MASSACHUSETTS INSTITUTE OF TECHNOLOGY

MIT BLOSSOMS

Math and Science Video Lessons for High School Classes

*Planting Seeds. Growing Minds.*

# MIT BLOSSOMS: International Co-creation and Co-utilization Of Math and Science Video Lessons for High School STEM Classes


Elizabeth Murray

Massachusetts Institute of Technology

Cambridge, Massachusetts


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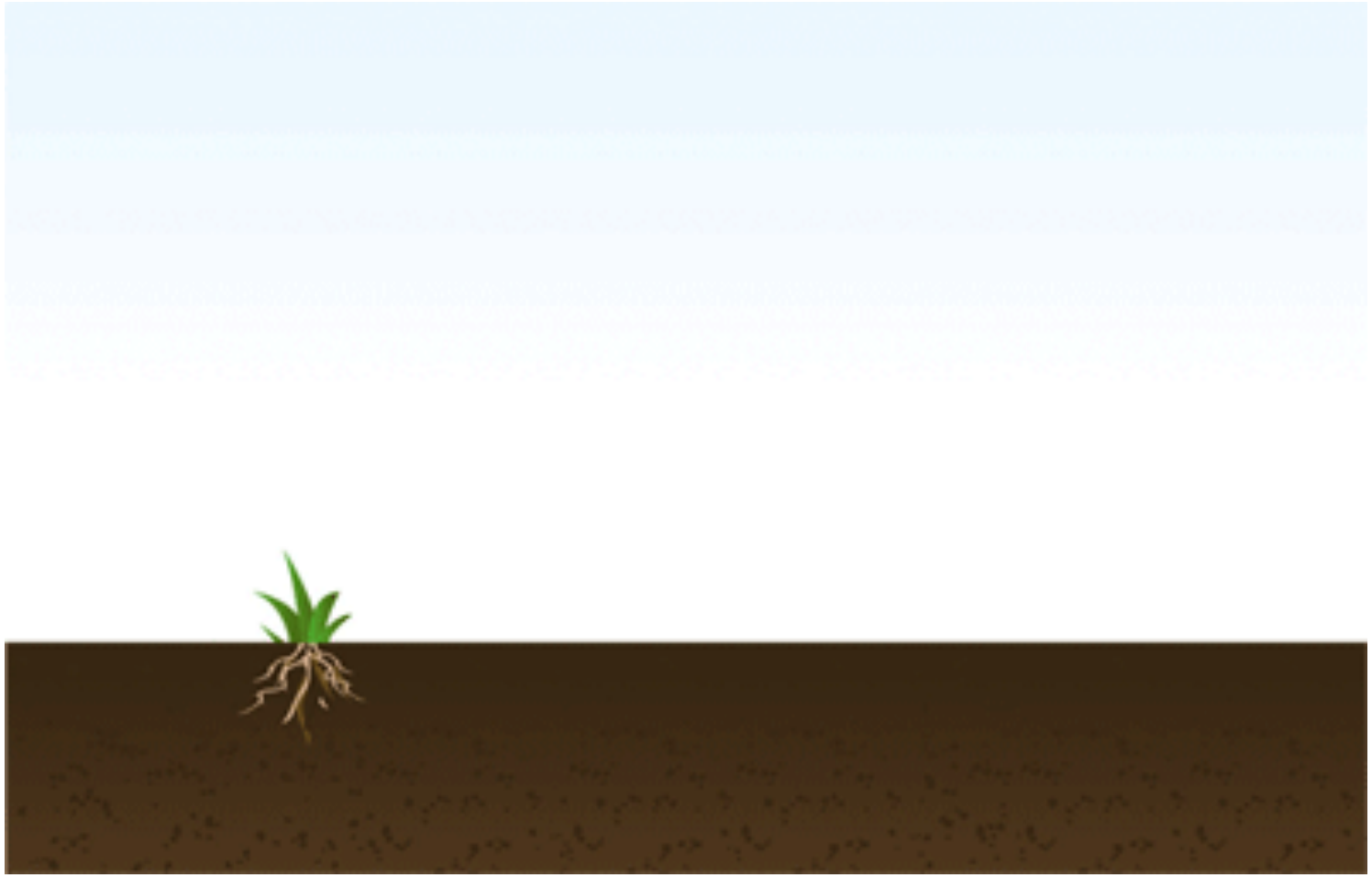
# The MIT LINC High School BLOSSOMS Initiative

