



National Inventors  
Hall of Fame®

**Annual Report  
2017**

# Letter from the CEO



Five years ago I had the privilege of taking over leadership of the National Inventors Hall of Fame® (NIHF). With your support, we have created a sustainable Mission-to-Market Innovation Ecosystem, a continuum of programs from preschool through college that allow our participants to practice creative problem solving using a STEM toolkit to see themselves as creative innovators. We have also expanded our Inductee recognition through events and exhibits and, in doing so, have provided a new generation with the best kind of role models, the world's foremost innovators. And, we have dramatically increased the

number of children, young adults and teachers we serve each year.

In partnership with the United States Patent and Trademark Office and our sponsors, the NIHF Museum physical footprint has expanded twice and is recognized as our country's National Monument to Innovation®. Within the Museum walls, we honor the women and men who have transformed our world. Outside the Museum walls, our Inductees' legacies come to life as we scale out their stories to inspire creativity, perseverance, fearlessness, entrepreneurship, and innovation in the next generation.

Thank you for your partnership, time, financial support, and belief in our mission.

Michael J. Oister  
Chief Executive Officer

## National Inventors Hall of Fame Mission

### We Inspire Innovation in America.

Founded in 1973, the National Inventors Hall of Fame recognizes inventors and invention, promotes creativity, and advances the spirit of innovation and entrepreneurship.



### United States Patent and Trademark Office Partnership

The United States Patent and Trademark Office (USPTO) is a founding partner of NIHF and continues to support our programs and national outreach to inspire innovation in America. Our unique collaboration includes the USPTO headquarters as well as USPTO Regional Offices in Dallas, Denver, Detroit, and San Jose.

Through decades of partnership, the USPTO's investment has propelled Camp Invention®, Club Invention®, Invention Project®, and Invention Playground® to be the largest PreK-12 nonprofit programs, encouraging the inventive spirit and imaginations of children nationwide. These programs are uniquely inspired by stories of our NIHF Inductees, the foremost invention experts in the world, and backed by the USPTO.

Recognizing the innovative research in American colleges and universities, the USPTO also supports our Collegiate Inventors Competition® (CIC). Together, we encourage invention, entrepreneurship, and creativity in undergraduate and graduate students who are working on cutting-edge inventions. CIC is the only competition in the country where student finalists are judged by a panel of NIHF Inductees and USPTO officials for feedback, brainstorming, and encouragement on advancing their innovation and intellectual property protection.

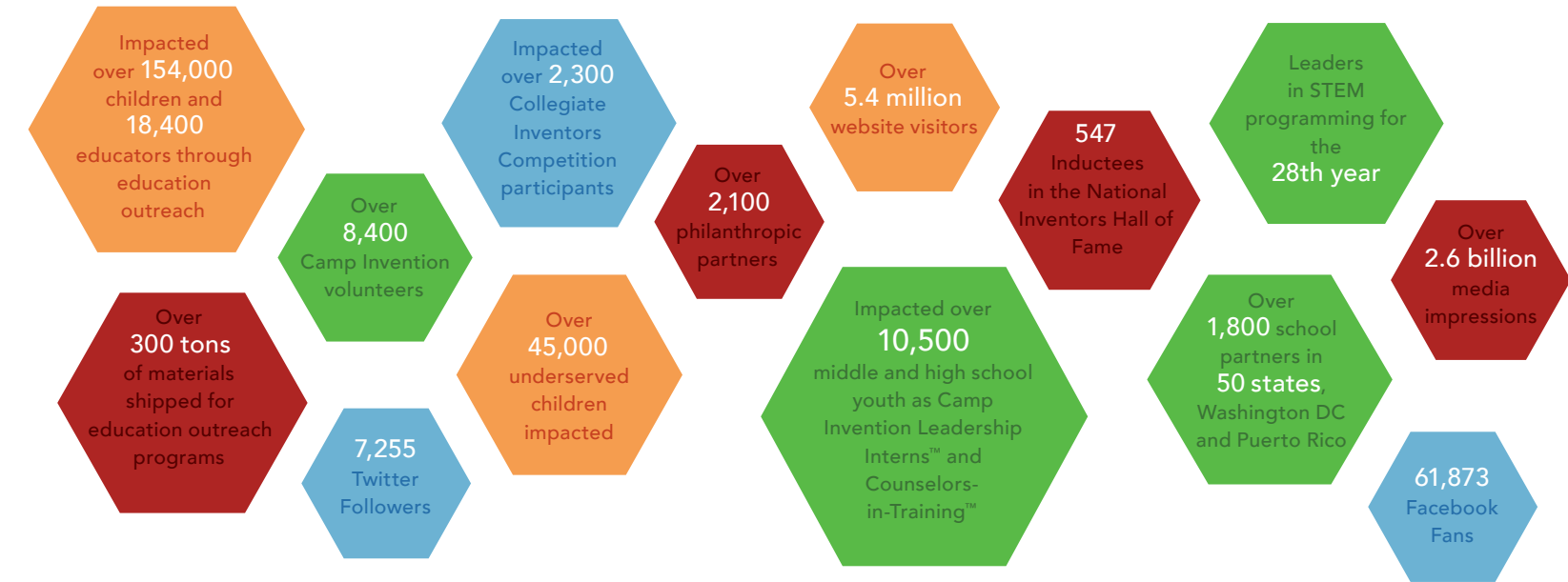
Finally, the National Inventors Hall of Fame is located at the USPTO headquarters in Alexandria, Virginia, serving as our country's National Monument to Innovation. The NIHF Gallery of Icons™ and exhibits share the inspiration of men and women who have significantly impacted our world. The first NIHF Induction Ceremony was held at the USPTO in 1973, and 45 years later we proudly continue our partnership to recognize the world's greatest innovators and inspire future generations through the world's greatest inventors.

In Partnership with



UNITED STATES  
PATENT AND TRADEMARK OFFICE

# 2017 By the Numbers



# Inventing the Future Today!

## 2017 Educational Programs

Inspired by the Inductees of the National Inventors Hall of Fame, our educational programs are designed to impact young minds through fun, hands-on activities infused with the spirit of innovation. Hosted annually by over 1,800 schools and districts nationwide, these immersive enrichment programs are led by local, certified educators and promote STEM concepts, Intellectual Property Literacy®, and 21st Century Skills such as critical thinking and creative problem-solving.

Each program we offer embraces its own unique characteristics, but what ties them all together is an exciting environment with no wrong answers, a chance to brainstorm with peers, and an opportunity to build confidence in the natural ability to dream and create!





# MOVE, MAKE, CREATE!™

*“Having these exposures at such a young age builds for them great foundations that apply to all subjects.”*

– **Monica Jarvis**  
**Teacher**



## Invention Playground

### Preschool

In 2017, 97 **Invention Playground** programs were hosted, opening a whole new playground of STEM activities to preschoolers where innovation and creativity are the foundation! In its second year, Invention Playground has transformed children's natural curiosity into innovation through imagination and play. By identifying natural learning opportunities for preschoolers to develop foundational STEM skills through song, literacy, and hands-on play, children better understand independent thinking and problem-solving. Learn more about Invention Playground at [invent.org/inspire](http://invent.org/inspire).



