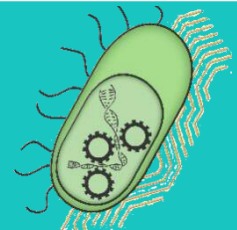
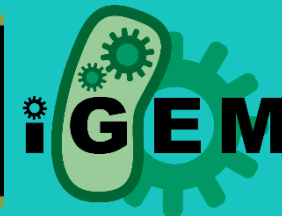


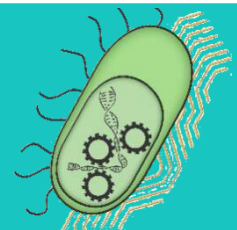
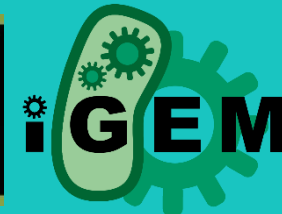
Standards



Activities and Conversations about Synthetic Biology



Synthetic Biology
uses new techniques combining **biology** and **engineering** to make new or modified living things and materials.



Four Pillars of Building with Biology

Synthetic biology
**builds biological
systems**

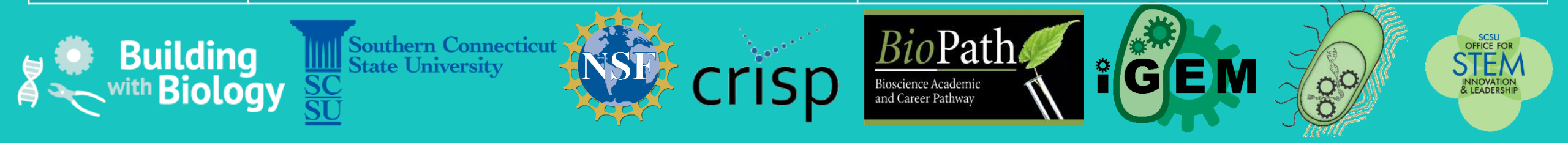
Synthetic biology
**generates new tools
and knowledge**

Synthetic biology
**benefits from
many voices**

Synthetic biology
**is interconnected
with society**

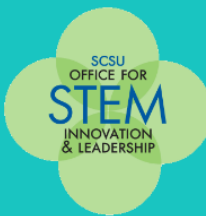
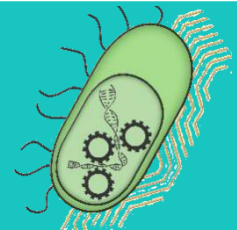
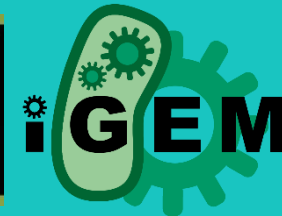
Standards

| Module | Next Generation Science Standards (Disciplinary Core Ideas & Potential Performance Expectations) | Connecticut Core State Standards |
|------------|---|--|
| Bio Bistro | <p>LS1 – From Molecules to Organisms: Structures and Processes MS-LS1-5, HS-LS1-1</p> <p>LS3 – Heredity: Inheritance and Variation of Traits MS-LS3-1, HS-LS3-1, HS-LS3-2</p> <p>LS4 – Biological Evolution: Unity and Diversity MS-LS4-5</p> <p>ESS3 – Earth and Human Activity MS-ESS3-3, HS-ESS3-2, HS-ESS3-3, HS-ESS3-4</p> <p>PS1 – Matter and Its Interactions MS-PS1-3</p> <p>ETS1 – Engineering Design MS-ETS1-1, MS-ETS1-2, HS-ETS1-1, HS-ETS1-2</p> | <p><u>Targeted Content Standards</u> <i>Science & Technology in Society</i></p> <p>7.4 - Technology allows us to improve food production and preservation, thus improving our ability to meet the nutritional needs of growing populations.</p> <p>9.6 - Chemical technologies present both risks and benefits to the health and well-being of humans, plants and animals.</p> <p>9.8 - The use of resources by human populations may affect the quality of the environment.</p> <p>9.9 - Some materials can be recycled, but others accumulate in the environment and may affect the balance of the Earth systems.</p> <p>10.2 - Microorganisms have an essential role in life processes and cycles on Earth.</p> <p>10.3 - Similarities in the chemical and structural properties of DNA in all living organisms allow the transfer of genes from one organism to another.</p> <p><i>Heredity and Evolution</i></p> <p>10.5 - Evolution and biodiversity are the result of genetic changes that occur over time in constantly changing environments.</p> <p><u>Targeted Scientific Inquiry, Scientific Literacy, Scientific Numeracy Standards</u></p> <p>D. INQ 1 Identify questions that can be answered through scientific inquiry</p> <p>D. INQ 2 Read, interpret and examine the credibility and validity of scientific claims in different sources of information.</p> |