**B**LENDED **L**EARNING **O**PEN **S**OURCE **S**CIENCE **O**R **M**ATH **S**TUDIES


Learning International Networks Consortium

# "BLOSSOMS"



# WHAT IS MIT BLOSSOMS?

***Math and Science video lessons created by gifted volunteer educators from grou w***

# A free online library of “interactive” video lessons for high school math and science classes.


BLOSSOMS
BLENDED LEARNING OPEN SOURCE SCIENCE OR MATH STUDIES

**Not long videos to be watched passively by teachers and students, but actively engage teachers and students in a learning experience with a virtual teacher whose home classroom might be a world away.**

# *"Teaching Duet"* Pedagogy

**Each video is viewed in brief segments.**

**The in-class teacher between segments engages the class in an active, goal-oriented exercise outlined in a companion teacher's guide.**

**Once this learning goal is accomplished, the video is advanced to the next segment.**

**Segment transitions imply "passing the baton."**

BLOSSOMS
BLENDED LEARNING OPEN SOURCE SCIENCE OR MATH STUDIES

# Focus:

**Not on memorization or rote learning, but on developing critical and creative thinking skills.**

- **Aimed** at
  - **Critical thinking**
  - **Creative thinking**
  - **Lateral thinking**
  - **Motivation: learning for life**

BLOSSOMS
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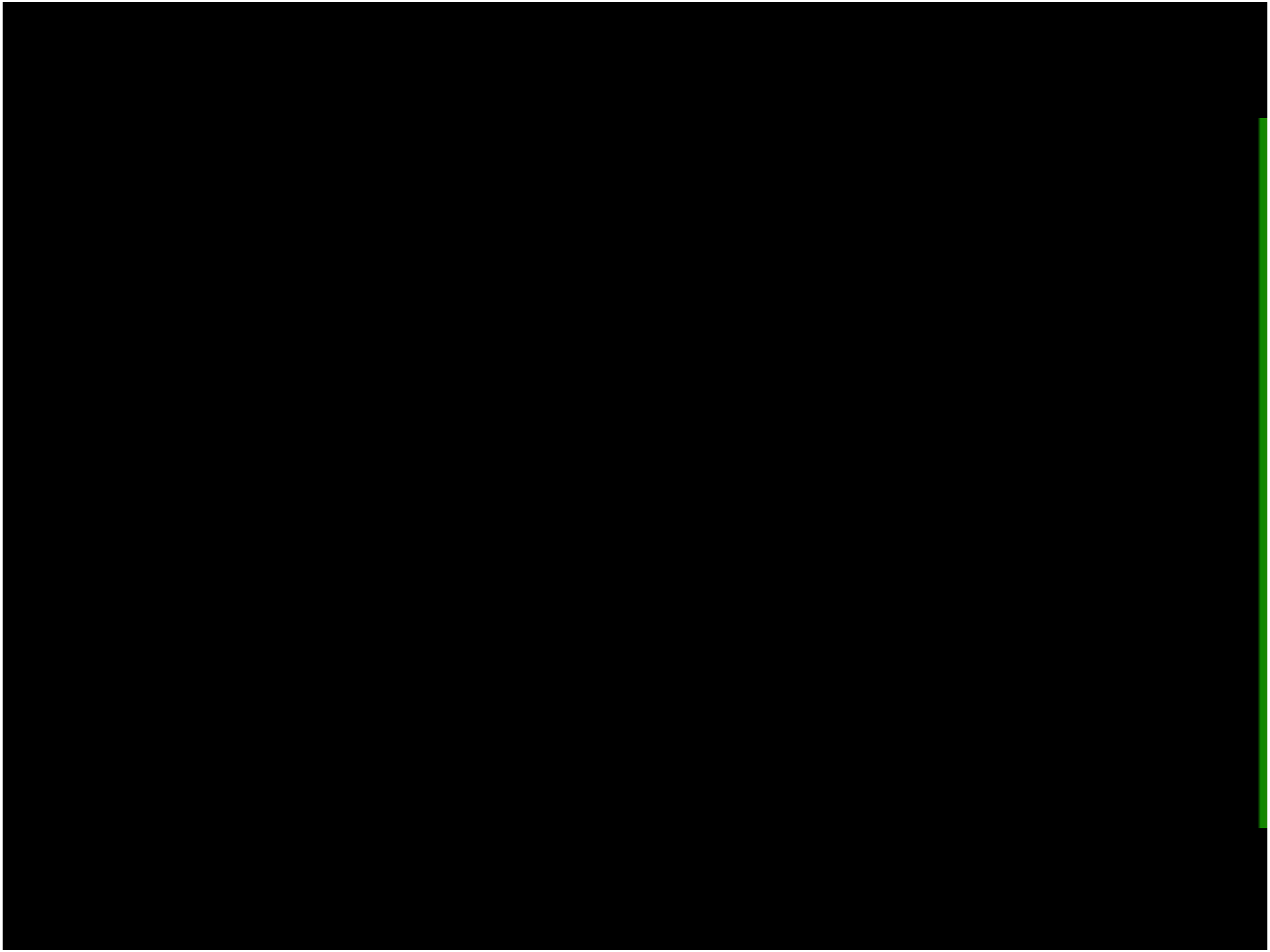