# Where Big Ideas Become the Next BIG Thing<sup>®</sup>



Camp Invention<sup>®</sup>



Club Invention<sup>®</sup>



## Camp Invention

Grades K-6

**Camp Invention** is the only nationally-recognized, nonprofit summer enrichment program for children in grades K-6 inspired by the brightest thinkers around—the Inductees of the National Inventors Hall of Fame. Children are empowered to have big ideas while they take on challenges that inspire them to question, brainstorm, collaborate with teammates, and build amazing invention prototypes. Every year offers both new and returning campers the opportunity to engage in brand new activities, inventions, and discoveries while creating lifelong memories!

With over 1,800 Camp Invention programs in 2017, campers were launched into a world of innovation, where they transformed a distant exoplanet, blasted

water rockets, wired circuits, and took risks as budding entrepreneurs. The all-new 2018 program, filled with robots and self-driving cars, is sure to leave campers talking about their experience at Camp Invention all year.

Campers weren't the only ones launching into a world of creativity. In 2017, Camp Invention launched Accelerate<sup>™</sup>, its new add-on program focused on literacy and math concepts. The Accelerate program combines Camp Invention's principles—creativity, innovation, and fun—with mathematical concepts and literacy to positively transform students' summer learning experience. Visit [campinvention.org](http://campinvention.org) to see the camp's hands-on STEM activities in action!

## Club Invention

Grades 1-6

Based on the same guiding principles as Camp Invention, **Club Invention** challenges children in grades 1-6 to creatively brainstorm ways to solve everyday challenges and enhance their understanding of essential STEM concepts through teamwork. Club Invention provides teachers with new ways to emphasize systems thinking and self-directed learning, as well as to create an immersive environment that offers a setting for children to take risks and build their collective knowledge!



# Camp Invention's IMPACT

## Camp Invention: Early STEM, Right on Time

"STEM disciplines require not only content knowledge but also robust thinking dispositions such as curiosity and inquiry, questioning and skepticism, assessment and analysis as well as a strong learning mindset and confidence when encountering new information or challenges. These need to be developed in a child's early education, beginning in infancy and continuing through third grade to lay the roots for STEM success."<sup>i</sup>

## Summer is a Critical Time for Learning

"Research shows that during summer, low-income students suffer disproportionate learning losses and those losses accumulate over time, contributing substantially to the achievement gap between low- and higher-income children.

Many school districts offer mandatory summer programs to students at risk of grade retention, but fewer districts offer summer learning programs to a broader population of students as a means of stemming summer learning loss and boosting academic performance."<sup>ii</sup>

**1=2**  
SUMMER YEARS

Summer learning programs endure for at least **two years** after the student has engaged in the summer program.<sup>ii</sup>

## Participate in Summer Learning

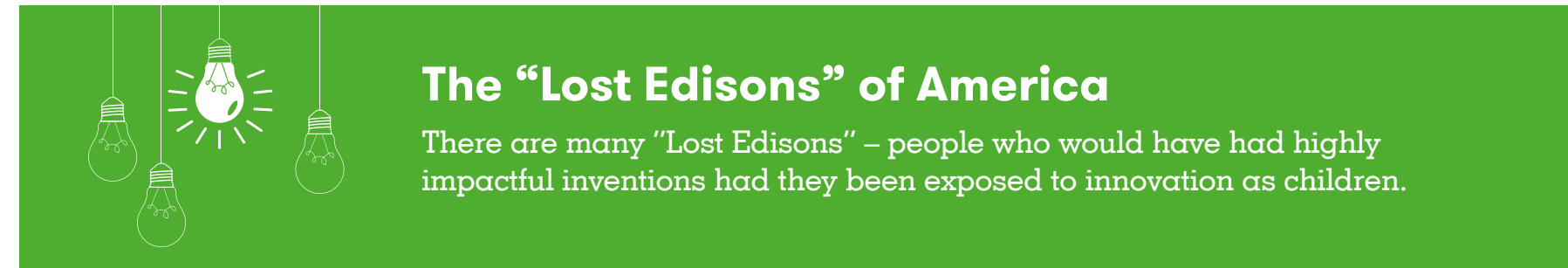
**14.3m**

An estimated **14.3 million** American school children currently participate in summer learning programs.<sup>ii</sup>

## Want Summer Learning

**24m**

Parent interest indicates **24 million more** would enroll if programs were available.<sup>ii</sup>



## The "Lost Edisons" of America

There are many "Lost Edisons" – people who would have had highly impactful inventions had they been exposed to innovation as children.

## The Power of Transference

Children from high-income families are **ten times more likely to become inventors** than children from low-income families.<sup>iii</sup>

**10x**

So much of this comes down to a gap in exposure and access. **Camp Invention bridges this gap.**

Camp Invention Instructors report more willingness to incorporate the following strategies into their teaching in the future: use of inquiry, problem solving challenges, and hands-on experiential learning.<sup>iv</sup>

## Empowering STEM

If women, minorities, and children from low-income families were to invent at the same rate as white men from high-income families, the rate of innovation in America would **quadruple**.<sup>iii</sup>

Parents and Instructors rate participants' interest in STEM or invention stronger or much stronger upon the completion of **Camp Invention**. They also note an increase in participants' skills to act on or implement new ideas, as well as take risks.<sup>iv</sup>



## We Need Creativity and Innovation

"In the modern world, individuals must be creative, tenacious and passionate, striving for excellence and the pursuit of new ideas. Regurgitation of existing knowledge, the historical focus of education, is no longer sufficient. People will stand out for embracing challenges, working diligently, and persisting in the face of adversity."<sup>v</sup>

## Children Need more Understanding of STEM Subjects

Science, engineering, and technology permeate nearly every facet of modern life and hold the key to solving many of humanity's most pressing current and future challenges. The United States' position in the global economy is declining, in part because U.S. workers lack fundamental knowledge in these fields.<sup>vi</sup>



# Cultivating Inventors, Innovators, and Entrepreneurs



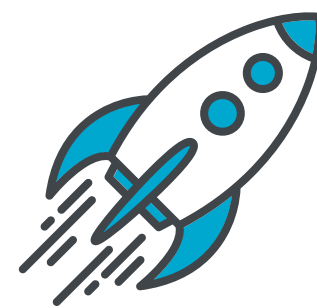
Camp Invention participants demonstrate **increases** in several characteristics recognized as critical elements to creativity and creative problem solving – specifically **fluency, flexibility, and elaboration**. Positive changes in elaboration may be positively related to improved academic achievement.<sup>iv</sup>



Participants, parents, and Instructors note improvement in **collaboration and working as a team** among participants at the end of Camp Invention.<sup>iv</sup>



Parent and Instructor surveys show strong agreement that Camp Invention provides participants a **valuable perspective of a real-life inventor and entrepreneur** by allowing participants to take apart objects and rebuild them into new inventions.<sup>iv</sup>

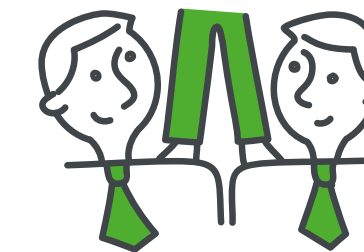


Instructors report **more willingness to incorporate entrepreneurship concepts into future teaching**. More specifically, Instructors indicated a strong likelihood of increased use of two strategies related to entrepreneurship after using them at Camp Invention: **1) creating an atmosphere of acceptance of people & ideas; and 2) fostering risk-taking**.<sup>iv</sup>



Exposure influences not just whether a child grows up to become an inventor but also the type of inventions he or she produces.

