



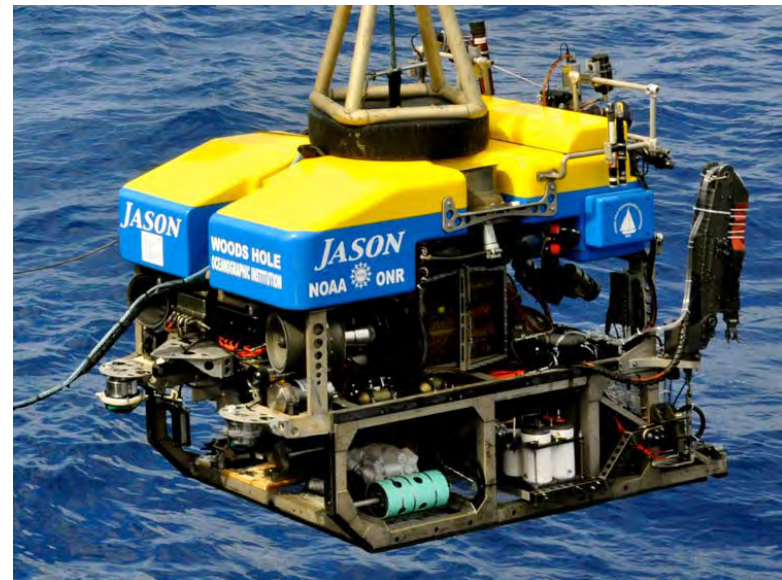
# *STEM Journey II: Great White Sharks to Deep Ocean Exploration*

*Dr. Jack Driscoll, Northeastern Section of the American Chemical Society  
(NESACS), Cape Cod Council of the Boy Scouts of America & STEM Journey  
Committee*

*Jennifer Maclachlan, NESACS & STEM Journey Committee*

*at*

*Cape Cod Community College, Hyannis, MA 12-4 PM  
March 28, 2015*



March 28, 2015

# *Introduction- @ Cape Cod Community College*

- This is the second year of the annual STEM Journey event- March 28, 2015
- The event was created in 2013 by the Cape Cod Council of the Boy Scouts of America, Northeastern Section of the American Chemical Society, PID Analyzers, LLC, & Cape Cod Community College. The Chair of the event was Eben Franks
- The mission of the event was to foster an interest, understanding and importance of Science Technology Engineering & Math (STEM) for K-12 students
- This year, we added another component to the keynote speakers and exhibition for grades 8-12- a Seminar on STEM Jobs
- We also added Mass Maritime and the newly created Cape and Islands Regional STEM Network as sponsors and committee members
- In a very short time this event has become the largest STEM event of its kind in SE MA



## Thank You to Our Sponsors!



## STEM Journey Committee

C. Eben Franks, Chairman  
Elizabeth Daly  
Dr. Jack Driscoll  
Nancy Gifford  
Kristina Ierardi  
Jennifer MacLachlan  
Jill Neumayer-DePiper  
Jayson Newell  
Michael Riley  
Alex Russo  
Dennis Walczewski  
Amy Zahn

### Boy Scout Counselors

#### Chemistry Merit Badge

Michael Morris  
Stephen Curtis

#### Oceanography Merit Badge

Meagan Eagle Gonnea  
Benjamin Linhoff

Miles Sundermeyer

#### Scientist Activity Badge (Webelos)

Nancy Gifford



# Keynote Speakers



## *Dr. Dave Gallo 12 & 2 PM*

- Dr. Gallo is an oceanographer and director of special projects at Woods Hole Oceanographic Institute
- He has been described as an enthusiastic ambassador between the sea and those of us on land
- He obtained a BS and MS in Geology at SUNY Albany and a PhD in Oceanography from URI
- He joined Robert Ballard's team at WHOI in 1987
- He was one of the first scientists to use robots and submarines to explore the ocean floor
- He was involved in exploring the Titanic, the Bismark and more recently looking for MH740 in the deepest ocean in the world

