Wonder Under the Waves: Coral Reef Aquarium
Family Science Night Event Offers Hands-On Ocean Activities and First Preview of New Exhibit

Press Kit
For Immediate Release: June 9, 2017
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Wonder Under the Waves: Coral Reef Aquarium
Family Science Night Event Offers Hands-On Ocean Activities and First Preview of New Exhibit

Contact: Aleisha Kropf, Marketing Director – 812-337-1337 ext. 12 or marketing@wonderlab.org

Bloomington, Indiana –

The anticipated new exhibit: Wonder Under the Waves: Coral Reef Aquarium will be the featured centerpiece during Family Science Night on Saturday, June 17 from 6 p.m. to 8 p.m. at WonderLab.

During this special family evening of science guests will dive into a one-of-a-kind underwater adventure and will encounter hands-on experiences with live ocean creatures. Event tickets are $10/person for members and $12/person for non-members.

"Family Science Night is a one of kind, one time event with all things related to the ocean," said Karen Jepson Innes, WonderLab Executive Director. "It is truly a one time, can't miss it event."

Ticket holders will get to experiment with the chemistry behind glowing fish and fluorescent coral, use a virtual reality headset to explore a coral reef, play with an amazing slime made out of sand and make an “ocean in a bottle” to take home. Visitors will engage in activities to learn about ocean communities, conservation, and the colorful inhabitants of coral reefs. Through it all guests will learn about Indiana’s ancient ocean past though examination of fossils, talk to experts about underwater exploration and SCUBA diving. Children who explore all the amazing experiences will receive a special prize.

“Family Science Night is a perfect example of how WonderLab approaches science education: the activities connect children and families with real science tools, real scientists, and accurate science facts," said Emmy Brockman, WonderLab Education Director. “We design activities with the recognition that children have diverse learning styles and preferences and that children of different ages learn in different ways. We have hands-on squishy learning for our youngest visitors, and in-depth explorations designed to intrigue even the expert. At WonderLab we recognize that children learn the most from those who they have the closest relationships with, so families are always encouraged to explore and engage together.”

Evening activities include:

- Ocean Creature Touch Tank: Get up close and personal with real live ocean critters
- Archaeology Under the Waves: How do scientists study shipwreck and also protect fragile coral reefs ecosystems?
- Ocean in a Bottle: Use the science behind the properties of oil and water to create a beautiful ocean in a bottle.
- Sand Slime: Dig your hands into an amazing sensory experience!
- Pollution Solution: Even the smallest person can change the world
- Underwater Robot: Learn how robots navigate under water!
- Luminescent Life: Learn the chemistry behind “glowing fish.”
- Fossil Clues: What was the environment like in Indiana millions of years ago?
- Virtual Coral Reef: Explore a coral reef without getting wet!

Family Science Night: Wonder Under the Waves is sponsored by Griffin Realty. Treats from Pizza X, Lucky’s Market and special cookies from Baked! of Bloomington will be available in the “Under the Waves Cafe”.

“We are so grateful that these community-minded, local businesses understand the importance of family-friendly events at WonderLab,” said Mallory Elver, WonderLab Annual Giving and Stewardship Manager. “Because of these businesses’ heartfelt support, Family Science Night will truly provide a one-of-a-kind evening for children and families.”

Program Partners for the Family Science Night Event event are Beth and Rudy Raff, Indiana University Department of Biology; the Indiana University Center for Underwater Science; and The Quadrangles- SeaPerch Robotics Team Bloomington High School South.

The Birth of An Ecosystem
In 2014 museum staff made the decision to dismantle and remove the original gallery fish tank that had been a WonderLab favorite. “The previous tank had reached a point where it needed to be completely overhauled,” said Michael Lindeau, WonderLab Exhibits Manager. But the aquarium was so popular with museum visitors that staff wondered if something similar might take its place. The exhibits team visited Morgan Lidster, Aquarium Specialist at Inland Aquatics in Terre Haute. Upon seeing Lidster’s work with small sustainable ecosystems the idea for new saltwater tank exhibit was born.