If girls were introduced to female inventors during childhood at the same rate that boys are to male inventors, **the gender gap in innovation would fall by half**.<sup>iii</sup>



Children who grow up in **areas with more inventors and innovation are more likely to become inventors themselves**.<sup>iii</sup>

Camp Invention connects children across the country with the Nation's Greatest Innovators!

i McClure et al., 2017 as cited in The Roots of STEM, 2018, Center for Childhood Creativity  
ii The Wallace Foundation  
iii Bell, A., Chetty, R., Jaravel, X., Petkova, N. & Van Reenen, J. (December, 2017). Who becomes a better inventor in America? The importance of Exposure in America. The Equality of Opportunity Project.  
iv ChangeMaker Consulting LLC (2014). Camp Invention® Evaluation.  
v Institute for Public Policy Research (2012)  
vi A Framework for K - 12 Science Education: Practices, Crosscutting Concepts, and Core Ideas (2012)



Frances Ligler, NIHF Inductee, at Camp Invention

## Inductees who went to Camp Invention Summer 2017

### Iver Anderson

Lead-Free Solder

### Federico Faggin

Microprocessor

### Leonard Flom

Iris Recognition System

### Eric R. Fossum

CMOS Active Pixel Image Sensor

### Art Fry

Post-it® Notes

### Marshall Jones

Industrial Lasers

### Alois Langer

Implantable Heart Defibrillator

### Frances Ligler

Portable Optical Biosensors

### Steve Sasson

Digital Camera

### Gary Sharp

Polarization-Control Technology

### Spencer Silver

Post-it® Notes

### James West

Electret Microphone

## Designing an Effective Experience

### 2017 Camp Evaluation

Previous evaluation studies (e.g., ChangeMaker, 2014; Kent State University, 2004; Scarisbrick-Hauser & Hauser, 2009) have reported that children who participate in Camp Invention show significant short-term improvements in measures of creativity, problem-solving, and interest in STEM, and that the program is positively viewed by instructors, parents, and students. The National Inventors Hall of Fame has a shared goal with the Burton D. Morgan Foundation to illuminate how our out-of-school (OST) programs, like Camp Invention, can more effectively support children's growth and learning. At the recommendation of Dr. John H. Falk, Executive Director of the Institute for Learning Innovation, we are investigating what factors contribute to elementary children's short- and long-term creativity, problem solving, entrepreneurship and STEM interests, through OST experiences. We are currently conducting a series of studies that begin to offer insights as to how to best achieve long-term positive outcomes for OST programs. This evaluation will be used to measure current creative problem solving, interest in STEM and entrepreneurship; and, identify pre-Camp and post-Camp factors such as at-home activities, parental support, in-school experiences, peer support and participation in other OST experiences that potentially have contributed to enhanced short- and long-term creative problem solving and interest in STEM and entrepreneurship.

*"Camp Invention has the right balance of challenge and engagement to support student learning, creativity and confidence. Our students experienced problem solving and creative thinking in a way that was different from the regular school year, but in a way that enhances the skills needed to support grade level context."*

-Julia Neuffer

Camp Invention Director

## Bridging the Gap/Title I

We are pleased to report that our Camp Invention and Invention Project programs are building a strong and positive reputation among the country's Migrant Education community. All our educational programs qualify for Title I, Title II, Title III, 21st CCLC, Migrant Education and Early Learning Challenge funding, as well as state and local district resource funding.



In Partnership with



UNITED STATES PATENT AND TRADEMARK OFFICE



GENERAL MOTORS



FOSSUM FAMILY ENDOWMENT



THE AL AND HELEN FREE FOUNDATION

The Amos E. Joel Young Inventors Endowment

NATIONAL INVENTORS HALL OF FAME® ENDOWMENT CHILDREN'S EDUCATION FUND



*"The Fort Smith community has always rallied around and proudly supported educational opportunities for our children. I became familiar with the Camp Invention program when my daughter participated in it several years ago. I was amazed how a girl who showed little interest in science and thought math was miserable became excited at how they can be used to understand and improve the world."*

*Over the last three years, the Fort Smith community has generously stepped up to give more than 600 underserved children this same transformational experience as many of our own children enjoyed. In addition, our local educators are provided professional development in innovative, creative curricula through STEM content which they can apply in their year-round classrooms."*

-Sam Sicard

President and CEO

First National Bank of Fort Smith, Arkansas



**THINK  
BIG  
BE BOLD  
AND NEVER GIVE UP**



***“Invention Project makes me feel like I can be anything I want to be if I put my mind to it.”***

**– Alex  
Invention Project Participant**

## **Invention Project**

**Grades 6-9**

Created for rising students in grades 6–9, **Invention Project** enables children to explore the edges of innovation and imagine the possibilities through dreaming, designing, engineering, and creating. Participants learn business skills while exploring circuitry, energy, bioengineering, and economics to create smart gear and much more! They will use these abilities to research, pitch, and invest in products with fellow creative thinkers.

Participating in different daily activities, students can wire their own solar-powered circuits one day and build a futuristic time machine the next. Although the business deals are simulated, the skills, the friendships, and the fun are all real because Invention Project takes place in an environment that inspires and supports individuality. When the program comes to an end, innovators won’t have a patent yet, but they’ll have the skills and confidence to make anything possible in the future! Learn more by visiting our website [inventionproject.org](http://inventionproject.org).







## Counselor-in-Training

Grades 7-9

Camp Invention's **Counselor-in-Training (CIT)** program is the best of both worlds for students in grades 7-9! They experience a week of fun at camp while also learning how to be a positive mentor and coach. As a CIT, participants set and meet personal goals using a Daily Tracker, work with experienced Camp Instructors to be positive mentors, and inspire children to push the limits of their imagination.

## Leadership Intern

Grades 10-12, College

Designed exclusively for current high school and college students, the **Camp Invention Leadership Intern (LI)** program is the perfect way for students to experience the fun and excitement of Camp Invention while helping campers learn, innovate, and create a brighter tomorrow. Not only does this volunteer position teach valuable knowledge about Intellectual Property Literacy, it also helps LIs strengthen their college, scholarship, and job applications.