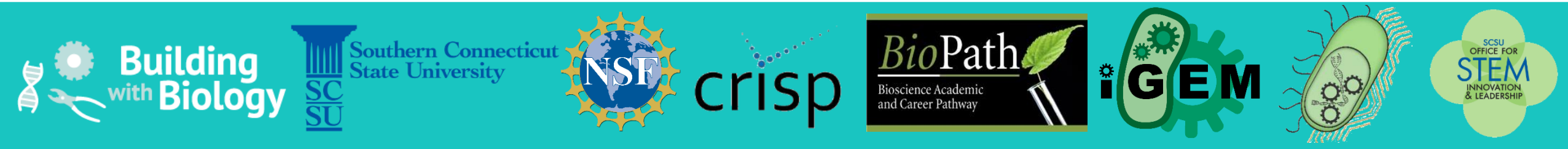
Standards

| Module | Next Generation Science Standards (Disciplinary Core Ideas & Potential Performance Expectations) | Connecticut Core State Standards |
|--------------|---|---|
| Kit of Parts | <p>LS1 – From Molecules to Organisms: Structures and Processes MS-LS1-2, HS-LS1-1, HS-LS1-2</p> <p>LS2 – Ecosystems: Interactions, Energy, and Dynamics MS-LS2-4, MS-LS2-5, HS-LS2-6, HS-LS2-7</p> <p>LS3 – Heredity: Inheritance and Variation of Traits MS-LS3-1, HS-LS3-1, HS-LS3-2</p> <p>LS4 – Biological Evolution: Unity and Diversity MS-LS4-5</p> <p>PS1 – Matter and Its interactions MS-PS1-3</p> <p>ETS1 – Engineering Design MS-ETS1-1, MS-ETS1-2, HS-ETS1-1, HS-ETS1-2, HS-ETS1-3</p> | <p><u>Targeted Content Standards</u> <i>Structure and Function</i> 10.1 - Fundamental life processes depend on the physical structure and the chemical activities of the cell. <i>Science & Technology in Society</i> 9.6 - Chemical technologies present both risks and benefits to the health and well-being of humans, plants and animals. 9.8 - The use of resources by human populations may affect the quality of the environment. 9.9 - Some materials can be recycled, but others accumulate in the environment and may affect the balance of the Earth systems. 10.2 - Microorganisms have an essential role in life processes and cycles on Earth. 10.3 - Similarities in the chemical and structural properties of DNA in all living organisms allow the transfer of genes from one organism to another. <i>Heredity and Evolution</i> 10.5 - Evolution and biodiversity are the result of genetic changes that occur over time in constantly changing environments.</p> <p><u>Targeted Scientific Inquiry, Scientific Literacy, Scientific Numeracy Standards</u> D. INQ 1 Identify questions that can be answered through scientific inquiry D. INQ 2 Read, interpret and examine the credibility and validity of scientific claims in different sources of information.</p> |



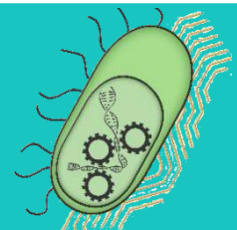
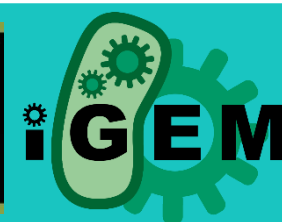
Standards