In late April 2017, after three years of planning and fundraising, WonderLab quietly welcomed the 300-gallon saltwater coral
reef aquarium to the museum's second-floor exhibit space.

Animal Exhibits Manager, Sam Couch, has been the main coordinator for both the installation and maintenance of the three hundred gallon saltwater tank. "The tank has been viewable to museum visitors since the beginning," said Couch. "Building an ecosystem takes time in nature and is fascinating science. Inviting visitors to watch this process here is a unique experience provided by WonderLab."

The building process started when the museum closed on April 30 with a nearly 48-hour build that included three tanks, all mechanicals and the first introduction of living biological elements such as living sand, starter corals and a few fish. The entire system is being built slowly with new animals introduced every three weeks until mid-July.

According to Couch, the primary distinction between WonderLab's coral reef aquarium and a standard saltwater tank is the natural environment and the self-sustaining feature. The system has three significant components: the 300-gallon main tank, the 25-gallon-refugium tank, and the Algal Turf Scrubber (ATS) developed by Morgan Lidster from Inland Aquatics. The ATS is a dump-bucket, water cleaning method using naturally occurring algae for cleaning. Water circulates between the three components creating an ocean-like atmosphere. This is achieved by generating multiple currents from different sources, one being a circular current from a pump and one coming from the dump action of the ATS. This multi-current system more closely mimics the unpredictability of natural ocean currents. Organisms within each of the components perform all cleaning and filtration, bacteria and algae process all toxins. This also allows for less frequent water changes, as the tank will require a full water change only every ten years.

Currently, the exhibit contains nearly thirty species of fish, coral, and various invertebrate from the Indo-Pacific region such as Bubble Tipped Anemone, Fire Shrimp, Fancy Brittle Stars, Clownfish, Green Chromis, Elongate Mbuna, and the Magnificent-Foxface-Rabbitfish. Upon completion in mid-July the tank is expected to contain more than sixty different species.

The Wonder Under the Waves: Coral Reef exhibit is unique to Bloomington with its complexity, multi-tier ecosystem, and self-sustaining cleaning. The reef offers insights to a variety of sciences ranging from marine biology to climate science and conservation efforts.

Wonderlab encourages hands-on engagement with the aquarium through the Dive Deeper Series scheduled every weekend: Saturdays at 11:00 a.m. and 1:00 p.m. and again on Sundays at 2:00 p.m. and 3:00 p.m. Dive Deeper is a thirty-minute gallery “chat” which includes topics of marine life, coral reefs, and conservation. The series also provides phases that include touch, where children can literally grasp marine life. Actual pieces of coral and seashells will be distributed, along with hermit crabs and other species. "This helps landlocked people get exposure to our oceans," said Couch.

"We are trying to connect Indiana's prehistoric past with modern-day sea life. The exhibit allows children to further develop their understanding of reef life and engage in marine biology," said Gallery Operations Director, Mike Voyles.

Coral reef ecosystems offer a wide variety of educational opportunities for every age level. Along with daily observation WonderLab members and visitors can expect to learn much more over the coming years. Topics range from sustainability/water as life, ecosystems and complex systems, environmentalism, marine biology and hands-on exposure to organisms.

Self-sustainability is a major theme. The tank itself is self-sustaining by way of the innovative algae scrubber system. This is reinforced by the recycling and self-producing nature of ecosystems. Basically the ATS system allows the tank to house a greater number of living organisms. The average aquarium can only house a limited number of fish because feeding so many organisms creates excessive waste. This waste contaminates the water making the entire system toxic. The ATS scrubber mimics nature; it uses a wave and algae system which constantly moves the water (imagine a tide pool) through the various levels.

The final introduction of live animals is scheduled to take place on Friday, July 14 during museum open hours. Visitors are invited to watch the process and ask questions. Other plans for the exhibit include interactive educational materials, scheduled live animal demonstrations, and a redesigned coral reef inspired exhibit area.