## *Toby Curtis 1 & 3 PM*

- Tobey Curtis is a shark researcher and policy analyst at National Oceanographic and Atmospheric Administration in Gloucester, MA. He has been studying sharks and other species for more than 15 years
- He received a BS from Long Island Univ. and an MS from the University of Florida
- He is a PhD candidate at U Mass Dartmouth in the lab of Dr. Greg Skomal

## David Gallo, Ph.D.



David Gallo is an American oceanographer and Director of Special Projects at the Woods Hole Oceanographic Institution. For more than 25 years, David has been at the forefront of ocean exploration, participating in and being witness to the development of new technologies and scientific discoveries that shape our view of planet earth. He has been described by TED Conferences as “an enthusiastic ambassador between the sea and those of us on dry land.” With more than 8 million views his TED presentation “Underwater Astonishments” is among the top three TED Talks viewed to date.

He received his Bachelor of Science and Master of Science degrees in geology from the State University of New York at Albany and a Doctorate degree in oceanography from the University of Rhode Island. In 1987 he joined Robert Ballard’s team at Woods Hole Oceanographic Institution as Assistant Director of the Center for Marine Exploration.

David has participated in expeditions to all of the world’s oceans and was one of the first scientists to use a combination of robots and submarines to explore the deep seafloor. Most recently he co-lead an expedition to create the first detailed and comprehensive map of the RMS Titanic and he co-lead the successful international effort to locate the remains of Air France flight 447. He is presently involved in planning an international expedition to locate and document the wreckage of Ernest Shackleton’s ship, HMS Endurance.

Dr. Gallo is personally committed to conveying the excitement and importance of ocean exploration to the public-at-large. He has lectured internationally to audiences ranging from children to CEOs with the goal of awakening the little bit of Jacques Cousteau and Jules Verne that resides in each of us. He has given more than 10 TED and TEDx presentations and has appeared in numerous documentaries (Discovery Channel, History Channel, National Geographic) and has been featured on numerous televised news programs (Weather Channel, PBS Need to Know, MSNBC Ed Show, and NBC Today show).

In recognition of his role in exploration and communications David is the co-recipient of a Computerworld-Smithsonian Award. He is an elected Fellow of the American Association for the Advancement of Science, a National Fellow of The Explorers Club, and a recent recipient of the Lotus Club Distinguished Achievement Award in Science. He is a member of the XPrize Deep Ocean Advisory Board and James Cameron’s Deep Ocean Task Force.

## Tobey Curtis



Tobey Curtis is a shark researcher and Fishery Policy Analyst for the National Oceanic and Atmospheric Administration Fisheries Service in Gloucester, MA. He has been studying great white sharks, basking sharks, bull sharks, and other species for over 15 years.

He received a Bachelor of Science from Long Island University - Southampton in 2000, and a Master of Science from the University of Florida in 2008. His research interests are in the behavioral ecology and fisheries biology of sharks. His past research has mostly focused on using tagging and acoustic telemetry to investigate the movements and habitat use of a variety of species including white sharks, mako sharks, bull sharks, bat rays, and sandbar sharks.

Tobey is a Ph.D. Candidate in the lab of Dr. Greg Skomal at the University of Massachusetts - Dartmouth. His PhD research is focusing on the seasonal migrations and habitat preferences of basking sharks in the northwest Atlantic using satellite tags. Ultimately, by gaining a greater understanding of the movement ecology of these vulnerable shark species, he hopes his research may be used to promote more sound conservation and management policies. He is currently a Fishery Policy Analyst for NOAA’s National Marine Fisheries Service in Gloucester, Massachusetts.



