

# Envision the Future

## A STEM PROGRAM FOR GIRLS AGES 11 - 13

A Southeastern Massachusetts STEM Network Initiative in Collaboration with CONNECT



### Draft Schedule

A final schedule will be posted by July 10, 2015 at <http://www.connectsemass.org/stem>

Activities will take place at Bridgewater State University, with one exception. On Tuesday, July 21, 2015, students will be transported, by bus, to Stonehill College to participate in a Biotech lab.

DRAFT SCHEDULE	Mon July 20	Tues July 21	Wed July 22	Thurs July 23	Fri July 24
7:30-8:15AM	Register at Dorm	Breakfast	Breakfast	Breakfast	Breakfast
8:30-10AM	Orientation Congressman Joseph Kennedy and BSU President Fred Clark	BioTech Lab	Computing Workshops	Group 1 LEGO Mindstorm Program a Robot Group 2 Get to the Point	Set Up STEM Resource Fair
10-11:15AM	ROV Workshop	BioTech Lab	Computing Workshops	Group 1 LEGO Mindstorm Program a Robot Group 2 Get to the Point	STEM Resource Fair  Envision Girls – demo accomplishments.
11:15AM- 12PM	ROV Workshop	BioTech Lab	Computing Workshops	Group 1 LEGO Mindstorm Program a Robot Group 2 Get to the Point	STEM Resource Fair  40+ interactive STEM displays
12-12:40PM	Lunch	Lunch	Lunch	Lunch	Closing Ceremony -
1-2:30PM	ROV Workshop	BioTech Lab	Computing Workshops	Group 2 LEGO Mindstorm Program a Robot Group 1 Get to the Point	<i>featuring UMD Chancellor Divina Grossman and BSU President Fred Clark Ends at 12:30</i>
2:30-4PM	ROV Workshop Test ROV in the pool	Activities	Group 1 BioBuilder Group 2 TBD	Group 2 LEGO Mindstorm Program a Robot Group 1 Get to the Point	
4-5PM	Activities	Sustainable Transportation & Urban Design	Group 2 BioBuilder Group 1 TBD	Group 2 LEGO Mindstorm Program a Robot Group 1 Get to the Point	
5-6PM	Dinner	Dinner	Dinner	Dinner	
6-8:30PM	EarthView	Sustainable Transportation & Urban Design	Introductio n to LEGO Mindstorm	Meet & Greet Women STEM Professionals	
8:30-9:30PM	Reflections	Reflections	Reflections	Reflections	
10PM	Lights Out	Lights Out	Lights Out	Lights Out	

For more information, contact Katherine Honey, STEM Network Coordinator at [khoney@comcast.net](mailto:khoney@comcast.net)

## **ACTIVITIES at BRIDGEWATER STATE UNIVERSITY and STONEHILL COLLEGE**

Activities will take place in Bridgewater State University (BSU) laboratory-classrooms, with one exception. On Tuesday, July 21, 2015, students will take a bus to Stonehill College to participate in a Biotech lab. At both locations students are expected to adhere to safety guidelines, including but not limited to wearing closed-toe shoes, use of safety glasses and use of equipment only as directed. Eating, drinking and applying cosmetics are prohibited in laboratory spaces. Students must be dressed for an academic environment.

### **BIOTECH LAB—SOLVE IT—THE CASE OF THE STOLEN JEWELS**

Students will be charged with solving a crime at the City Museum where the Crown Jewels, valued at over \$1,000,000, were stolen. Four suspects have been identified and were required to supply DNA samples to be compared to the DNA found at the scene of the crime. Students will be forensic scientists for the day—solving the crime by comparing the suspects' DNA to the DNA from the crime scene. They will learn to use DNA restriction enzymes and gel electrophoresis to distinguish different types of DNA.

This activity simulates a real-laboratory experience utilizing commercially available DNA and typical tools/equipment found in any molecular biology/biotechnology laboratory. *Presented by Rachel Hirst, Assistant Professor of Biology, Stonehill College and Gilles Bolduc, Associate Professor of Biology, Massasoit Community College*

### **PRESENTERS:**

**Rachel A. Hirst, Ph.D.**, is currently an Assistant Professor of Biology at Stonehill College in Easton, MA. She received her B.S. degree in biology from Stonehill College, a Ph.D. in Microbiology and Immunology from Pennsylvania State University, and was a postdoctoral fellow at Tufts University in the Department of Molecular Microbiology. Since joining the faculty at Stonehill, Dr. Hirst has worked to establish a student focused research program that engages students during the summer and throughout the school year. Her lab is focused on understanding the relationship between a recently identified species of *Methylobacterium* and the white-rot fungus *Armillaria gallica*. Research students are currently working on genotypic, phenotypic and biochemical characterization of the bacterium. Broadening the participation of underrepresented, community college, and first-generation college students in undergraduate research has been a central theme of Rachel's work and she has been involved in several projects focused on collaboration between 2-year and 4-year institutions.

**Gilles Bolduc, Ph.D.**, is Director of Massasoit Community College's Biotechnology Certificate Program and Associate Professor in Biology at Massasoit. Dr. Bolduc received his B.S. degree in Microbiology from the University of Maine, and M.A in Biochemistry and Ph.D. in Microbiology from Boston University. Upon receiving his doctorate degree, he was a postdoctoral fellow and Instructor in Medicine at Channing Laboratory, Brigham and Women's Hospital, and later became CMC Team Leader at Cequent Pharmaceuticals, Inc. Dr. Bolduc currently teaches Microbiology, Biological Principles I, Topics in Molecular Biology, and organizes the Biotechnology Seminars. Dr. Bolduc was awarded two grants that supplied state-of-the-art equipment and supported the undergraduate research and Biotechnology Certificate programs at Massasoit. His undergraduate research students have characterized over 50 bacterial species isolated from various rivers and ponds of the Taunton River Watershed. They examined antibiotic resistance profiles and compared water quality based on chemical composition and coliform counts. Parts of this global project have been adopted by honors students.