A Community Effort

“When we announced that WonderLab was installing a new coral reef aquarium exhibit, we saw a remarkable outpouring of support from the community,” said Elver. “Our 2016 spring fundraising campaign and a few key grants made this exhibit a reality. Wonder Under the Waves would not be at the museum without the genuine enthusiasm and compassion from individual donors.”

Major funders for the building, installation and maintenance of the coral reef exhibit include: Andrew D. Bacher, Brabson Library and Educational Foundation, Duke Energy Foundation, and an anonymous Friend of WonderLab.

Purchase tickets for Family Science Night: Wonder Under the Waves at the museum or on-line at wonderlab.org. Ticket prices
are $10/person for members and $12/person for non-members. Proceeds from the event will continue to support Wonder-
lab's hands-on-science experiences. Tickets are limited.

WonderLab is an award-winning science center at 308 W. Fourth St. on the B-Line Trail. The museum is open to the public
9 a.m.-6 p.m. Tuesday through Thursday, 9 a.m.-5 p.m. Friday and Saturday, and 1-5 p.m. on Sunday. General admission
is $8. Children younger than the age of one are free. For more, call 812-337-1337, ext. 25, or go online to wonderlab.org or
WonderLab's Facebook page.

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Family Science Night Activities
Event Specifics and Details

Contact:
Staci Radford-Vincent, Associate Education Director  812-337-1337 ext. 18 or staci@wonderlab.org

Wonder Under the Waves: Family Science Night
Saturday, June 17 from 6 p.m. to 8 p.m.
Event tickets are $10/person for members and $12/person for non-members.

Dive into a one-of-a-kind underwater adventure during a special family evening of science. Explore the latest succession of our new coral reef ecosystem and experience one of the FIRST public opportunities to encounter hands-on experiences with live ocean creatures.

Ticket holders will get to experiment with the chemistry behind glowing fish and fluorescent coral, use a virtual reality head-set to explore a coral reef, play with an amazing slime made out of sand and make an “ocean in a bottle” to take home. Visitors will engage in activities to learn about ocean communities, conservation, and the colorful inhabitants of coral reefs. Through it all guests will learn about Indiana’s ancient ocean past though examinations of fossils, talk to experts about underwater exploration and SCUBA diving. Children who explore all the amazing experiences will receive a special prize.

Evening activities include:

Ocean Creature Touch Tank: Join biologists Beth and Rudy Raff to get up close and personal with real live ocean critters. Touch a sea urchin, starfish and sand dollar and learn some amazing facts about aquatic animals.

Archaeology Under the Waves: How do scientists study shipwreck sites and also protect fragile coral reefs ecosystems? Meet real underwater archaeologists from Indiana University, try on SCUBA equipment and then go on a mock “research dive” by trying to identify fish species in WonderLab’s coral reef aquarium. Examine genuine shipwreck artifacts, handle tools used in the field and explore computerized 3-D models of underwater sites as you learn about the work that underwater archaeologists do.

Ocean in a Bottle: Do oil and water mix? Create a soothing science craft as you learn about ocean health. What happens when oil spills in water? How can we clean it up? Use the science behind the properties of oil and water to create a beautiful ocean in a bottle.

Sand Slime: Dig your hands into an amazing sensory experience as you explore Sand Slime. Stretch it! Roll it! Let it ooze between your fingers! Take home a copy of the recipe so you can recreate this unique textural experience at home.

Pollution Solution: Even the smallest person can change the world! Kids will get to play a role in cleaning up an “ocean” by sorting creatures that live there from trash that shouldn’t. By removing the trash from the ecosystem and sorting it into recycling bins, they will do their role in giving these creatures a clean ocean home.

Underwater Robot: Learn how robots navigate under water as you get to drive a mini submersible robot from the SeaPerch program. Members of The Quadrangles, the robotics team from Bloomington South, will put you in control of a remote controlled robot that you can navigate through the water.

