

# ***CHRISTOPHER COLUMBUS FELLOWSHIP FOUNDATION***



## **Fiscal Year 2015 Budget Projection and Justification**

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# CHRISTOPHER COLUMBUS FELLOWSHIP FOUNDATION FISCAL YEAR 2015 BUDGET JUSTIFICATION

## OVERVIEW

The following staff projection and justification is provided for Board review. It incorporates strategic planning decisions, budget allocations and business operations considered and resolved at the June 12, 2014 and September 18, 2014 Board Meetings.

As directed, this projection details the operating plan to be implemented in FY 2015 pending public and private sector support. It describes the ongoing 2015 STEM competition, program and outreach timetables as well as resources required for implementation. Essential initiatives underway for 2016 and 2017 policy and program development are fully incorporated.

Respectfully submitted



Hallock Northcott  
Executive Director & CEO

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**I. BUSINESS PLAN OVERVIEW**

STEM education is the Foundation’s purpose. Its mission is “*Community Service through Science, Technology, Engineering, and Mathematics (STEM) by Middle School and High School Students*”. Ongoing enhancement and expansion of additional STEM competitions and education programming is integral to its mission.

The Foundation’s requested appropriation for FY 2015 is \$450,000. This follows a \$450,000 appropriation in FY 2013 and \$150,000 appropriation in FY 2014. The Foundation’s Fund<sup>1</sup> and private sector contributions brought FY 2014 to \$569,000.

Total expenditures in FY 2015 are projected at \$576,000. This utilizes the \$450,000 requested appropriation and anticipated \$126,000 in private sector contributions for this first year of new co-sponsorship and partnership efforts. Not included in these expenditures are significant in-kind contribution sought through OGA interaction and joint efforts. They will be reflected in enriched program launch and targeted development of 2014 / 2015 CCFF programing (described below).

CCFF projected expenditures, through Fund administration by the Department of Treasury and GSA, for FY 2015:

<b><u>Expense</u></b>	<b><u>Amount</u></b>
<b>Competitions and Awards</b>	<b>\$ 274,000</b>
Christopher Columbus Awards	\$ 251,000
Agriscience Awards	\$ 18,000
Life Science Awards	\$ 5,000
<b>Compensation</b>	<b>\$ 170,000</b>
<b>General Operations</b>	<b>\$ 70,835</b>
<b>Other Government Agencies</b>	<b>\$ 60,165</b>
GSA Required Services	\$ 40,000
GSA Rent / Security	\$ 18,400
Other	\$ 2,165
<b>Total</b>	<b>\$ 576,000 <sup>2</sup></b>
<b><u>Funding</u></b>	<b><u>Amount</u></b>
<b>Appropriations</b>	<b>\$ 450,000</b>
<b>PPP</b>	<b>\$ 126,000</b>
<b>Total</b>	<b>\$ 576,000</b>

FY 2015 is the 2nd of 3 years devoted to “refocus, retool and rebuild”. New mission driven initiatives began in September 2013 with Board of Trustees action leading to: (1) March 2014 reorganization (2) creation of new Public-Private Partnership (PPP) initiatives, (3) relocation to Washington, 4) installation of a new Executive Director and CEO and, most importantly, (5) the new vision to efficiently and effectively implement its statutory mission.

[Notes: <sup>1</sup>The Fund, often referred to as "The Endowment", is an interest bearing account held by the Department of Treasury and administered through the GSA. The current sum of less than \$20,000 is the interest from both the original \$5.2 million received from sales of the Quincentenary coins and private sector contributions. Private sector contributions were derived from events and tax exempt corporate and individual donations. Most recently, contributions are being received through pay.gov.

<sup>2</sup> Total expenditures may be significantly reduced from the figures used in this projection due both to overall program reductions and cuts already made in first and 2<sup>nd</sup> quarter CCFE activities due to funding uncertainty. Indeed, these projections have already been significantly reduced from the requested FY 2015 Federal Budget figure of \$676,000 due to 1) postponement of 2014/15 Agriscience program pending re-dedicated middle and high school STEM programs, 2) reconsideration of 2015/2016 Life Sciences program launch to assess financial requirements, 3) limited public engagement regarding science education, 4) operational cost reduction initiatives and 5) reduction of technology "overhaul".