# Participants at 2004 LINC Conference

# This Initiative Blossomed in Mid-October 2004

**…we were visiting a classroom in Ningxia Province, China where they observed teacher utilizing TV lecture.**

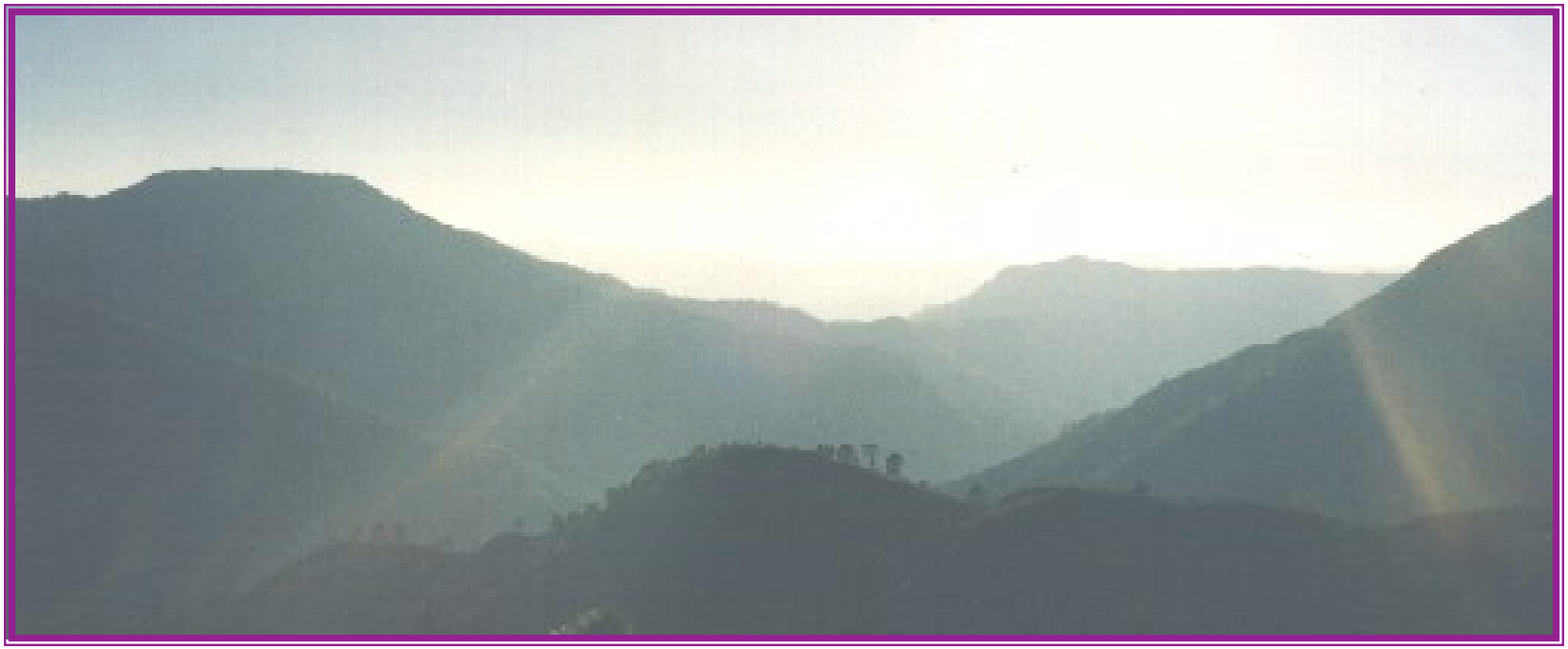

# Why Do We Need an Initiative like MIT BLOSSOMS?

We are all affected by the competitive forces of
**Expanding Economic Globalization**

# Our Children Will Need an Education that Enables Them to Find Jobs in this New Economy.

# Today We Live In a Knowledge Age

# The Most Valuable Natural Resources of a Country Lie Buried…



http://www.mountain-environments.ndirect.co.uk/

# Between the Ears of Its Citizens

# Within this Framework, BLOSSOMS Began with Four Guiding Principles

1) Improve math and science teaching and learning at the secondary level.
2) Introduce teachers in a gentle way to the power of technology-enabled education.
3) Encourage universities to "reach down" to help improve math & science education in high schools.
4) Initiate an educational resource that involves international partners in co-creation and co-utilization.

# 1. Improve Math and Science Teaching and Learning at the Secondary Level.

# STEM Education (STEAM)

# Suggested Attributes of the STEM Educated Student

- **Problem-solvers**—able to frame problems as puzzles and then able to apply understanding and learning to these novel situations (argument and evidence)
- **Innovators**—"power to pursue independent and original investigation"