Luminescent Life: In the darkest depths of the ocean, there are creatures that can make their own light! Learn the chemistry behind “glowing fish” as you make your own luminescent reaction. Discover how some ocean life can even use invisible rays from the sun to change their colors into brilliant displays.

Fossil Clues: What was the environment like in Indiana millions of years ago? Explore real fossil remains of early life and use those clues like a real geologist to unlock the secrets of Indiana’s ancient past.

Virtual Coral Reef: Explore a coral reef without getting wet! Experience virtual reality by using Google Cardboard to move around in a simulated reef ecosystem. See what you can discover through this unique use of technology.

Family Science Night is sponsored by Griffin Reality. With treats from Pizza X, Lucky’s Market and special cookies from Baked! of Bloomington will be available in the “Under the Waves Café.”

Program Partners for the event are Beth and Rudy Raff, Indiana University Department of Biology; the Indiana University Center for Underwater Science; and The Quadrangles- SeaPerch Robotics Team Bloomington High School South.

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Educational Messages
Hands-On Learning for All Ages

Contact: Emmy Brockman, Education Director 812-337-1337 ext. 17 or emmy@wonderlab.org

Sustainability/Water as life - Self-sustainability is a major exhibit theme. The tank itself is self-sustaining by way of the innovative algae scrubber system. This is reinforced by the recycling and self-producing nature of ecosystems (by way of vegetation acting as producers and detritivores recycling nutrients etc). Basically the scrubber system allows us to have a greater number of living organisms. The average aquarium can house a limited number of fish because feeding so many organisms creates excessive waste which contaminates and the water making the system toxic. The ATS scrubber mimics nature; it uses a wave and algae system which constantly moves the water (imagine a tide pool) through the various levels. There are different things happening as well as different organisms in each level. The water is cleaned, the organisms are fed and the entire system becomes mostly self-sustaining. The ATS systems we examined require minor water tops and cleaning. Full water changes were never performed and water removal and cleaning happened once a decade.

Hands-on, up close exposure to organisms. - Children can watch the animals interact with each other, can touch the animals to see how they feel and can watch how the animals move to learn how the various body plans allow for varying lifestyles amongst sea organisms. The refugium tank will house a number of animals that can be taken out for examination and presentations by WonderLab staff.

Ecosystems - Learn the basics of ecology: what an ecosystem is, the components of an ecosystem (producers, primary consumers, secondary consumers, detritivores ect), trophic levels and how they fit into food webs, the way energy flows through the system and how chemicals such as nitrogen can be recycled in a healthy ecosystem. Interspecies relations such as symbiosis, parasitism, and commensalism are also on display.

Complex systems - The aquarium is an excellent example of a complex system, like WonderLab's honeybee and ant colony, where there are many organisms interacting simultaneously with each other and with their environment. Why are complex systems important to understand? While at first glance the interactions may seem random and confusing, by finding patterns and structure we can gain important insights into many other complex systems ranging from computer networks to traffic patterns and economic models!

Environmentalism - See a living example of current environmental issues, how they affect the marine organisms and what can be done do to help the oceans from an inland state. The coral reef is an example showing how the sea temperature is increasing, how algae chokes out coral, about overfishing and destructive fishing practices, and the effects of all of these.

Marine Biology - As the aquarium is build visitors will learn about marine succession - how organisms need to be established in a particular order. Organisms established first create a framework so that other organisms can come in and get established. Those established later are dependent on those established first for some aspect such as food, habitat ect. Housing a greater number of organisms will give us countless opportunities to create science labs and demonstrations around marine life.