## **II. PROJECTED PLAN AND BUDGET**

### **OVERVIEW**

Building upon proven expertise and achievements, 2015 programs enhance the long standing Christopher Columbus Awards (CCA) and expand new outreach to vital national challenges. For our middle and high school students, the competitions strive to attract and shape STEM participation, incentivize performance and provide essential individual and program nurture for those seeking scientific solutions to community problems.

Direct competition and awards expenditures will total \$275,000 incorporating \$251,000 for enhanced production of the Christopher Columbus Awards, \$18,000 for initial build out of FY 2016 Agriscience program, as well as \$5,000 for investigation and promotion of Life Science program opportunities.<sup>3</sup>

[Note: <sup>3</sup>Staff time and operational expenditures allocated to individual awards programs and competitions are, for budget analysis, estimated to be 60%. Much of the remaining has been devoted to communications, external affairs, administration and intergovernmental agency efforts.]

### **A. COMPETITIONS AND AWARDS**

#### **CHRISTOPHER COLUMBUS AWARDS**



##### **1. PROGRAM**

Launched in August of 2014, the 2014/2015 CCA competition challenges middle school students nationwide to identify and explore problems in their communities and then apply the scientific method to create and implement innovative STEM solutions.

From an extensive field of applicants meeting the February 2015 deadline, teams move through 3 levels of expert judging leading to selection of 30 Semifinalist teams at the National Science Foundation in April 2015.

Just 8 teams will move on to the National Championship Week competition held at the Christopher Columbus Academy provided through Disney Corporation at Disney World (See

Enclosure A. CCA Judging / Expert Panel Review). Each has met a high standard of scientific method application, creativity in analysis and practical “down to earth” applicability.

From Championship week in June, 3 teams will have earned and receive recognition for their application of the Scientific method in development and proposed application of a practical STEM solution to a community or societal problem. The 2 Gold Medal Award winning team members will each receive a \$2,000 fellowship grant. The Community Award winning team receives the special award of \$25,000 used in application or implementation of their approach / solution.

## 2. ACTION

### Phase One

From late August thru early February, coaches and teams come together in classrooms, home school forums, community halls and social organizations serving our youth. Literally thousands of teams will explore wide scope development of projects using the scientific method through extensive peer exchange, in-kind community contributions and frequent scientific consultation as well as social media and direct coach and team sessions with CCA staff (See Enclosure B. CCA Timeline). Integration of these efforts and support of new initiatives consumes multiple staff hours in addition to expected administration and interface.

Each project submitted in February is screened by staff before qualified proposals go to the national panel. The panel reviews 4 separate elements including problem identification and demonstration, scientific method application, research and community service. Applications are limited to 10 pages. Substantial, technical, engineering and video materials may and virtually always do accompany the applications. However, to ensure equity in diverse population competition, application expenses by teams are limited to a carefully enforced \$100. (See Enclosure C. CCA Entry Guidelines)

All teams fulfilling basic requirements are acknowledged and team members are recognized for their extensive efforts. Certificates of participation, application review by three expert panelists and ongoing nurture are provided to all these teams nationwide. With this and other efforts, CCFF actively supports and encourages STEM application and further competition in CCA or multiple advanced high school and college events.

### Phase Two

With the February selection of 30 Semifinalist teams, a new phase of support and guidance begins. Appreciation of the team efforts starts with personal recognition of all 30 team members, mentors and coaches receiving a CCA “T Shirt” and grows to significant support for individual team members and team local and regional media outreach.