# Exhibitors



- Barnstable Amateur Radio
- Cape Light Compact
- Cape Cod Community College Lego Lab
- MA Maritime Academy
- Northeastern Section of the ACS
- Cape and Islands Council of the BSA
- Seabotix
- Oceans Wide
- Sandwich STEM Academy
- Green Briar Nature Center
- National Marine Life Center
- Chatham Shark Center
- PID Analyzers, LLC
- Chatham Marconi Maritime Center
- Frogmen Divers
- Duct Tape Kayaks
- Stellwagen Bank Life Sanctuary
- WDC 55' Whale Model
- Cambridge Science Festival-Science in the Streets
- Cape Cod Museum of Natural History
- Ruminant Home Building
- Squishy Circuits
- Lewis Bay Research Center
- Agriculture Research Center (ARC)
- Thornton Burgess Society



# *Photos of Exhibit Area-Hands-on Exhibits*



*Squishy Circuits*



*Duct tape boats*



*Cambridge Science in the Streets*



# Scout Training & Exhibit Area



*Boy Scout Badges*



**Merit badge Leaders-L to R- Dennis Walczewski, Bill Neillis (NESACS Member), Mike Morris**

# Additional Exhibit Photos



*Keynote Speakers in Tilden Theater*



*Inside the Right whale*



*Keynote speakers: Tobey Curtis, and Dave Gallo with Jack Driscoll*



# *STEM Journey- STEM Jobs Panels*

12-2 PM

Lecture Hall B

Cape Cod Community College

March 28, 2015

## Health Care & Medical Device Panel



- Hospitals are everywhere and a great source of STEM Jobs. Cape Cod Healthcare is the largest STEM employer on Cape Cod
- MA is one of 4 states (MN, CA, NC) that have a concentration of medical device manufacturers and a large number of STEM jobs
- Panelists are:
  - Jack Driscoll- ***PID Analyzers, LLC, Nova Biomedical Corp., STEM Journey Committee***
  - Anne Bastianelli- ***Epiphany Solutions, Inc.***
  - Larry Bastianelli- ***Medtronics***

# Cape Cod Health Care STEM Jobs



## Largest STEM employer on Cape

- Cape Cod Hospital
- Falmouth Hospital
- Visiting Nurses
- Blood Analysis Laboratories
- Physicians Practices
  - Emerald Physicians 45 physicians
  - MSSP
- Revenues 2014 \$715M

## Jobs

- Total Jobs- 4,500/20 + offices across Cape Cod
- Physicians 450 (10%)
- Nurses 1200 (26%)
- Technicians- X-ray, Imaging, Magnetic Resonance, Radiology, abt. (5%)
- Pharm 1%
- Rehab Phys therapy (1%)
- Accountants -25 (0.5%)
- Electricians, hvac- few
- Labs- 14 Lab service Locations across the Cape
- Chemists, Biologists 2%
- IT 100 people (2.5%)



**CAPE COD HEALTHCARE**

**Nearly 50% STEM workers 2160 employees**

## STEM Jobs At Nova Biomedical (Medical Devices)



Research & Development Opportunities 21%	Educational Requirements
Electrical Engineer	Bachelor's Degree, EE
Mechanical Engineer	Bachelor's Degree, ME
Associate Scientist	Bachelor's Degree, Chemistry or Biology
Engineering Technician	Associates Degree, Engineering
Chemist	Bachelor's Degree in Chemistry
<b>Manufacturing 5%</b>	<b>Educational Requirements</b>
Manufacturing Engineer	Bachelor's Degree in Engineer
Mechanic	Associates Degree preferred
Machinist	Trade school and or relevant experience
Manufacturing Technician	Trade school and or relevant experience
Technical Sales 15%/Field Service 12% <b>Total 53%</b>	Associates or BS in Chemistry, EE, Biology or Physics



# Medtronic



Medtronic is the global leader in medical technology – alleviating pain, restoring health, and extending life for millions of people around the world. We're creating technologies that treat chronic disease in new ways so people can live better, longer.