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Contact: Aleisha Kropf, Marketing Director – 812-337-1337 ext. 12 or marketing@wonderlab.org

“Family Science Night is a perfect example of how WonderLab approaches science education: the activities connect children and families with real science tools, real scientists, and accurate science facts. We design activities with the recognition that children have diverse learning styles and preferences and that children of different ages learn in different ways. We have hands-on squishy learning for our youngest visitors, and in-depth explorations designed to intrigue even the expert. At WonderLab we recognize that children learn that most from those who they have the closest relationships with, so families are always encouraged to explore and engage together.”
   – Emmy Brockman, WonderLab Education Director

“Family Science Night is a one of kind, one time event with all things related to the ocean. It is truly a one time, can’t miss it event.”
   – Karen Jepson Innes, WonderLab Executive Director

“We are trying to connect Indiana’s prehistoric past with modern-day sea life. The exhibit allows children to further develop an understanding of reef life and engage in marine biology.”
   – Mike Voyles, WonderLab Gallery Operations Director

“The aquarium allows us to help build a connection between our community and our oceans. It helps bring public awareness to the state of our oceans and their degradation.”
   – Sam Couch, WonderLab Animal Exhibits Manager

“We can still help oceans while in Indiana by reducing our carbon footprint, limiting pollution, and maintaining our river systems.”
   – Sam Couch, WonderLab Animal Exhibits Manager

“Every animal in our coral reef has a role facilitated by unique behaviors. These roles intertwine to maintain an balanced ecosystem.”
   – Sam Couch, WonderLab Animal Exhibits Manager

“The tank has been viewable to museum visitors since the beginning. Building an ecosystem takes time and is fascinating science. Letting visitors watch this process is a unique experience that WonderLab is providing.”
   – Sam Couch, WonderLab Animal Exhibits Manager

“We are so grateful that these community-minded, local businesses understand the importance of family-friendly events at WonderLab. Because of these businesses’ heartfelt support, Family Science Night will truly provide a one-of-a-kind evening for children and families.”
   – Mallory Elver, WonderLab Annual Giving and Stewardship Manager

“When we announced that WonderLab was installing a new coral reef aquarium exhibit, we saw a remarkable outpouring of support from the community. Our 2016 spring fundraising campaign and a few key grants made this exhibit a reality. Wonder Under the Waves would not be at the museum without the genuine enthusiasm and compassion from individual donors.”
   – Mallory Elver, WonderLab Annual Giving and Stewardship Manager

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Sam Couch, WonderLab Animal Exhibits Manager  
Contact: animalexhibits@wonderlab.org  
812-337-1337 x30

Sam Couch recently graduated from Indiana University with a bachelor's degree in Biology and a certification in Animal Behavior. She began working at WonderLab in 2015 as a Animal Exhibits Intern. She was hired in March 2017 as Animal Exhibits Manager. Couch has been a key participant in the planning and design of the Coral Reef Aquarium. Couch's favorite aspect of observing animal science is the collaboration in ecosystems.

Morgan Lidster, Inland Aquatics Owner  
10 Ohio Street, Terre Haute, IN  
812-232-9000  
888-368-9114

Morgan Lidster is the owner and general manager of Inland Aquatics located in Terre Haute, Indiana. The facility offers ornamental marine fish, hard and soft corals, live rock, live sand, and a variety of marine plants and invertebrates. Lidster and Inland Aquatics have been the primary collaborators for the Wonder Under the Waves: Coral Reef Aquarium exhibit assisting with aquarium design, species selection, and installation.

Lidster has been designing, building and using (dump bucket-driven) true Algal Turf Scrubbers since 1992 when he partnered with Walter Adey of the Smithsonian Institution to utilize the technology for ornamental mariculture. The resulting retail business, Inland Aquatics, then introduced the tenets of Dynamic Aquaria, Adey's book on microcosm modeling, including deep oolitic sand beds, refugia, non-traumatic pumping and algal turf scrubbing, to the aquarium hobby. For more than two decades Inland Aquatics has run hundreds of systems, comprising nearly 100,000 gallons with Algal Turf Scrubbing as the sole means of nutrient export.

The innovative algal turf scrubber is a key component of the WonderLab Coral Reef allowing a relatively small ecosystem to thrive and create a home for diverse number of animals.

For more information about Morgan Lidster, Inland Aquatics, or the Algal Turf Scrubber (ATS) system go to inlandaquatics.com or atscrubber.com.

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Photos
Credit: WonderLab Museum / Robinson Gonyea, Photographer

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