From the April selection of the 8 Finalist teams to the June Championship competition, individual teams seek local and national subject specific volunteer support, in-kind contributions and scientific authority input to augment research and develop plans. Nurture and training includes consultation with staff but is perhaps best exemplified by the \$200 grant for each finalist team enabling active community outreach and applications support to further develop their proposals. Extensive consultation with experts and members/ leaders of prior teams is encouraged through social media and the CCA website. In building their “solution”, they will explore refinements with the community, government or business advisory partner they had recruited for implementation of the program

### Phase Three

June brings the National Championships held at the Christopher Columbus Academy within Disney World<sup>4</sup>. A week of classes, meetings and contest sessions, Sunday through Wednesday, is supplemented by multiple networking opportunities with both Disney Corporation staff and other teams of very different backgrounds and expertise. An early day enjoying Disney World is scheduled on Thursday with the evenings Awards Dinner and Closing Ceremony concluding the program.<sup>5</sup>

Community Award winning teams are monitored for productive use of July to September for Community outreach and promotion of a STEM solution to municipal, community and social group's forums. Late summer brings exploration and required finalization of community service plans and programs with further discussion among scientific and technology advisors, community leaders and, often, multiple public officials. Such voluntary support is invaluable<sup>6</sup>. Utilizing this data, students will develop a final proposal then considered by CCA staff to assure compliance with requirements, funding schedules and additional needs.

### Phase Four

September 2015 through June of 2016, and often well beyond, highlights Community Grant Award application and implementation. Model programs and external group efforts are encouraged. CCFF Board members, staff and associates can and do pitch in along the way.

Wide outreach incorporating state and local testimony, Congressional meetings, local and national TV news segments, feature local and national media articles are all part of making the solution work. Ongoing CCA staff coordination ensures both national mentor and PPP support as well as participation in the Annual STEM Science Festival and the White House Science Fair where the teams have been featured for all 4 years.

July to August of 2016 can include application by the Community Grant team to explore additional support for STEM-based opportunities and extend program reach with partner and related organizations.

[Notes: <sup>4</sup> The Steve Harvey and Essence Magazine sponsored Disney Dreamers Academy held at Disney World in March is built on same model with multiple shared efforts and programs. Science and STEM-based subjects are among multiple areas covered. It offers excellent opportunities for CCA topic expansion in future years.

<sup>5</sup> Most families and team members schedule time following the Awards to enjoy Disney World.

<sup>6</sup> CCA's funds are augmented by an invaluable national volunteer network. Adult coaches, teachers, judges, and many others donate an estimated 30,000 – 50,000 hours annually. Overall volunteer totals, currently not recorded, are likely to substantially exceed 100,000 hours. Volunteers often remain with the program for multiple years, mentoring and supporting new entrants through social media and direct contact (2015 and 2016 funds will enhance training and technology support for this invaluable resource).]

### 3. ONGOING EXPENDITURES-FUTURE PROGRAMS

On a separate track, essential efforts for the 2015 / 2016 competition will be well underway. June and July will incorporate formulation of 2015/16 outreach program improvements in tandem with liaison and participation. Enhancement of the online portal for additional contest applications and website update is scheduled.

August, September and through to January are filled with notification and promotion. Outreach to school districts, State Departments of Education and Community Service organizations goes hand-in-hand with active participation at multiple STEM events and careers fairs. Messaging preparation and presentation is widespread for Student-oriented media with middle and high school publications, such as Earth Science Week. Also emphasized is extensive social media use including participant's blogs and coach's website.

In multiple forums and reports the Board will actively push its 3-year exploration and implementation of "refocus, retool and rebuild". It will solicit suggestions and proposals from multiple important resources incorporating those often arising from state and local government and community leaders as well scientific guides such as Judges at the April NSF sessions. The Board looks to learn from and build upon hosting initial meetings /conference among noteworthy private and public sector STEM competitions. Of particular importance to the Board is calling for significant discussion and coordination with Federal agencies of CoSTEM (Described in "Federal Integration" below).