## 160+

Number of countries operating in

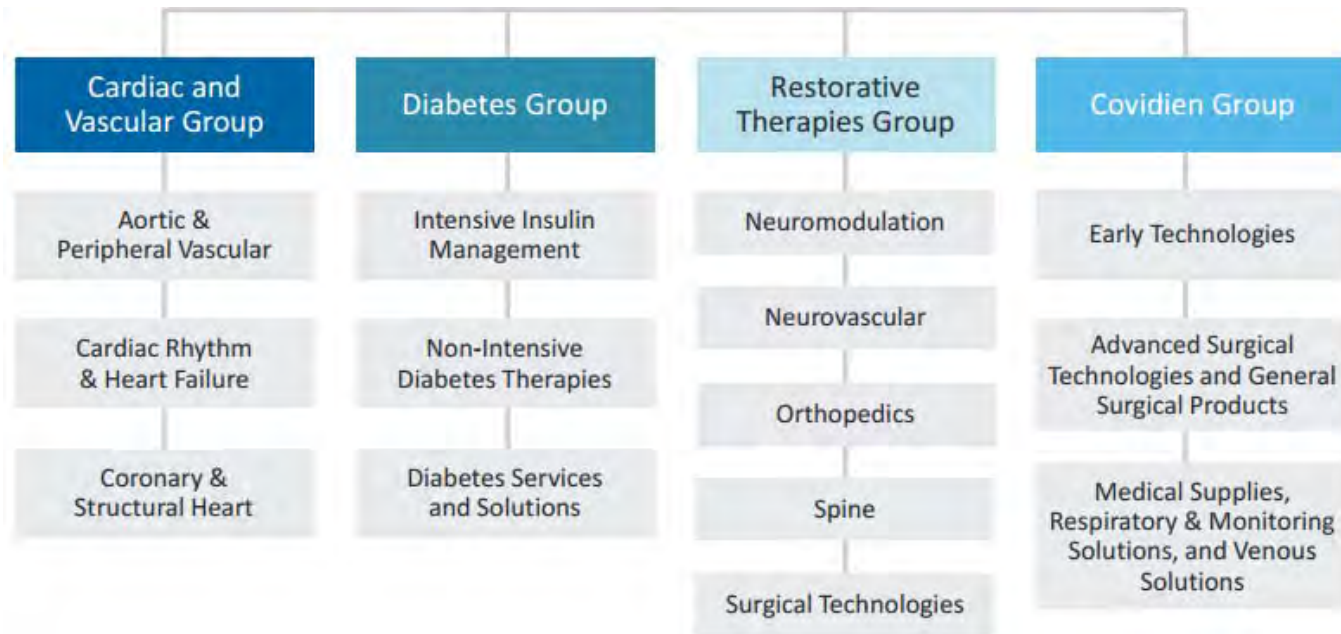
## 85,000+

Employees

## 84

 Manufacturing facilities

## 56

 Research centers

Over **75% of Medtronic jobs are STEM jobs**, including actuaries, biomechanical engineers, product managers, database administrators, medical scientists, network and computer systems administrators, software developers, medical researchers, and manufacturing engineers.

## STEM Jobs At Epiphany Solutions, Inc. (Technology Solution Provider)



STEM Opportunities 87.50%	Educational Requirements
Web Services Developer	Bachelor's Degree, Computer Science, Math, Engineering
Scripter	Bachelor's Degree, Computer Science, Math
Sr. Manager R&D	Bachelor's Degree, Computer Science, Math, Engineering
Director R&D	Bachelor's Degree, Computer Science, Math, Engineering
Director Architecture & Design	Bachelor's Degree, Computer Science, Math, Engineering
Product Strategy	Bachelor's Degree w Technology Experience
Implementation Consultant	Bachelor's Degree w Technology Certification
Support Consultant	Bachelor's Degree w Technology Certification
COO, CEO, CTO	Bachelor's Degree & Master's Degree with Technology, Engineering, Math focus

Epiphany is a technology provider that delivers cloud based software solutions to its customers (SaaS).

People, Parts and Profit is our focus.

We help customers of all sizes deliver world class customer experiences while maximizing efficiency and minimizing costs.