INVENT.  
COMPETE.  
ACHIEVE.®



## Collegiate Inventors Competition

In 2017, the **Collegiate Inventors Competition (CIC)** continued its tradition of encouraging innovation, entrepreneurship, and creativity in students who are working on cutting edge inventions at their colleges and universities.

Students from across the country traveled to the United States Patent and Trademark Office where they made presentations to panels of judges comprised of National Inventors Hall of Fame Inductees and USPTO officials. The judges deliberated on-site, and an awards ceremony took place to announce winners in the graduate and undergraduate categories. In addition, all finalists participated in an Expo that allowed them to showcase their inventions for USPTO patent and trademark examiners, corporate sponsors, and leaders in the intellectual property community. USPTO Acting Deputy Director Anthony Scardino and the Commissioner for Patents Drew Hirschfeld participated in the CIC awards ceremony.





2017 Undergraduate Finalist Charu Thomas receives one-on-one mentorship from National Inventors Hall of Fame Inductee Radia Perlman

## Inductee Judges

### Eric R. Fossum

CMOS Active Pixel Image Sensor

### Marcian "Ted" Hoff

Microprocessor

### Don Keck

Optical Fiber

### Alois Langer

Implantable Defibrillator

### Victor Lawrence

Signal Processing in Telecommunications

### C. Kumar N. Patel

Carbon Dioxide Laser

## United States Patent and Trademark Office Judges

### Elizabeth L. Dougherty

### George Elliott (retired)

### Radia Perlman

Robust Network Routing and Bridging

### Steve Sasson

Digital Camera

### Gary Sharp

Polarization-Control Technology

### Spencer Silver

Post-it® Notes

### Jim West

Electret Microphone



2017 Undergraduate Gold Winners, Abraham Espinoza and Matthew Rooda

*"I am very passionate about creating and innovating, and it was great seeing other students strive to make the world a better place like I am."*

### -Abraham Espinoza

SwineTech

## Presenting Sponsors

In Partnership with



# 2017 Collegiate Inventors Competition Winners

## GOLD MEDALISTS

### Ning Mao

Boston University - Graduate

#### Engineered Probiotics: Building Bacteria to Fight Cholera

Ning Mao has shown that a safe bacteria found in dairy products has the serendipitous benefit of inhibiting the progression of a cholera infection. Building on this discovery, she developed an engineered version that provides early detection of cholera and helps further contain the spread of the disease. This synthetic probiotic could control outbreaks and save lives. In addition, the technology could be adapted to fight other types of bacterial infections.

### Abraham Espinoza, Matthew Rooda

The University of Iowa - Undergraduate  
2017 Arrow Innovation Prize Winners

#### SwineTech: Newborn Piglets are Safe by Sound

More than 116 million newborn piglets were accidentally crushed to death by their mothers on hog farms in 2016, resulting in billions of dollars lost. The SmartGuard system monitors the pitch, loudness, and duration of squeals and determines whether a piglet is in distress or just squealing as piglets normally do. When a piglet is in distress, the device sends a vibration to a wearable patch on the mother, prompting her to stand and free her piglet.

## SILVER MEDALISTS

### Travis S. Schlappi, Nathan G. Schoepp

California Institute of Technology - Graduate

#### dAST: More Effective Antibiotic Prescriptions

The unchecked use of antibiotics has threatened the efficacy of these life-saving drugs. The goal of this invention is to enable doctors to make more effective prescriptions where treatment happens: the doctor's office. This test only requires 30 minutes to determine if an infection can be successfully treated with an antibiotic, while traditional methods require multiple days. Having this knowledge improves patient outcomes, and enables the preservation of these drugs by avoiding overprescribing.

### Clayton Andrews, Talia Kirschbaum, Pooja Nair, Harrison Nguyen

Johns Hopkins University - Undergraduate

#### AssitENT: Easier Breathing Through the Nose

One in eight people experiences difficulty breathing through the nose. This can hinder sleep and impact aerobic endurance during exercise or daily activities. AssitENT has created a flexible yet stable device that is worn completely within the nose and aids breathing by expanding nasal passages safely, comfortably, and discreetly. This invention is intended as an alternative to current treatments, such as external adhesive strips or invasive surgery.

## BRONZE MEDALISTS

### Praveen Kumar, Reddy Majjigapu

West Virginia University - Graduate

#### NextGen Structural Rehab System: Building New Life for Old Structures

Much of America's infrastructure is well past its intended lifespan, and repair costs number in the trillions. Structural joints, where at least two members meet, are the most crucial to the integrity of a building or bridge. This invention is a four-part system designed to fortify existing joints, extending their service lives, and improving the safety of a structure under extreme loads efficiently and economically. Tests have shown that renewed joints can withstand 500% more force than unfortified joints.

### Paco Abiad, Ashwinraj Karthikeyan

University of Virginia - Undergraduate

#### InMEDBio: Healing Layers

The growing prevalence of diabetes around the world has brought on an increase in chronic wounds, especially on the feet. These wounds can take months to heal and are prone to infections and other life-threatening complications. The Phoenix-Aid is a five-layer bandage that meshes the ABCs of chronic wound care—accelerate healing, block pathogens, and comfort wound—into one cost-effective product that is ideal for patients in developing countries.

## PEOPLE'S CHOICE AWARD WINNER

### Andrew Falcone, David Ferrara, Maria V. De Abreu Pineda

Stevens Institute of Technology

#### CerebroSense: Better Brain Monitoring

During open-brain surgeries, the brain's health is monitored by perhaps the world's first medical device, the finger. The surgeon or anesthesiologist physically touches the exposed brain to feel for changes in size that indicate swelling, decreased blood flow, or other issues requiring action. CerebroSense uses ultrasonic sensing technology to provide safe, noncontact, real-time measurements that can help reduce complications during and after surgery.



CIC Expo



CIC Expo



# Honoring the Greatest Innovators™



Mo Rocca, Master of Ceremonies, 2017 NIHF Induction Ceremony





Mo Rocca, Master of Ceremonies, with 2017 Mighty Minds winner Mya Sewell and NIHF Inductee Eric R. Fossum

## Museum

May 2017 marked the opening of the 2017 Inductee exhibits at the National Inventors Hall of Fame (NIHF) Museum. The Fifteen Inductees were represented by displays and artifacts such as an actual aerial firefighting Bambi Bucket®, invented by Don Arney, and an original pair of laminate snow skis, invented by Howard Head. A display on Inductee Haren Gandhi, inventor of automotive exhaust catalysts, was created in partnership with the Ford Motor Company.

The Intellectual Property Power® area of the museum continued to showcase the many ways intellectual property touches our lives. Visitors enjoyed learning how the camera evolved from an early 19th-century model to versions that utilize the latest imaging chips, and about the power of patents in a Qualcomm exhibit that presented the evolution of the cell phone.