<b>CCA 2014-2015 Competition</b>		<b>\$251,000</b>
<b>Promotion / Notification</b>		<b>\$18,000</b>
Direct Mail to Institutions & Organizations	\$14,000	
Publications, Email campaign & Print	\$4,000	
<b>Team Liaison</b>		<b>\$5,400</b>
Communications	\$3,400	
Certifications	\$1,000	
Phone Bank	\$1,000	
<b>Panel Review &amp; Judging</b>		<b>\$8,400</b>
Expenses	\$6,000	
Logistics	\$2,400	
<b>Recognition &amp; Support</b>		<b>\$8,200</b>
Non-Placement Teams	\$500	
Certificates (All)	\$2,500	
T-shirts (All Semifinalists)	\$2,000	
Semifinalist Implementation	\$3,200	
<b>National Championship Week</b>		<b>\$146,400</b>
Academy & Experts	\$35,000	
Park Passes	\$6,000	
Presentation (Competitions)	\$13,200	
Logistics	\$3,200	
Publications / Artwork	\$5,000	
Air and Ground Transportation, Meal Expenses	\$60,000	
Hotel (192 Room nights @ \$125)	\$24,000	
<b>Operations</b>		<b>\$15,600</b>
Website / Database Management	\$13,500	
Printing, Shipping, Storage	\$2,100	
<b>Awards (Team &amp; Individual)</b>		<b>\$49,000</b>
Finalist Preparation	\$4,000	
Coach & Mentors	\$4,000	
Gold Medal Team Members	\$16,000	
Community Grant Team	\$25,000	

## AGRISCIENCE AWARDS



These awards honor, reward and enable middle school and high school student teams exemplifying excellence in the agriculture-based application of exact and natural sciences for community service.

Built upon the CCA program model, the Agriscience Awards will be publicly launched in August of FY 2015 with staff and volunteer driven preliminary program development and private sector outreach. Initial expenses will be primarily for materials development and technology applications essential to timely launch. Build out particularly requires extensive staff coordination of essential stakeholder and education community private sector outreach.

The development of technology processes will require an early RFP. The system is to be initiated, assembled, and assessed from March 2016 through August 2016. During this period, the Foundation will devise and test program parameters, judging and evaluation as well as the processing analysis and operations. With significant internal development, external contractor work is to be minimized.

Unique competition criteria and planned outreach will create opportunities for cooperative and coordinated interface across deeply involved agriculture, food and chemical related Federal programs. September 2015 evaluation of opportunities and collaborations will involve policy and program determination.

Advanced academic and business community collaboration is being explored through outreach to several agricultural excellence public universities, divided by regions, linked to USDA regional programs. American Farm Bureau and 4-H collaboration is underway.

<b>Agriscience 2015/2016 Competition Budget</b>		<b>\$18,000</b>
Outreach	\$2,000	
Notification & Promotion	\$8,000	
Technology	\$8,000	

## LIFE SCIENCES AWARDS



Life Sciences Awards honor, reward and enable middle school and high school student teams strongly committed to protecting and advancing human health through science driven community and public service.

Utilizing the same basic process and stages described above, the Life Sciences Awards will be launched in 2016. Initial expenses will primarily include funding of materials development and program guidelines.

Liaison with private sector organizations such as the Friends of the National Library of Medicine and AMA Education are ongoing. Development of relationships will, in part, utilize the Foundation's demonstrated expertise through its legacy programs commending Agriscience and Life Sciences research and professional leadership.

Outreach to undergraduate, university and research facilities for student mentors and volunteer program centers are in early stages. Seeking institutional commitments will be a focus.

<b>Life Sciences - 2016/2017 Competition Preparation</b>		<b>\$5,000</b>
Outreach	\$2,000	
Notification & Promotion	\$3,000	

**B. COMPENSATION**

The Foundation has two full time employees, the Executive Director and CEO, and the Office Manager. This is less than 50 percent of the personnel authorized, and is a direct result of the ongoing efficiency and cost reduction effort. The \$170,000 in total compensation includes federal government employee benefits.

**C. OPERATIONS**

Operation expenditures incorporate private sector expenditures ranging from office supplies to telecommunications service. They are anticipated to include Travel of up to \$30,000, temporary and project support \$20,000, as well as CCA and competition consultation at \$20,000. Additional consultation and support requirements, as needed, are expected to be fulfilled through use of private sector contributions either directly or in-kind.