## Panelists



- Dr. Jack Driscoll-moderator, STEM Journey Committee
  - Tina Betti- VP of Personnel
  - Dr. Megan Carroll is a Research Engineer at WHOI.
  - Anna Michel is an Assistant Scientist at WHOI.
  - Diana Wickman is an Information Systems Assistant III at WHOI.
- ;-the second largest employer of STEM Jobs on Cape Cod with 1,100 employees and 300 students



# Woods Hole Oceanographic Institute

## Sponsors

## About



- WHOI is a government Funded Contract Research Lab with > 1,000 personnel located in woods Hole
- They are also an educational institution providing a joint degree with MIT (BS, MS, PhD)
- Here 15% jobs are administrative and 55% STEM related
- Marine Biologists, Chemists, Biologists, Engineers, Physicists, IT

## *STEM Journey II Statistics*



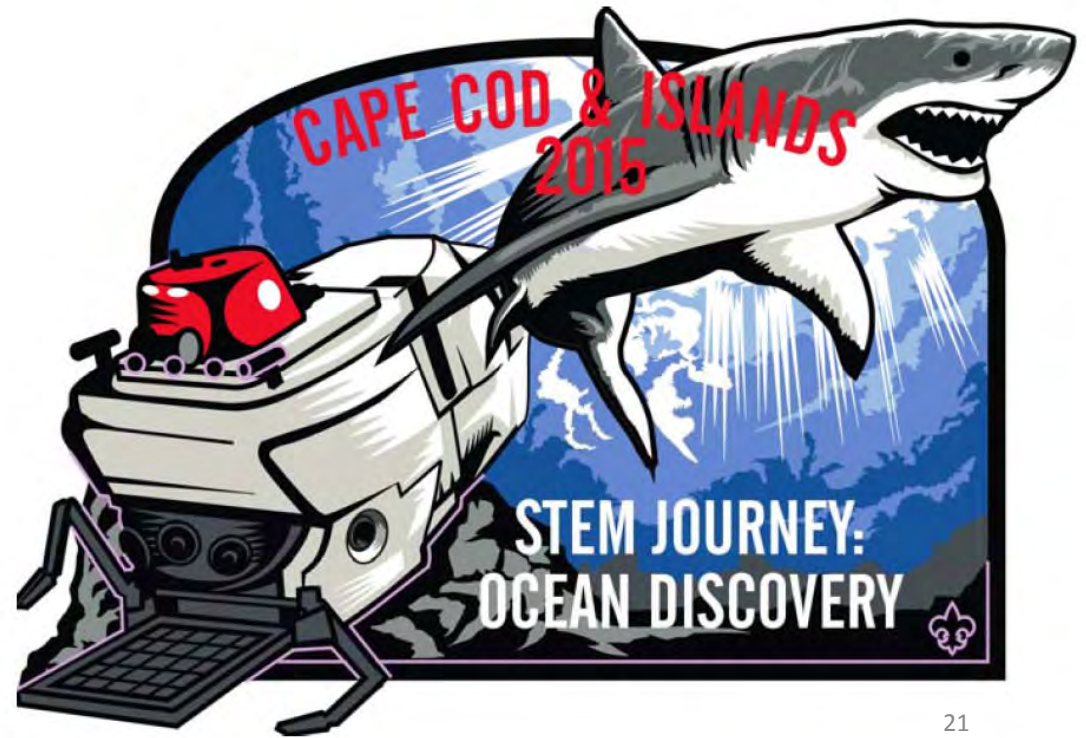
- Attendees- 1,100
- The Attendees were up from 750 at STEM Journey I in 2014, **a 47% increase**
- Scout Badges in Oceanography, Chemistry and Scientist- **150**
- People signed up for Keynote Speaker Talks- 450
- Volunteers- 100
- Exhibitor Organizations-25

## *Conclusions*

- We had a very successful STEM Journey II event with an increase of 46% in attendance in spite of the snow storm
- We had the first STEM Jobs Panel specifically for grade 8-12 students, guidance councilors and teachers. Many of the companies who participated indicated that the number of STEM Jobs varied from 45-87.5% of the total. A STEM education is very important to consider
- We had significant attendance from K-7, parents and grandparents
- We would like to increase the attendance for grades 8-12, parents guidance councilors and teachers at our STEM Jobs panel next year

Photos courtesy: Cape Cod Community College, Jennifer Maclachlan & Cape and Islands Council of the Boy Scouts of America

**THANK  
YOU**



*See you next  
year*

**Cape Cod Community College**

**12-4 PM**

**April 2, 2016**