The museum also welcomed a new exhibit from the International Trademark Association (INTA), who worked with NIHF to produce a fascinating display on the importance and integrity of trademarks by featuring genuine and counterfeit items side by side.

Other exhibits that debuted in 2017 included an African-American Inductee display in honor of Black History Month, a feature for Women's History Month that highlighted women Inductees, and a new Visionary Veterans® display that commemorated the 100th anniversary of the United States' involvement in World War I and the NIHF Inductees who served in the conflict.

As the Museum continues to be a showcase for the inventors who have changed our lives and the many ways intellectual property surrounds us, it offers free admission to the general public and also serves as an important venue for United States Patent and Trademark Office events as well as a destination for visiting executives and dignitaries.

## Induction

The 45th Annual Induction events for the National Inventors Hall of Fame were held in May in Washington, D.C. Fifteen inventors were recognized for their groundbreaking, patented inventions that have furthered not only our nation, but the global economy.

On May 3, the new Inductee class placed their names in the Gallery of Icons™ at the National Inventors Hall of Fame Museum in Alexandria at the headquarters of the United States Patent and Trademark Office (USPTO), symbolically joining the visual display that illustrates how innovation has advanced and evolved in the United States.

On May 4, the 2017 Inductees were honored during the Induction Ceremony, held for the first time in the grandeur of the National Building Museum in Washington, D.C. USPTO Director Michelle K. Lee welcomed the guests to the gala event, and many past Inductees attended to help celebrate the new Inductees' endeavors, learning more about their stories and the ways they have impacted our world. Both Drew Hirshfeld, Commissioner for Patents for the USPTO, and Mary Boney Denison, Commissioner for Trademarks for the USPTO, also participated in the tribute to the new class. Camp Invention participant Mya Sewell appeared on stage to convey her infectious and unwavering excitement about inventing.



2017 NIHF Induction Ceremony

## Class of 2017 Inductees



**Iver Anderson**  
Lead-Free Solder



**Don Arney**  
Bambi Bucket®  
for Aerial Firefighting



**Carolyn Bertozzi**  
Bioorthogonal  
Chemistry



**Earle Dickson**  
BAND-AID® Brand  
Adhesive Bandages



**Harold Froehlich**  
Alvin Deep-Sea  
Submersible



**Haren Gandhi**  
Automotive Exhaust  
Catalysts



**Eli Harari**  
Floating Gate  
EEPROM



**Howard Head**  
Laminate Ski;  
Oversized Tennis Racket



**Beatrice Hicks**  
Device for Sensing  
Gas Density



**Allene Jeanes**  
Dextran Production;  
Xanthan Gum



**Marshall Jones**  
Industrial Lasers



**Tom Leighton**  
Content Delivery  
Network



**Daniel Lewin**  
Content Delivery  
Network



**Frances Ligler**  
Portable  
Optical Biosensors



**Augustine Sackett**  
Drywall





Ashok Gadgil, NIHF Inductee



Eric R. Fossum, NIHF Inductee

## NIHF STEM Schools/ Visiting Inductee Program

In April 2017, students from the National Inventors Hall of Fame (NIHF) STEM Middle School and High School welcomed Inductee Ashok Gadgil for a visit. Gadgil, whose inventions include a water purification device used in India and Africa and a more efficient wood-burning stove first used in war-torn regions of Sudan, talked with the students about the importance of pursuing work that has an impact on those living in developing nations. His enthusiasm and passion for his work clearly came through, and Gadgil inspired the students with his stories.

In addition, multiple professional development workshops that share NIHF's educational philosophy took place on-site at the schools. The NIHF STEM Middle School also hosted Camp Invention for four weeks in the summer with 100% scholarship support, as well as eight Club Invention programs and one Invention Project program. The NIHF STEM Middle School also brought in high school students and provided them with Intellectual Property Literacy and leadership training through the Leadership Intern program.

Presenting Sponsor  John S. and James L.  
Knight Foundation



# Partners and Sponsors

## Annual Fund

Frederick E. Allen  
AmazonSmile Foundation  
Stanley Apple  
Donald L. and Maryann Bitzer Family Fund of Triangle Community Foundation - NIHF Inductee  
The Rob and Alyssa Briggs Fund of Akron Community Foundation  
Jasemine C. Chambers  
Raj S. Davé  
Robert H. Dennard - NIHF Inductee  
Christine Donovan  
Edith M. Flanigen - NIHF Inductee  
Eric R. Fossum - NIHF Inductee  
John E. Franz - NIHF Inductee  
Edward W. Gray, Jr.  
Ted and Judy Hoff - NIHF Inductee  
IBM Corporation  
James D. Kraus  
John D. Macdougall - NIHF Inductee  
James Malackowski - Ocean Tomo  
Stanley Mazor - NIHF Inductee  
Deana Milliken  
Tracy Rosen - Meeting Street Marketing  
Steve Sasson - NIHF Inductee  
Klaus and Joel Schmiegel - NIHF Inductee  
Gary and Patty Sharp - NIHF Inductee  
David Smorodin  
Wayne Sobon  
Gary & Rona Sterling  
William Walker  
Robert and Peggy Willson - NIHF Inductee  
Jon Wood  
James J. Wynne - NIHF Inductee

## Collegiate Inventors Competition

Arrow Electronics  
Bridgestone Americas Inc.  
Eric R. Fossum - NIHF Inductee  
Skild

## National Inventors Hall of Fame

ACS Central Science  
Akamai Technologies  
American Intellectual Property Law Association  
Clyde E. Bailey, Jr.  
Jean Bailey  
C. Donald Bateman - NIHF Inductee  
Lisle M. Buckingham Fund of Akron Community Foundation

Corning Inc.  
CPA Global  
Eli Lilly & Company  
Finnegan, Henderson, Farabow, Garrett, & Dunner LLP  
Fitch, Even, Tabin, and Flannery LLP  
Ford Motor Company  
Eric R. Fossum - NIHF Inductee  
Arthur Fry - NIHF Inductee  
Furman University  
Jasemine C. Chambers  
Raj S. Davé  
Robert H. Dennard - NIHF Inductee  
Christine Donovan  
Edith M. Flanigen - NIHF Inductee  
Eric R. Fossum - NIHF Inductee  
John E. Franz - NIHF Inductee  
Edward W. Gray, Jr.  
Ted and Judy Hoff - NIHF Inductee  
IBM Corporation  
James D. Kraus  
John D. Macdougall - NIHF Inductee  
James Malackowski - Ocean Tomo  
Stanley Mazor - NIHF Inductee  
Deana Milliken  
Tracy Rosen - Meeting Street Marketing  
Steve Sasson - NIHF Inductee  
Klaus and Joel Schmiegel - NIHF Inductee  
Gary and Patty Sharp - NIHF Inductee  
David Smorodin  
Wayne Sobon  
Gary & Rona Sterling  
William Walker  
Robert and Peggy Willson - NIHF Inductee  
Jon Wood  
James J. Wynne - NIHF Inductee

