquam semper dapibus posuere.



Arcu a ipsum dictum at rhoncus nisi ultricies. Vestibulum consequat sollicitudin mattis. Aliquam semper dapibus posuere.



This media asset was adapted from NOVA scienceNOW "Fastest Glacier"

VIEW

Media Type: Video
Running Time: 04:35
Size: 12.2 MB
Level: Grades 6-12

To download, share, rate, and save to a folder, view this resource on [Teachers' Domain](#) (log-in required).

► Background Essay

► Questions for Discussion

► Transcript

▼ Standards

Standards for Grades: K-12 [Change grade range](#)

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MA View

Massachusetts

Strand: Life Science (Biology)

Systems in Living Things

6. General functions of the major systems of the human body, and the interactions of these systems.

Anatomy and Physiology

4.4 The nervous system mediates communication.

the evolution of gliding and flight and database schemas

AUDIO (20)

Eco-Impact

◀ In this interactive, learn more about the evolution of gliding and flight and database schemas ▶

VIDEO (34)

Flying its not just for birds

◀ In this interactive, learn more about the evolution of gliding and flight and database schemas ▶

TEACHERS (17)

Mirror Neurons

◀ From flu to food—hear five researchers discuss how evolution affects your day-to-day life. ▶

COMING UP ON PBS



The Human Spark
airs 2.25.09 at 9pm on PBS



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Teachers' Domain?**

- A. Yes, I'm a registered user
- B. I've visited once or twice
- C. What's Teachers' Domain?

NOVA

Teachers' Domain



NOVA

Coming Soon



The new NOVA
site coming to a
computer
near you in
August 2010

pbs.org/nova



TEACHERS' PICKS

**Fossil Evidence**

Examine five transitional species that fill so-called gaps in the fossil record.

**How Did Life Begin?**

Harvard's Andrew Knoll discusses the deeply mysterious jump long ago from non-living to living.

Regulating Genes

By [Inquirium](#) | Posted 01.11.10 | NOVA

Find out what Darwin never knew. He understood that species adapt and change, but he didn't understand the actual processes that made this happen. New discoveries in the emerging science of "evo devo" are helping to solve these mysteries. In this feature, you'll see for yourself how genetic mutations influence the development of an individual creature. Study how the mutations in different regions of the DNA impact the expression of genes. Predict how the mutations impact the development of the creature's traits. And finally, observe the developed creature and explain how the mutation gave rise to any changes.

**LAUNCH INTERACTIVE**

Observe and manipulate an interactive model that illustrates the mechanisms that govern gene regulation during an organism's development.

► Background Essay

► For Teachers

► Student Resources

RELATED EVOLUTION RESOURCES**TEXT (27)****Timing Is Everything**

Developing embryos reveal secrets about both genetics and the odyssey of life on Earth.

VIDEO (11)**Little People of Flores**

The remains of three-foot-tall humans are discovered on a remote Indonesian island.

MULTIMEDIA (16)**Evolution in Action**

In this game, change the environment of "living" things and see how random mutations help them survive.

AUDIO (2)**Sexual Cannibalism**

Biologist Maydianne Andrade says that the gruesome mating behavior of some spiders is a lesson in evolution.

TEACHER RESOURCES

COMING UP ON PBS



REGULATING GENES

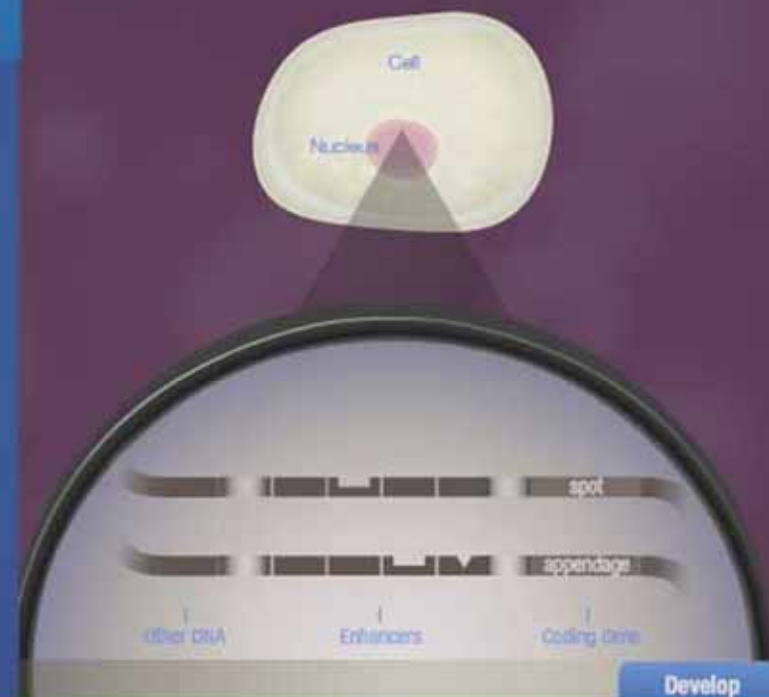
This is a close-up of two DNA segments in the nucleus of a fertilized egg. Each segment contains a gene – one controlling spots, the other appendages.

