

# BiteScis: Classroom-tested, scientist-approved

Cara Battersby<sup>1</sup>, Shannon Morey<sup>2</sup>, Erica Kimmerling<sup>3</sup>, Stephanie Keep<sup>4</sup>, and the ComSciCon team.

<sup>1</sup>Astronomy postdoctoral fellow at the Harvard-Smithsonian Center for Astrophysics. <sup>2</sup>Boston Public Schools Science Teacher, <sup>3</sup>Biotech predoctoral fellow at Tufts University, <sup>4</sup>Editor, "Reports of the National Center for Science Education"



Bringing modern science research into the classroom through one-of-a-kind lesson plans developed in partnerships between K-12 teachers and STEM graduate students.

## BiteScis:

- Pairs together K-12 teachers with STEM graduate students to develop lesson plans that bring modern science research into the classroom
- Provides the structure and resources to foster personal connections between early career scientists and teachers
- Hosts lesson-plan development workshops
- Will ultimately host all the BiteScis lesson plans on a user-friendly web interface that is fully-searchable by topic, level, curriculum standard, and big-picture questions.

BiteScis seeks to improve science education and communication, with the ultimate goal of enhancing public understanding and appreciation of science.



June 2015 ComSciCon National K-12 session and the start of BiteScis



Each lesson plan BiteScis develops is tested in real K-12 classrooms and revised until it is scientist- and teacher-approved.



ComSciCon 2015 Organizing Committee

BiteScis is a ComSciCon<sup>1</sup> program

<sup>1</sup>The Communicating Science Conference for graduate students. National conference held annually in Boston, local conferences held nationwide (see [comscicon.com](http://comscicon.com) for details)



## BiteScis lesson plans:

A few highlights – ask me to see full lesson plans and much more!

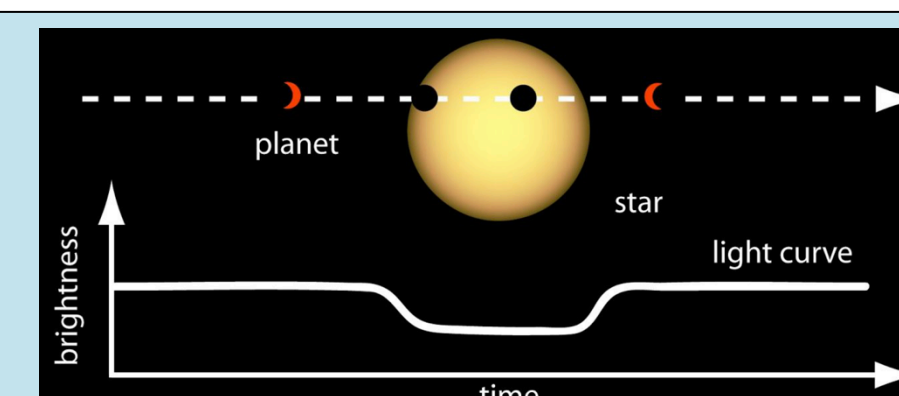
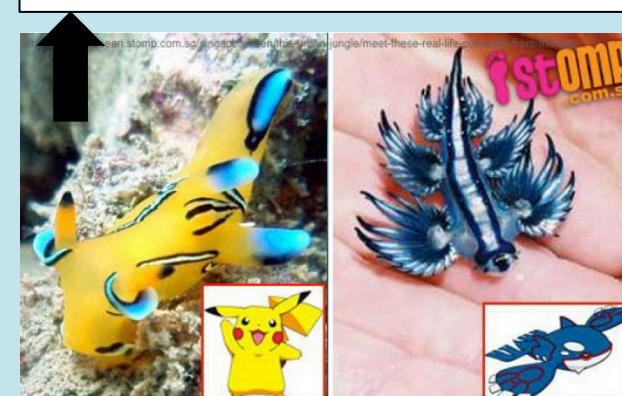
### *You are what you eat - sea slug super powers*

**Purpose**  
This activity is meant as an introduction to marine diversity and how things exist in nature that challenge our idea of the impossible. It is intended to enable students to teach students about how sea slugs get their defences.

**Grade Level**  
3rd-4th

**Lesson Objectives**  
SWBAT understand and recognize inherited characteristics in the world and families around them.

**NGSS Standards**  
Grade 5 - PS2B. Animal interactions



### *Exoplanet Detection Lab*

**Purpose**  
The purpose of the activity is to introduce the concepts of orbital dynamics and light while including information about the most recent research advances in exoplanet detection from the Kepler Telescope.

**Grade Level**  
9-12

**Lesson Objectives**  
Students should be able to interpret transit light curves and determine basic properties of the planets in an orrery without seeing them directly.

**NGSS Standards**  
HS-ESS2-4: Use mathematical or computational representations to predict the motion of orbiting objects in the Solar System.