Corning Inc.  
CPA Global  
Eli Lilly & Company  
Finnegan, Henderson, Farabow, Garrett, & Dunner LLP  
Fitch, Even, Tabin, and Flannery LLP  
Ford Motor Company  
Eric R. Fossum - NIHF Inductee  
Arthur Fry - NIHF Inductee  
Furman University  
Jasemine C. Chambers  
Raj S. Davé  
Robert H. Dennard - NIHF Inductee  
Christine Donovan  
Edith M. Flanigen - NIHF Inductee  
Eric R. Fossum - NIHF Inductee  
John E. Franz - NIHF Inductee  
Edward W. Gray, Jr.  
Ted and Judy Hoff - NIHF Inductee  
IBM Corporation  
James D. Kraus  
John D. Macdougall - NIHF Inductee  
James Malackowski - Ocean Tomo  
Stanley Mazor - NIHF Inductee  
Deana Milliken  
Tracy Rosen - Meeting Street Marketing  
Steve Sasson - NIHF Inductee  
Klaus and Joel Schmiegel - NIHF Inductee  
Gary and Patty Sharp - NIHF Inductee  
David Smorodin  
Wayne Sobon  
Gary & Rona Sterling  
William Walker  
Robert and Peggy Willson - NIHF Inductee  
Jon Wood  
James J. Wynne - NIHF Inductee

## Children's Education Fund Endowment Sponsors

Alpha Medical Resources, Inc.  
The Al and Helen Free Foundation - NIHF Inductee  
Eric R. Fossum - NIHF Inductee, establishing The Fossum Family Endowment  
Susan Hoffman  
Andrea and Stephanie Joel, establishing The Amos E. Joel Young Inventors Endowment

Irwin Lachman - NIHF Inductee  
David Mayer  
Klaus and Joel Schmiegel - NIHF Inductee

## Camp Invention, Club Invention, and Invention Project

AbbVie Foundation  
Rachelle Albrechta  
Eli and Britt Harari - NIHF Inductee  
Mrs. Howard Head  
HU ADVANCE-IT Women in STEM  
Intellectual Ventures  
International Trademark Association  
The Amos E. Joel Young Inventors Endowment  
Johnson & Johnson  
Ruth and Donald Keck - NIHF Inductee  
James D. Kraus  
Ray and Jennifer Leach  
The Marconi Society  
Micron Technology Inc.  
National Academy of Inventors Inc.  
New Jersey Institute of Technology  
North Carolina State University  
Ocean Tomo  
Orrick, Herrington & Sutcliffe LLP  
Julio & Amelia Palmaz - NIHF Inductee  
Qualcomm  
Red Point Digital  
SEI Industries Ltd.  
Wayne Sobon  
Society of Women Engineers  
Sughrue Mion PLLC  
University of Massachusetts - Amherst  
Unlimited Ink Inc.  
USDA Agricultural Research Service  
Wilson Sonsini Goodrich & Rosati  
Thomas Wolf  
Jon Wood  
Yet Another Society dba The Perl Foundation  
Zeppelin Communications

AbbVie Foundation  
Rachelle Albrechta  
Eli and Britt Harari - NIHF Inductee  
Mrs. Howard Head  
HU ADVANCE-IT Women in STEM  
Intellectual Ventures  
International Trademark Association  
The Amos E. Joel Young Inventors Endowment  
Johnson & Johnson  
Ruth and Donald Keck - NIHF Inductee  
James D. Kraus  
Ray and Jennifer Leach  
The Marconi Society  
Micron Technology Inc.  
National Academy of Inventors Inc.  
New Jersey Institute of Technology  
North Carolina State University  
Ocean Tomo  
Orrick, Herrington & Sutcliffe LLP  
Julio & Amelia Palmaz - NIHF Inductee  
Qualcomm  
Red Point Digital  
SEI Industries Ltd.  
Wayne Sobon  
Society of Women Engineers  
Sughrue Mion PLLC  
University of Massachusetts - Amherst  
Unlimited Ink Inc.  
USDA Agricultural Research Service  
Wilson Sonsini Goodrich & Rosati  
Thomas Wolf  
Jon Wood  
Yet Another Society dba The Perl Foundation  
Zeppelin Communications

Cleveland Intellectual Property Law Association  
Clorox  
Community Foundation for Northern Virginia  
Community Foundation of Central Wisconsin  
Community Foundation of Howard County  
Community Foundation of Lorain County  
Community Foundation of Northeast Iowa  
IEEE - Northern Virginia Section  
David Ingemie  
Betty V. and John M. Jacobson Foundation  
Andrew and Marsha Jameton  
Christine Jayo  
Martha Holden Jennings Foundation  
Matt Jennings Memorial Fund of the Cape Coral Community Foundation  
The Jochum-Moll Foundation  
Kristina M. Johnson - NIHF Inductee  
Marshall and Annie Jones - NIHF Inductee  
Matthew Jones  
Monica Jones  
David Judson  
Kansas Health Foundation Children's Fund administered by the McPherson County Community Foundation  
Ashley Kellicker  
Killeen Evening Lions Club  
Bruce Kisliuk  
Kosciusko County Community Foundation  
Robert Laird  
Victor Lawrence - NIHF Inductee  
Laura Leibman  
Frances and George Ligler - NIHF Inductee  
Lilly Foundation  
Charles Loehr Charitable Trust  
The Lubrizol Foundation  
Britt Magneson  
Marathon Petroleum Company LP  
Maryland Space Business Roundtable  
Katharine Matthies Foundation, Bank of America, N.A., Trustee  
Herbert D. McAvoy Fund of the Idaho Community Foundation  
Alexandria McCall  
Alexandra McCarthy in honor of Christopher Robinson  
R.J. McElroy Trust  
The Sisler McFawn Foundation  
Wendy J. Merkert in memory of Carma R. Merkert  
Metal Bowtie Company  
Micron Technology Foundation, Inc.  
Mid-South Steam Boiler & Engineering Co., Inc.  
Larry H. Miller Charities  
Lindsay Miller  
Matthew and Kelly Miller in memory of Aiden Miller