- **Inventors**—recognize the needs of the world and creatively design and implement solutions

# The goals of MIT BLOSSOMS are:

- Enhance development of critical thinking skills
- Engage students in observation, experiment & discussion
- Connect abstract concepts to the real world
- Show how exciting STEM can be
- Increase student interest in careers in STEM

# All Students Need to Be STEM Literate

***In that way we individually and collectively become better decision makers about all the options that our world and we face. STEM is not only for Ph.D. researchers. It's for all of us!***

# BLOSSOMS

BLENDED LEARNING OPEN SOURCE SCIENCE OR MATH STUDIES

# 2. Introduce Teachers in a Gentle Way to The Power of Technology-enabled Education, to the Technology of the 21st Century.

# Video Lesson Content

- Broadband Internet connection not required.
- All that's required is a TV and a projector.
- We distribute CD's, DVD's and videotape.
- Shipped to high school teachers upon request.

# 3) Encourage Universities to "Reach Down" to Help Improve Math and Science Education in High Schools.

# Partnering Universities: To Make Sure that High School Students Have Adequate Preparation in Math and Science

- **Jordan** — University of Jordan; Jordan University of Science and Technology
- **Pakistan** — Pakistan Virtual University; University of the Punjab
- **Lebanon** — American University of Beirut; Notre Dame University
- **K.S.A.** — King Fahd University of Petroleum and Minerals
- **Malaysia** — Universiti Teknologi Malaysia