### *Proportions in Biology*

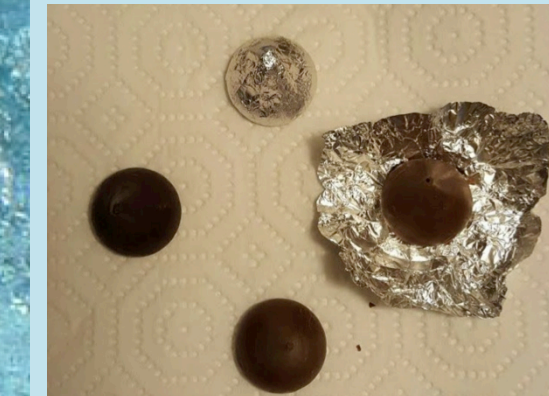
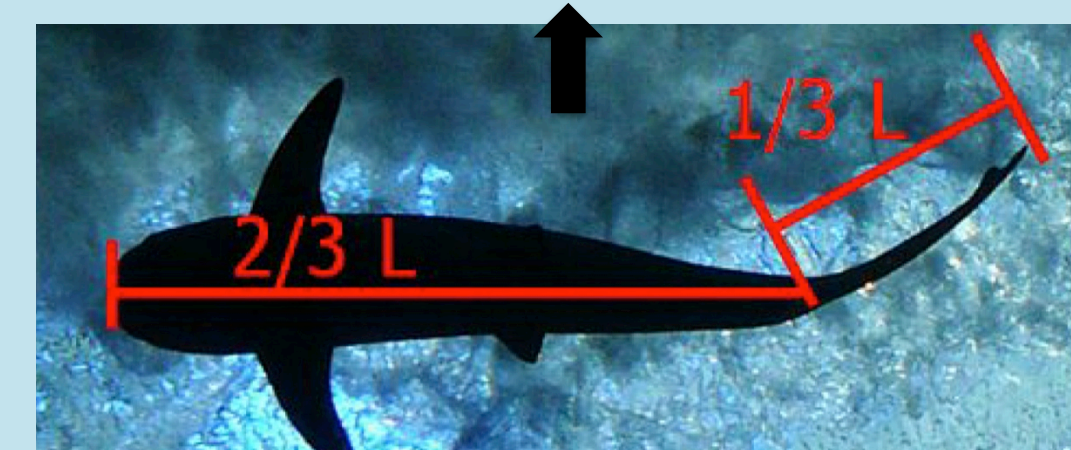
**Purpose**  
This activity is meant as a supplement to a lesson on either proportions and convergent evolution. This activity will get students thinking about the importance of proportions in nature.

**Grade Level**  
Middle school (math or biology)  
High school (biology)

**Lesson Objectives**  
To show how and why proportions of propulsors (wings, tail fins, etc) are similar across different groups of animals.

**Common Core Math Standards**  
CCSS.MATH.CONTENT.7.RP.A.2.A Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.

**NGSS Standards**  
MS-LS4-4: Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.  
HS-LS4-4: Construct an explanation based on evidence for how natural selection leads to adaptation of populations.



### *Radiative Forcing*

**Purpose**  
To use the metaphor of melting chocolate to describe the reflective properties of different carbon substances in the atmosphere beyond just CO2.

**Grade Level**  
6

**Lesson Objectives**  
There's not just CO2 in the atmosphere. Different substances in atmosphere have different effects on absorbing or reflecting heat. These substances can come from different sources (ex: burning coal vs natural gas), and have different climate effects. It's important to understand the atmosphere beyond just CO2.

**NGSS Standards**  
MS-ESS3-5



Fall 2015 BiteScis Workshop, K-12 lesson development and BiteScis Planning Meeting

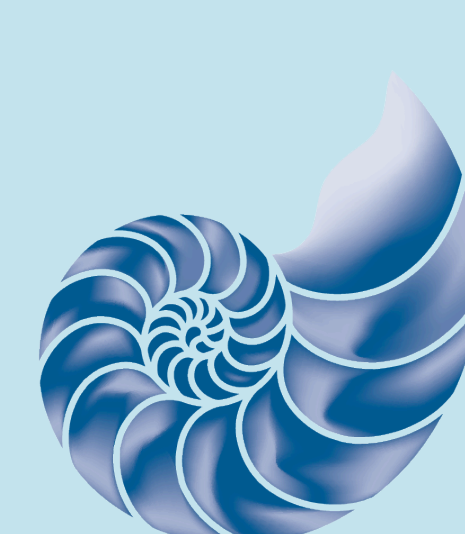
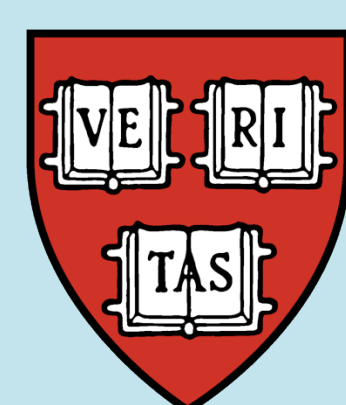
## BiteScis events:

- ComSciCon K-12 teacher workshop, June 2015. Developed 30 lesson plans
- Fall 2015 Boston-local BiteScis workshop. Developed ~10 lesson plans
- Next – ComSciCon 2016 BiteScis workshop

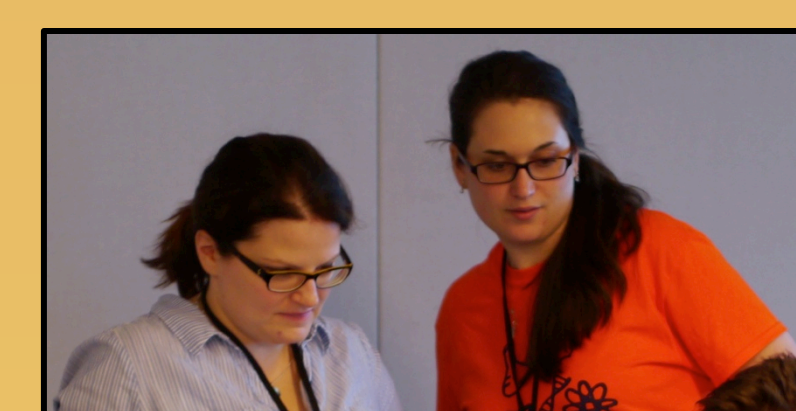
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**BiteScis leadership team** (clockwise from top left): Stephanie Keep, Erica Kimmerling, Cara Battersby, and Shannon Morey