| Module | Next Generation Science Standards (Disciplinary Core Ideas & Potential Performance Expectations) | Connecticut Core State Standards |
|---------|---|---|
| See DNA | <p>LS1 – From Molecules to Organisms: Structures and Processes MS-LS1-1, MS-LS1-2, MS-LS1-3, HS-LS1-1</p> <p>LS3 – Heredity: Inheritance and Variation of Traits MS-LS3-1, HS-LS1-1</p> <p>LS4 – Biological Evolution: Unity and Diversity MS-LS4-5, HS-LS4-1</p> <p>PS1 – Matter and Its Interactions MS-PS1-1, MS-PS1-3</p> <p>ETS1 – Engineering Design MS-ETS1-1, MS-EST1-2, HS-ETS1-1, HS-ETS1-2</p> | <p><u>Targeted Content Standards</u></p> <p><i>Structure and Function</i> 10.1 - Fundamental life processes depend on the physical structure and the chemical activities of the cell.</p> <p><i>Science & Technology in Society</i> 10.3 - Similarities in the chemical and structural properties of DNA in all living organisms allow the transfer of genes from one organism to another.</p> <p><i>Heredity and Evolution</i> 10.4 - In sexually reproducing organisms, each offspring contains a mix of characteristics inherited from both parents. 10.5 - Evolution and biodiversity are the result of genetic changes that occur over time in constantly changing environments.</p> <p><u>Targeted Scientific Inquiry, Scientific Literacy, Scientific Numeracy Standards</u></p> <p>D. INQ 1 Identify questions that can be answered through scientific inquiry D. INQ 2 Read, interpret and examine the credibility and validity of scientific claims in different sources of information. D. INQ 4 Design and conduct appropriate types of scientific investigations to answer different questions.</p> |



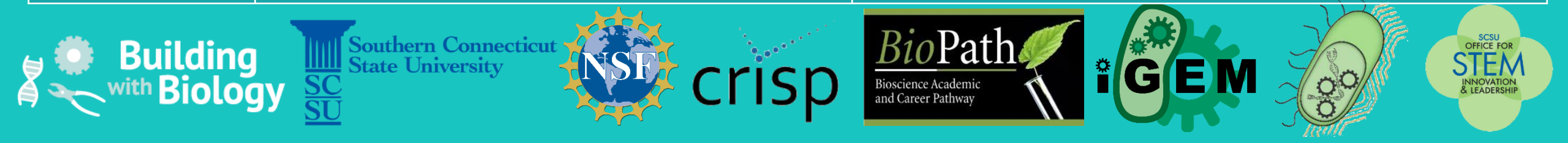
Standards

| Module | Next Generation Science Standards (Disciplinary Core Ideas & Potential Performance Expectations) | Connecticut Core State Standards |
|-----------------|---|--|
| Super Organisms | <p>LS1 – From Molecules to Organisms: Structures and Processes MS-LS1-1, MS-LS1-2, HS-LS1-1, HS-LS1-2</p> <p>LS2 – Ecosystems: Interactions, Energy, and Dynamics MS-LS2-5, HS-LS2-7</p> <p>LS3 – Heredity: Inheritance and Variation of Traits MS-LS3-1, HS-LS3-1, HS-LS3-2</p> <p>LS4 – Biological Evolution: Unity and Diversity MS-LS4-4, MS-LS4-5, HS-LS4-1, HS-LS4-5, HS-LS4-6</p> <p>PS1 - Matter and Its Interactions MS-PS1-1, MS-PS1-3</p> <p>ETS1 – Engineering Design MS-ETS1-1, MS-ETS1-2, MS-ETS1-3, HS-ETS1-1, HS-ETS1-2</p> | <p><u>Targeted Content Standards</u></p> <p><i>Structure and Function</i> 10.1 - Fundamental life processes depend on the physical structure and the chemical activities of the cell.</p> <p><i>Science & Technology in Society</i> 9.6 - Chemical technologies present both risks and benefits to the health and well-being of humans, plants and animals. 9.8 - The use of resources by human populations may affect the quality of the environment. 9.9 - Some materials can be recycled, but others accumulate in the environment and may affect the balance of the Earth systems. 10.2 - Microorganisms have an essential role in life processes and cycles on Earth. 10.3 - Similarities in the chemical and structural properties of DNA in all living organisms allow the transfer of genes from one organism to another.</p> <p><i>Heredity and Evolution</i> 10.4 - In sexually reproducing organisms, each offspring contains a mix of characteristics inherited from both parents. 10.5 - Evolution and biodiversity are the result of genetic changes that occur over time in constantly changing environments.</p> <p><u>Targeted Scientific Inquiry, Scientific Literacy, Scientific Numeracy Standards</u> D. INQ 1 Identify questions that can be answered through scientific inquiry D. INQ 2 Read, interpret and examine the credibility and validity of scientific claims in different sources of information.</p> |