**D. OTHER GOVERNMENT AGENCIES (OGA)**

Vital services are provided to the CCFF through GSA and other agencies. The pricing for these required services is set by GSA. A service contract of \$40,000 includes Accounting and Human Resources among other professional functions. Rent and Security of \$18,400 are also paid to GSA.

### **III. POLICY INITIATIVES – CONGRESSIONAL DIRECTION**

#### **A. FEDERAL INTEGRATION**

Active collaboration is sought in FY 2015 with the Federal Committee on STEM Education (CoSTEM) which works within the National Science and Technology Council (NTSC). CoSTEM, comprised of 13 partner agencies, incorporates the mission science primary agencies led by the Department of Education.

CoSTEM will coordinate a “cohesive national strategy”, to reorganize STEM education programs. It will increase the impact of federal investments in areas where CCA has an established presence: P-12 STEM instruction and application; increasing and sustaining public and youth community engagement with STEM; and better serving groups historically underrepresented in STEM fields.

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Advancing vital national policy goals through its partnerships has long been a focus of the Foundations ongoing innovation. In 2015 and beyond, the program will replicate for inner city and educationally underserved communities the successful outreach that has grown annual female student participation to between 55 percent and 62 percent annually. It will strive to innovatively grow opportunities for competition among our significant number of alternate education opportunity, home or online schooling teams. Concurrently, the programs will also meet the broadly recognized need to dramatically grow the application of STEM beyond simple classroom and contest environments to meet CoSTEM mission

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Building upon its record, CCFF has the expertise and systems in place to administer multiple aspects of existing and new competitions. It conducts nationwide nomination solicitations; promotes and advertises all phases of the competitions; and develops the nomination and related materials such as procedures and criteria. It can and does provide federal network facilitation by which the recipient(s) can pursue the development and funding of their innovation(s) and community service.

#### **B. PUBLIC PRIVATE PARTNERSHIPS**

In 2015 CCFF will build upon its success in forming public-private partnerships for almost 20 years. It has partnered with organizations as diverse as the National Science Foundation, Bayer Corporation, U.S. Chamber of Commerce, Walt Disney World, *DISCOVER Magazine*, the National Italian American Foundation, the National Museum of Education, the Association of Middle Level Education, and the American Farm Bureau Federation, as well as noted colleges and universities.

Through its program and competition development, CCFF can and will utilize relationships with both public and private sector entities aligned with particular themes or an award program and open related avenues for collaboration. Building upon multiple established PPP elements to pursue ongoing “national opportunity challenge” themes and subjects will enable development of implementable solutions to the issues our students face in their own communities.

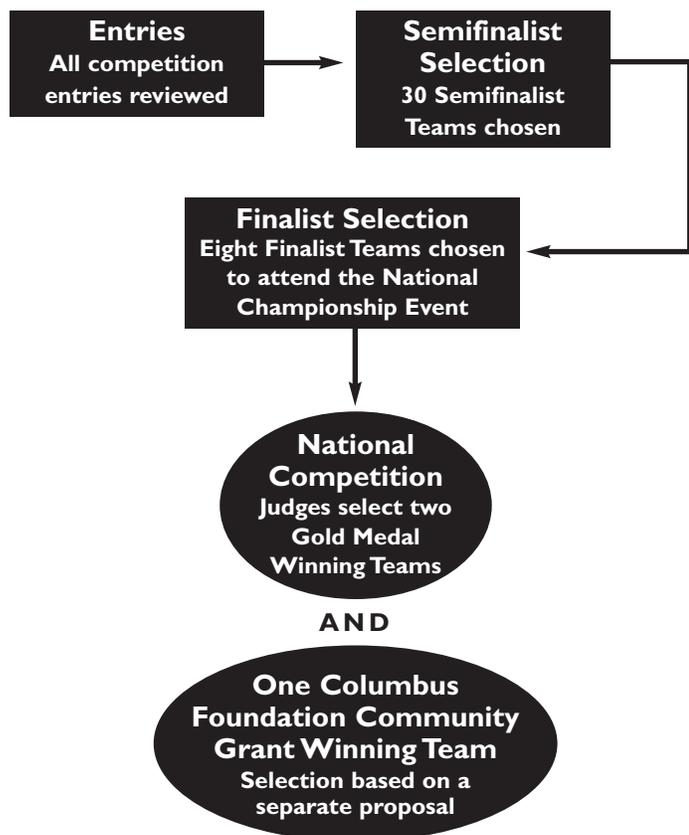
CCFF is actively seeking to encourage private sector funding sources to augment existing and future programs. A complimentary effort is being undertaken by a new independent advisory group, Innovation Generation: A STEM Education Foundation (iGEN). iGEN will undertake leadership of public and private sector nonprofit 501(c) (3) promotion and support to fulfill its purpose: Community Service through STEM by middle and high school students. From 2016 forward, it is anticipated that total private sector funding, administered through the Department of Treasury, will replace a significant portion of current Federal responsibility.