Cleveland Intellectual Property Law Association  
Clorox  
Community Foundation for Northern Virginia  
Community Foundation of Central Wisconsin  
Community Foundation of Howard County  
Community Foundation of Lorain County  
Community Foundation of Northeast Iowa  
IEEE - Northern Virginia Section  
David Ingemie  
Betty V. and John M. Jacobson Foundation  
Andrew and Marsha Jameton  
Christine Jayo  
Martha Holden Jennings Foundation  
Matt Jennings Memorial Fund of the Cape Coral Community Foundation  
The Jochum-Moll Foundation  
Kristina M. Johnson - NIHF Inductee  
Marshall and Annie Jones - NIHF Inductee  
Matthew Jones  
Monica Jones  
David Judson  
Kansas Health Foundation Children's Fund administered by the McPherson County Community Foundation  
Ashley Kellicker  
Killeen Evening Lions Club  
Bruce Kisliuk  
Kosciusko County Community Foundation  
Robert Laird  
Victor Lawrence - NIHF Inductee  
Laura Leibman  
Frances and George Ligler - NIHF Inductee  
Lilly Foundation  
Charles Loehr Charitable Trust  
The Lubrizol Foundation  
Britt Magneson  
Marathon Petroleum Company LP  
Maryland Space Business Roundtable  
Katharine Matthies Foundation, Bank of America, N.A., Trustee  
Herbert D. McAvoy Fund of the Idaho Community Foundation  
Alexandria McCall  
Alexandra McCarthy in honor of Christopher Robinson  
R.J. McElroy Trust  
The Sisler McFawn Foundation  
Wendy J. Merkert in memory of Carma R. Merkert  
Metal Bowtie Company  
Micron Technology Foundation, Inc.  
Mid-South Steam Boiler & Engineering Co., Inc.  
Larry H. Miller Charities  
Lindsay Miller  
Matthew and Kelly Miller in memory of Aiden Miller

George Wesley and June R. Henglein Memorial Fund of the Coshocton Foundation  
William T. & May P. Hennessy Foundation  
Margaret Hershey-Mason in memory of John C. Pemble  
Diana Hirshfeld  
Patricia S. Holmes, CFRE  
Honda of America Mfg., Inc.  
Huntington Akron Foundation  
Idaho STEM Action Center  
IEEE - Northern Virginia Section  
David Ingemie  
Betty V. and John M. Jacobson Foundation  
Andrew and Marsha Jameton  
Christine Jayo  
Martha Holden Jennings Foundation  
Matt Jennings Memorial Fund of the Cape Coral Community Foundation  
The Jochum-Moll Foundation  
Kristina M. Johnson - NIHF Inductee  
Marshall and Annie Jones - NIHF Inductee  
Matthew Jones  
Monica Jones  
David Judson  
Kansas Health Foundation Children's Fund administered by the McPherson County Community Foundation  
Ashley Kellicker  
Killeen Evening Lions Club  
Bruce Kisliuk  
Kosciusko County Community Foundation  
Robert Laird  
Victor Lawrence - NIHF Inductee  
Laura Leibman  
Frances and George Ligler - NIHF Inductee  
Lilly Foundation  
Charles Loehr Charitable Trust  
The Lubrizol Foundation  
Britt Magneson  
Marathon Petroleum Company LP  
Maryland Space Business Roundtable  
Katharine Matthies Foundation, Bank of America, N.A., Trustee  
Herbert D. McAvoy Fund of the Idaho Community Foundation  
Alexandria McCall  
Alexandra McCarthy in honor of Christopher Robinson  
R.J. McElroy Trust  
The Sisler McFawn Foundation  
Wendy J. Merkert in memory of Carma R. Merkert  
Metal Bowtie Company  
Micron Technology Foundation, Inc.  
Mid-South Steam Boiler & Engineering Co., Inc.  
Larry H. Miller Charities  
Lindsay Miller  
Matthew and Kelly Miller in memory of Aiden Miller

W. Paul Mills and Thora J. Mills Memorial Foundation  
The Laura R. & Lucian Q. Moffitt Foundation  
Burton D. Morgan Foundation  
Motorola Solutions Foundation  
Edwin F. Mulligan Endowed Fund  
Robert Murphy  
National Inventors Hall of Fame Endowment Children's Education Fund  
Naval Air Systems - Lakehurst  
Jason Nesmith in memory of Larry C. Nesmith  
The Erwin J. & Gertrude K. Neusch Fund of the Lehigh Community Foundation  
Nexteer Steering the Future Fund  
Nordson Corporation Foundation  
Ocean Tomo  
Alexander Oesch  
The Ohio Lottery  
Michael J. Oister  
OK Foods  
Oklahoma Gas and Electric Company Foundation, Inc.  
OMNOVA Solutions Foundation  
OtterCares Foundation  
Oxford Community Foundation  
Miranda Paley  
Paragraphics  
Patterson Thuente Pedersen, P.A.  
Hannah Paulin  
Arogyaswami Paulraj - NIHF Inductee  
The Pentair Foundation  
Joe D. Pentecost Foundation  
Maggie Petrush  
Pierce Family Fund  
Dan Pillar  
Pilot Flying J  
The Portage Foundation  
ProPak Corporation  
Publix Super Markets Charities  
Qualcomm  
Katarina Quintana  
The Reinberger Foundation  
Rheem Manufacturing Company  
Charles E. & Mabel M. Ritchie Memorial Foundation  
The Blanche and Julian Robertson Family Foundation, Inc.  
Rocky Mountain Power Foundation  
Patrick Ross  
Karen Russell  
Samuel Russell  
Shannon Russell  
Thomas Russell  
Alaina Rutledge  
Paul Sagan  
Saginaw Community Foundation  
Salem Five Charitable Foundation  
Benjamin and Courtney Sander  
Sandia National Laboratories

Eric Saurers  
Scottsdale Unified School District Foundation  
Donald Sedlock  
Megan Sevastos  
Shoop Sports & Youth Foundation, Inc.  
Sam Sicard  
Carolina Silva  
Mariana Silva  
Ofelia Silva  
Zildo Ribeiro da Silva  
Spencer F. Silver - NIHF Inductee  
Simpson Family Donor Advised Fund of the Coshocton Foundation  
Anna Slaght  
Russ and Phyllis Slifer Family Fund in the Idaho Community Foundation  
Lloyd L. and Louise K. Smith Memorial Foundation  
Sorenson Legacy Foundation  
Stark Community Foundation  
Zuzana Steen  
Gary & Rona Sterling  
SummerTime Kids, an initiative of Stark Community Foundation  
The Summit Foundation  
Ashley Takacs  
TE Connectivity  
Sarah Tegen  
Tiffany Thompson  
The Henry and Louise Timken Foundation  
TimkenSteel Charitable Fund  
Todd Memorial Trust  
The Troy Foundation  
Umpqua Bank Charitable Foundation  
Vanderheiden Foundation  
Waccamaw Community Foundation  
Warren County Foundation  
Ken Washington  
Wayne County Community Foundation  
We Energies Foundation  
The Raymond John Wean Foundation  
Weldon, Williams & Lick, Inc.  
The S. K. Wellman Foundation  
Wells Fargo  
Welty Family Foundation  
Whitewater Community Foundation  
Ralph D. & Judy P. Wisenburg Fund  
Wooster Hydrostatics, Inc.  
Wyoming Community Foundation  
York County Community Foundation  
The Youngstown Foundation  
Youngstown Jewish Federation

# Ways to Give

Each year, gifts from our philanthropic partners help inspire innovation in our country by impacting more than 430,000 children, teachers, and college students nationwide.

There are many ways you can help ensure creativity and innovation continue to thrive in the hands of the next generation.