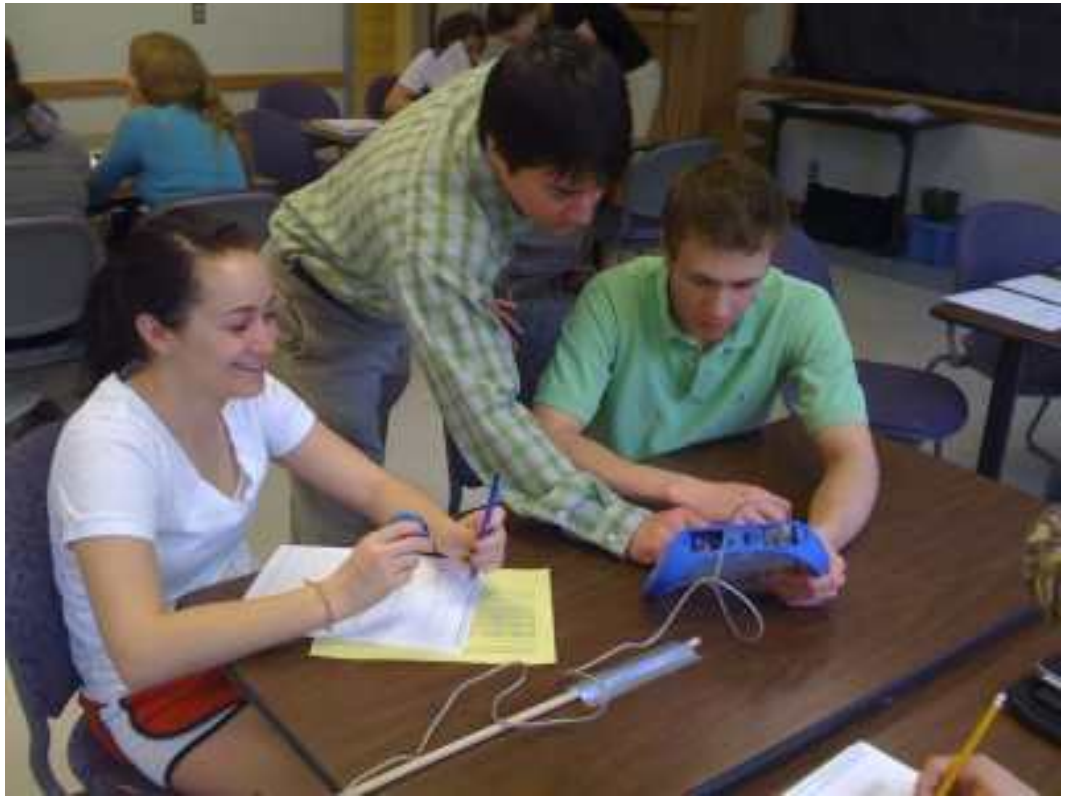
# 4) Initiate an Educational Resource That Involves International Partners In Co-creation and Co-utilization.

# The #1 Goal of BLOSSOMS Lessons for students:

# Critical Thinking Skills

# The #1 Goal of BLOSSOMS for Teachers:

## To Learn a New Style of Teaching



# *The First BLOSSOMS Funder*

# Three Major Dimensions of k-12 Science Education

- Scientific and engineering practices
- Crosscutting concepts that unify the study of science and engineering through their common application across fields
- Core ideas in four disciplinary areas: physical sciences; life sciences; earth and space sciences; and engineering, technology, and applications of science

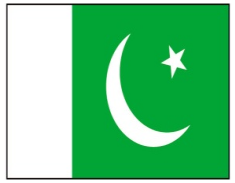
# MIT BLOSSOMS and the Massachusetts Department of Elementary and Secondary Education

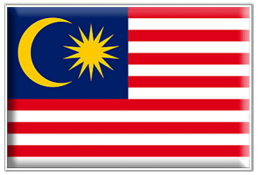


**These new lessons, created here in Massachusetts by individual science teachers or small teams of science teachers, will become valuable educational resources within the Commonwealth and important tools to support the transition to new state science standards.**









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WELLS FARGO
We're on Track For a Cure