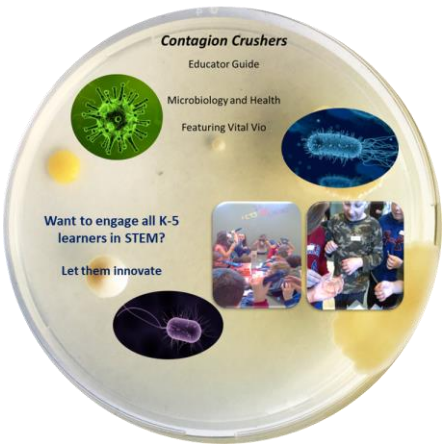
CreositySpace Educator Guides and curricular materials are designed to support a variety of implementation methods:

For the Classroom Teacher

- A variety of introduction tools to assess prior knowledge and create common experiences.
- Detailed **weekly learning objectives** and instructional lessons lists/pacing guides.
- **Cross-curricular activities** to support ELA and math learning objectives.

For the STEM/Afterschool Teacher

- A variety of introduction tools to assess prior knowledge and create common experiences.
- **Flexible lesson plans** that can adjust to your instructional method and schedule
- **Leveled content** that supports students at different reading, writing, and language levels.



Contagion Crushers

Primary Curriculum	Grade 3
Supplemental Curriculum	Grades 3–5
Notes	Microbe growing activity requires 1 week to complete. Petri dishes contain agar gel. Standard unit comes with enough materials for 30 students.

Description

How can you kill germs with the flip of a switch?

Explore the world of light, bacteria, and business as Colleen Costello, co-founder and president of Vital Vio (recently renamed to Vyv), tells her story about designing an everyday light source that automatically cleans while in use.

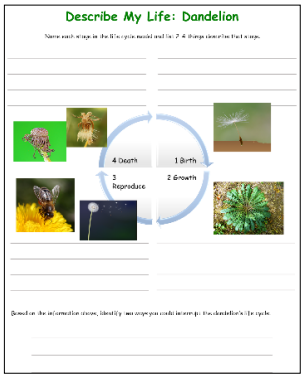
Using Vyv's ellumi™ technology as the overarching phenomenon, students will explore bacteria, environmental influences, and life cycles as they ask themselves: "*How can understanding the way different organisms live help us to solve health-related problems?*"

Main Investigations

Bacteria Growing

Light Experiments

Life Cycle Investigations



Number of Lessons*

Full unit – 25 lessons
Supplemental program – minimum 5 lessons (requires 1 week for microbes to grow)

**Lesson = 30–40 min. block, 50% of full unit lessons can be delivered in non-science classes*

Best Suited For

- Classroom science instruction
- STEM class instruction or afterschool programs (with regular attendance)

Overarching Enduring Understanding

How can naturally occurring materials can be used to create healthier, safer, and cleaner products that put less stress on the environment?

Number of Lessons*

Full unit – 25 lessons

Supplemental program – minimum 5 lessons (requires 1 weeks for microbes to grow)

**Lesson = 30 – 40 min block, 50% of full unit lessons can be delivered in non-science classes*

FLOW OF INSTRUCTION

Investigation: What Does it Take to Crush a Contagion? (hands-on and mini research project (concurrent), occurs during weeks 1 and 2)

In this investigation students are introduced to concept of using life cycle models to explore, describe, and compare the various life stages of living organisms. As they work through the various parts of this investigation they will:

- identify patterns, similarities, and differences between the life stages of different types of organisms explore how life cycle models can be used to tell us about the interdependencies between living organisms and their environment, and,
- investigate how we can use the information in life cycle models to support or eradicate various organisms.

Using the *Contagion Crushers* unit overarching phenomenon "*How can you kill germs with the flip of a switch?"* students will further investigate the ways habitat and environment can influence the survival of various organisms as they learn about Vyv's *Ellumi*™ technology. As part of this investigation health-related problems will be defined (including constraints and criteria for success) and key aspects of the Vyv technology will be explored. Throughout this investigation, students will explore and develop a model that describes both the unique aspects and common steps in the life cycle of various organisms as they answer the question *"What does it take to crush a contagion?"*

Investigation: Who Lives Here? (hands-on and mini research project (concurrent), occurs during weeks 3, 4 and 5)

In this three-part investigation students explore, gather evidence, and draw conclusions about the interactions and interdependencies between organisms and their environment.

A: Who Lives in Our Classroom? (hands-on investigation, occurs during weeks 3 and 4)

In this hands-on investigation students collect samples of bacteria and other microbes from the different parts of the classroom. Samples are stored in different environments and growth is monitored to determine which classroom locations have more or less bacteria and which storage environment results in large bacteria growth.

B: Who Lives Throughout the World? (research project, occurs during weeks 3 and 4)

Student pick 1—3 different environments/habitats and construct an argument with evidence on why some organisms can survive their while others cannot. In their argument they must describe what about the organism enables it to survive there and if a person or plant could also survive in that location. (Enrichment activity: Develop a technology or invention that would allow a person to survive in that environment). Students must also hypothesize what type of change to the environment might harm the organism.

C: Who Lived Long Ago? (research project, occurs during week 5)

Students must gather evidence about one or two fossils from a similar location and describe what it tells us what about the organism and environment was like when it was alive.

Investigation: Multiplying Microbes (preparatory research project, occurs week 5 and 6)

Building from the observations made in **Who Lives in Our Classroom?** students must work in teams to identify and describe microbe-related problems that may accompany weather-related hazards. Students will use the information from this investigation for their **Microbe Melee** summative challenge.

Investigation: Microbe Melee (summative challenge, occurs weeks 7 and 8+)

Student work in small groups to accomplish the following:

1. Describe a weather-related hazard and the microbe-related problem that may result. Using the life cycle model developed in **What Does it Take to Crush a Contagion**, they must identify what stage of life cycle the weather-related hazard affects.
2. Describe, or propose, a solution to that microbe-related problem. The description must include success criteria and a list of constraints. The description must also identify what part of the life cycle is being disrupted and how.
3. Compare their solution and that of another group to the design criteria and constraints. The comparison must include something that they think is very clever about each solution and something that could be improved for each solution.