## Program Sponsor

Your gift will make a difference now and for years to come. Designate your gift to a National Inventors Hall of Fame (NIHF) program that speaks to you, or allow us to allocate your gift to the area of greatest need.

## Endowment

Endowments can be established to support the area where you have the greatest interest or our area of greatest need. Endowments offer NIHF stability and are a resource for developing new educational programs to meet the needs of the future.

## Stocks

The tax planning benefits of donating appreciated shares of stock include deducting the amount of the charitable donation and avoiding the unrealized gains on the appreciated shares.

For more information about these or other options, please contact us at [donate@invent.org](mailto:donate@invent.org).

## Planned Giving

Leave a legacy. Whether through estate plans or life income gifts, planned gifts make a lasting impact. You can designate NIHF as a beneficiary of a will, trust, retirement plan, life insurance policy, bank account, stock holding, or charitable lead trust.

## Matching Gifts

Many employers match charitable contributions. You can increase the size and impact of your gift by completing your company's matching gift form found online or with your human resources department.

## Giving Online

Giving online is fast, easy, and secure. Your donation in any amount will make an impact. Please visit [invent.org/sponsor/donate/](https://www.invent.org/sponsor/donate/) for more information.



# Board of Directors

\* Member of the Executive/Governance Committee

## National Inventors Hall of Fame, Inc. Board of Directors

### Thomas Wolf\*

Co-Chairman  
Chief Financial Officer,  
InstaKey Security Systems

### Jon Wood\*

Co-Chairman  
Executive Director of Innovation,  
Bridgestone Americas, Inc.

### Gary Sterling\*

Vice Chairman  
Retail Consultant,  
Dick's Sporting Goods (retired)

### Michael J. Oister (non-voting)

President  
Chief Executive Officer,  
National Inventors Hall of Fame, Inc.

### Monica Jones (non-voting)

Vice President  
Chief Operating Officer,  
National Inventors Hall of Fame, Inc.

### Rhonda L. Campbell (non-voting)

Treasurer  
Chief Financial Officer,  
National Inventors Hall of Fame, Inc.

### Stanley L. Apple, CPA\*

Assistant Treasurer  
Principal, Apple Growth Partners

### Maggie Petrush (non-voting)

Secretary  
Vice President, General Counsel,  
National Inventors Hall of Fame, Inc.

### James Kraus\*

Assistant Secretary  
Partner, Buckingham, Doolittle & Burroughs, LLC

### Edward W. Gray, Jr.\*

Board Ambassador  
Partner, Thompson Coburn LLP

### James E. Malackowski

President & Chief Executive Officer, ICMB Ocean Tomo

### Jean Bailey, Ph.D.

Director and Graduate Professor,  
Center for Drug Abuse Research,  
Howard University

### Jasemine Chambers, Ph.D.

Of Counsel, Wilson Sonsini Goodrich & Rosati

### Raj S. Davé

President & Founder, Davé Law Group, LLC

### Ray Leach

Chief Executive Officer, JumpStart, Inc.

### Steven Sasson

Product Development Manager, Eastman Kodak (retired)  
2011 National Inventors Hall of Fame Inductee –  
Digital Camera

### Wayne P. Sobon

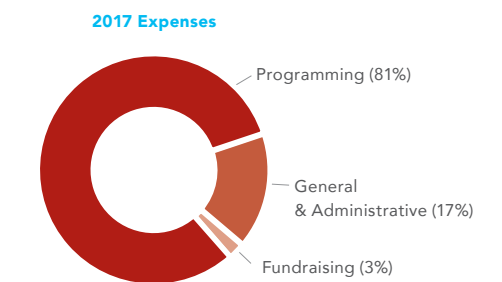
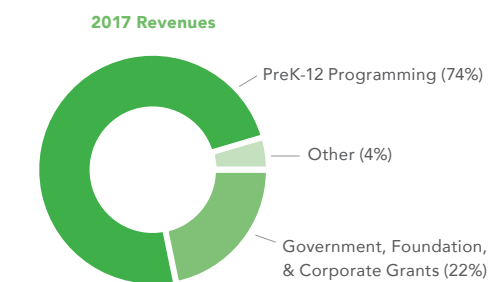
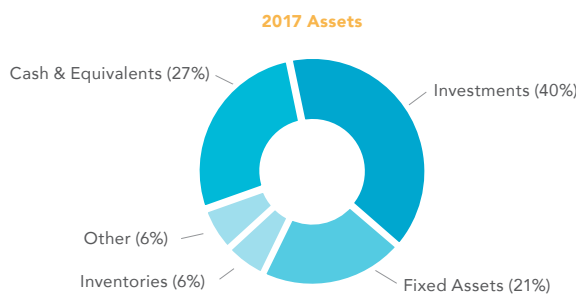
Vice President, Intellectual Property,  
JUUL Labs

### Robert W. Briggs

Board Member Emeritus  
Buckingham, Doolittle & Burroughs, LLC (retired)

# Financial Statement (in thousands)

Statement of Financial Position	2017	2016
<b>Assets</b>		
Cash & Cash Equivalents	\$7,396	\$6,814
Accounts Receivable	141	202
Grants Receivable	833	97
Pre K-12 Program Education Supplies	1,631	1,676
Investments - Market Value		
Endowment	5,791	4,826
Board Designated	4,315	2,576
Other - Trust	681	630
Other Assets	783	539
Buildings, Exhibits, Collections, Software & Equipment - Net	5,666	5,926
<b>Total Assets</b>	<b>\$27,237</b>	<b>\$23,286</b>
<b>Liabilities and Net Assets</b>		
Accounts Payable & Accrued Expenses	\$1,884	\$1,706
Deferred Revenue	464	442
Other Liabilities	681	630
Total Liabilities	\$3,029	\$2,778
Net Assets	\$24,208	\$20,508
<b>Total Liabilities and Net Assets</b>	<b>\$27,237</b>	<b>\$23,286</b>



Statement of Activities	2017	2016
<b>Revenue</b>		
Pre K-12 Programming	\$22,901	\$19,263
Government, Foundation, & Corporate Sponsorships	6,758	5,530
Store	81	64
Realized & Unrealized Gains (Losses)	1,261	473
Other Revenue	108	58
<b>Total Revenue</b>	<b>\$31,109</b>	<b>\$25,388</b>
<b>Expenses</b>		
Outside Services	\$8,422	\$6,608
Salaries, Wages, & Benefits	10,044	8,447
Other Expenses	3,120	2,628
Printing, Postage & Supplies	3,636	3,199
Advertising	1,748	1,257
Depreciation	438	421
<b>Total Expenses Related to Program &amp; Supporting Services</b>	<b>\$27,408</b>	<b>\$22,560</b>
Increase/(Decrease) in Net Assets	\$3,701	\$2,828
Net Assets, Beginning of Year	\$20,508	\$17,680
<b>Net Assets, End of Year</b>	<b>\$24,209</b>	<b>\$20,508</b>





National Inventors  
Hall of Fame®