Each segment is made up of three sections (from left to right):

- DNA not associated with the gene
- Enhancers in the non-coding regulatory region of the gene
- The protein-coding region of the gene (spot or appendage)

Click "Develop" to watch the fertilized egg begin to develop into an organism.

After your first run, click "View Mutation" to view a random mutation that was inherited by the fertilized egg.





Which genes were activated in which cell?
What traits do you expect will develop in each section of the creature?

TAIL

Middle 1

MIDDLE 1

MIDDLE 2

HEAD

Replay

Continue

NOVA



What effect did the proteins in each cell have on the creature's traits?

Print

Back

NOVA

New Creature

H

M1

M2

T

spot

appendage

T

M2

H



What effect did the proteins in each cell have on the creature's traits?

Print

Back

NOVA

New Creature



TV SCHEDULE | BROWSE NOVA | CLOSE

What effect (if any) did mutations have on the creature's traits? [Print](#)

TEACHERS' PICKS

Fossil Evidence
Examining five transitional species that fill in-caded gaps in the fossil record.

genes. Predict how the mutations impact the development of the creature's traits. And finally, observe the developed creature and explain how the mutation gave rise to any changes.

NOVA

NOVA WEB SEMINARS

The interactive interface shows a central panel with four DNA sequences labeled H, M1, M2, and T. Each sequence has two tracks: 'spot' and 'appendage'. The H sequence is the baseline. M1 has two blue square mutations on the 'spot' track. M2 has a purple triangle mutation on the 'appendage' track. T has a green star mutation on the 'spot' track. To the right is a large illustration of a yellow creature with red spots and legs, labeled with T, M2, M1, and H. A question box asks: 'What effect (if any) did mutations have on the creature's traits?'. A 'Print' button is next to it. Below the DNA sequences is a navigation bar with five creature icons and a 'Ne' button. A 'Back' button is at the bottom right.



Bones of Contention

By [Inquirium](#) | Posted 01.08.10 | NOVA

TEACHERS' PICKS

Fossil Evidence
Examine five transitional species that fill so-called gaps in the fossil record.

How Did Life Begin?
Harvard's Andrew Knoll discusses the deeply mysterious jump long ago from non-living to living.

Explore the challenges scientists face when classifying hominid fossils by using this database to classify your own collection of 10 mystery fossils. Identify your fossils by comparing their features to known hominid fossils, and defend your classifications with peers. By using known facts about fossils to define hominid species, take part in the ongoing scientific process of discovering human origins.

LAUNCH INTERACTIVE

Do the work of scientists, using this interactive database to classify actual fossil records of human ancestors.

RELATED EVOLUTION RESOURCES

TEXT (27)
Timing Is Everything
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VIDEO (11)
Little People of Flores
The remains of three-foot-tall humans are discovered on a remote Indonesian island.

MULTIMEDIA (16)
Evolution in Action
In this game, change the environment of "living" things and see how random mutations help them survive.

AUDIO (2)
Sexual Cannibalism
Biologist Maydianne Andrade says that the gruesome mating behavior of some spiders is a lesson in evolution.