Standards

| Module | Next Generation Science Standards (Disciplinary Core Ideas & Potential Performance Expectations) | Connecticut Core State Standards |
|-------------|---|---|
| Tech Tokens | <p>LS1 – From Molecules to Organisms: Structures and Processes MS-LS1-2, HS-LS1-2</p> <p>LS2 – Ecosystems: Interactions, Energy, and Dynamics MS-LS2-5, HS-LS2-7</p> <p>LS3 – Heredity: Inheritance and Variation of Traits MS-LS3-1, HS-LS3-2</p> <p>LS4 – Biological Evolution: Unity and Diversity MS-LS4-4, HS-LS4-6</p> <p>ESS3 – Earth and Human Activity MS-ESS3-3, HS-ESS3-2, HS-ESS3-4</p> <p>PS1 – Matter and Its Interactions MS-PS1-3</p> <p>ETS1 – Engineering Design MS-ETS1-2, MS-ETS1-3, HS-ETS1-1, HS-ETS1-3</p> | <p><u>Targeted Content Standards</u></p> <p><i>Structure and Function</i> 10.1 - Fundamental life processes depend on the physical structure and the chemical activities of the cell.</p> <p><i>Science & Technology in Society</i> 7.4 - Technology allows us to improve food production and preservation, thus improving our ability to meet the nutritional needs of growing populations. 9.6 - Chemical technologies present both risks and benefits to the health and well-being of humans, plants and animals. 9.8 - The use of resources by human populations may affect the quality of the environment. 9.9 - Some materials can be recycled, but others accumulate in the environment and may affect the balance of the Earth systems. 10.2 - Microorganisms have an essential role in life processes and cycles on Earth. 10.3 - Similarities in the chemical and structural properties of DNA in all living organisms allow the transfer of genes from one organism to another.</p> <p><i>Heredity and Evolution</i> 10.4 - In sexually reproducing organisms, each offspring contains a mix of characteristics inherited from both parents. 10.5 - Evolution and biodiversity are the result of genetic changes that occur over time in constantly changing environments.</p> <p><u>Targeted Scientific Inquiry, Scientific Literacy, Scientific Numeracy Standards</u> D. INQ 1 Identify questions that can be answered through scientific inquiry D. INQ 2 Read, interpret and examine the credibility and validity of scientific claims in different sources of information.</p> |



Standards

| Module | Next Generation Science Standards (Disciplinary Core Ideas & Potential Performance Expectations) | Connecticut Core State Standards |
|----------------|--|--|
| VirEx Delivery | <p>LS1 – From Molecules to Organisms: Structures and Processes MS-LS1-2, HS-LS1-1</p> <p>LS2 – Ecosystems: Interactions, Energy, and Dynamics MS-LS2-5, HS-LS2-7</p> <p>LS3 – Heredity: Inheritance and Variation of Traits MS-LS3-1, HS-LS3-1, HS-LS3-2</p> <p>LS4 – Biological Evolution: Unity and Diversity MS-LS4-5</p> <p>PS1 - Matter and Its Interactions MS-PS1-3</p> <p>ETS1 – Engineering Design MS-ETS1-1, MS-ETS1-2, HS-ETS1-1, HS-ETS1-2</p> | <p><u>Targeted Content Standards</u> <i>Structure and Function</i> 10.1 - Fundamental life processes depend on the physical structure and the chemical activities of the cell. <i>Science & Technology in Society</i> 9.6 - Chemical technologies present both risks and benefits to the health and well-being of humans, plants and animals. 10.2 - Microorganisms have an essential role in life processes and cycles on Earth. 10.3 - Similarities in the chemical and structural properties of DNA in all living organisms allow the transfer of genes from one organism to another. <i>Heredity and Evolution</i> 10.4 - In sexually reproducing organisms, each offspring contains a mix of characteristics inherited from both parents. 10.5 - Evolution and biodiversity are the result of genetic changes that occur over time in constantly changing environments.</p> <p><u>Targeted Scientific Inquiry, Scientific Literacy, Scientific Numeracy Standards</u> D. INQ 1 Identify questions that can be answered through scientific inquiry D. INQ 2 Read, interpret and examine the credibility and validity of scientific claims in different sources of information.</p> |