TEACHER RESOURCES

► Background Essay

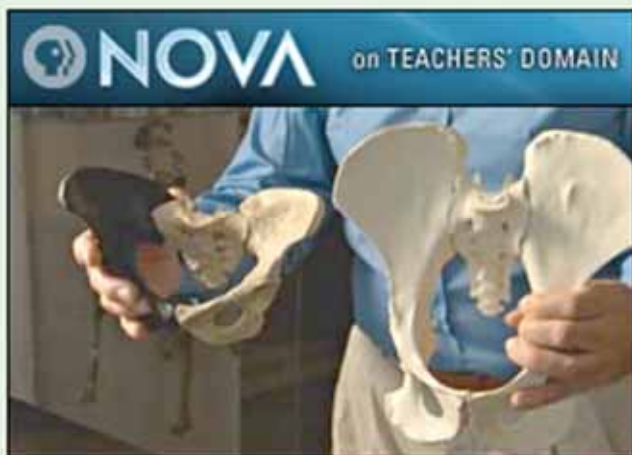
► For Teachers

► Student Resources

► Sources

**Resource: Fossil Evidence of Bipedalism**

Recommended for: Grades 8-12

[Save to a folder](#)Media Type:
MPEG 4 VideoLength: 3m 06s
Size: 9.3 MB[View](#)

or

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In this video segment adapted from NOVA, see how paleoanthropologists—including Don Johanson, with his famous discovery of the *Australopithecus afarensis* “Lucy”—have used the fossil record to identify a large number of fairly similar bipedal species that encompass ancestors of humans and related species. These species, which walked upright like humans, but resembled apes in small brain size and in facial structure, flourished as a group for millions of years. Scientists still debate which of these species was our direct ancestor. The video features a comparison of Lucy’s fossilized pelvis bone with that of an ape, and shows how strikingly similar Lucy’s is to a human one.

[View Citation](#)



BONES of CONTENTION

Create filters to define groups of records based on similarities in their features.

[Show Instructions...](#)

[Remove all filters](#)

FILTERS

Select a field: [+ Add Filter](#)

[Save Group](#)

SAVED GROUPS

[Print Groups List](#)

RECORDS

☒ Show all mystery fossils [Edit Columns...](#) Double-click a row to view detailed information. Showing 10 of 67 records

Description	ID	Date	Bone Type	Cranial Capacity (cc)	Cresting	Dentition	Foramen Magnum...	Femur Orientation
?	Mystery 1	6,000,000-7,000,000	Cranial	320-380	Large	Small Molars	Back of Skull	n/a
?	Mystery 2	2,900,000-3,300,000	Partial	0	Small	Large Molars	n/a	Angled
?	Mystery 3	3,000,000	Cranial	500	None	Large Molars	Middle of Skull	n/a
?	Mystery 4	2,500,000	Partial	475	Small	Megadontia	n/a	Angled
?	Mystery 5	1,800,000	Cranial	510-550	None	Small Molars	Middle of Skull	n/a
?	Mystery 6	1,700,000	Cranial	500	Large	Megadontia	Middle of Skull	n/a
?	Mystery 7	1,510,000-1,560,000	Partial	900	None	Small Molars	Middle of Skull	Angled
?	Mystery 8	220,000-580,000	Partial	1,000	None	Small Molars	Middle of Skull	Angled
?	Mystery 9	150,000-250,000	Cranial	1,200	None	Small Molars	Middle of Skull	n/a
?	Mystery 10	40,000	Cranial	1,600	None	n/a	Middle of Skull	n/a




NOVA scienceNOW

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30 Second Science



Adrienne Block: Geologist

"I just never got over that 'oh wow' kind of moment."

Her Science:
Geologist
Favorite activity as a girl:
Sitting in a lawn chair at night
and staring at the stars
When she started collecting
rocks: Even before she started
looking at the stars
Her favorite question both
then and now: Why?

30 Second Science:
Adrienne Block [0:30]

The Enormity
of Things
[2:23]

Part of
Something
Amazing
[1:36]

10 Questions
for Adrienne
[1:38]

Q&A with Adrienne

Turn Up the Heat
Posted by Secret Life Team | 26 February 2010



**Do you think you'll be using
Secret Lives videos in your
classroom?**

- A. No
- B. Maybe
- C. Yes

NOVA

QUESTIONS?

For more information about NOVA

Contact:

Jennifer Larese

Jennifer_Larese@wgbh.org

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The Learning Center is NSTA's e-professional development portal to help you address your classroom needs and busy schedule. You can gain access to more than 3,300 different resources that cater to your preference for learning. Over 925 resources, such as journal articles, science objects and web seminars are available [for free](#). A suite of practical tools such as My Library, My Transcript, and My Professional Development Plan and Portfolio tool help you organize, personalize, and document your growth over time. If desired, you may review an [archived Web Seminar](#) overview of the NSTA Learning Center, or download the ["How to Guide"](#) PDF (2.7 MB).



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3. Energy: Thermal Energy, Heat, and Temperature
4. Universe: The Sun as a Star

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