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Final. November 1, 2014

## Competition Rules and Resources

# The Judging Process



## NATIONAL COMPETITION SEMIFINALIST SELECTION

### Process

1. All entries received are screened for compliance with the rules.
2. Each entry is sent to three randomly selected judges (prominent educators, scientists, engineers and community leaders).
3. Each entry is evaluated anonymously based on the stated criteria (see below) and assigned a numerical score by each judge.
4. Entry evaluations are collected and an aggregate score is created based on the sum of the three judges' numerical scores.
5. The top 30 entries with the highest aggregate scores are selected as semifinalists (30 total semifinalists).
6. All teams receive a feedback form with comments from the three judges.
7. Semifinalist teams will be announced in mid-April 2015.

### Criteria

Each entry will be evaluated based on creativity, innovation, scientific accuracy, relevance to the community, feasibility and clarity of communication.

The following categories will be used to score the entries:

1. **Creativity: 20 Points** The demonstration of imagination, problem-solving techniques, artistic skills, etc.
2. **Innovation: 20 Points** An assessment of the proposed solution's uniqueness, the use of science to solve the problem and the potential impact of the solution on the community or in general.
3. **Scientific Accuracy: 24 Points** An assessment of the application of scientific laws and theory and an evaluation of the methods used to research the topic and to test the proposed solution.
4. **Feasibility: 18 Points** An assessment of the likelihood that the solution will work as presented based on relevant economic, political and social issues, etc. Higher points will be given to plans that are developed fully versus plans that need adjustments to succeed.
5. **Clarity of Communication: 18 Points** Includes adherence to the entry guidelines (written and visual), as well as grammar, writing skills, organization of the facts and data, etc. Project should show a coherent display and presentation.

### Semifinalist Awards

1. Every team member who enters will receive a Christopher Columbus Awards Certificate of Participation and have the judges' comment sheets returned to them.
2. Each of the 30 semifinalist team members receives a certificate, the judges' comment sheets and a Christopher Columbus Awards T-shirt.



St. Philip the Apostle School, Illinois

## Facilitating the Competition Project

# Suggested Project Timeline

Preparing for the **Christopher Columbus Awards** can fit easily into your plans. This is hands-on learning at its best — students work in teams, just as real scientists do. Each student contributes his or her own unique talents and perspectives to reach an outcome that can make everyone proud. And the students use scientific methods to solve problems that are important to them and their community.

Preparing a competition project is a great learning experience for students in science or social studies classes, or for cross-curricular use in team teaching or block-scheduled classes. You and your students can start today to talk about the important issues in your community and brainstorm possible solutions. A sample timeline is provided, but you may wish to adjust it to your schedule and the amount of meeting time available. Just follow these easy steps to get your students started — **and get them psyched about science!**

## STEP ONE

### Brainstorm community problems with your students.

Ask students what's going on in their community that is important to them. As students list their topics and concerns, write their ideas on the board. Guide students to think about problems that could be solved with the help of a new, creative way of thinking.

Once several ideas have been suggested, begin a more in-depth discussion about these issues. Why are they important to students? Do they affect other people in the community? Is there more than one side to a particular issue? Encourage students to share their ideas and opinions, even if they seem "outlandish." Allow enough time for differing sides to voice their opinions.

**Team Exercise:** Ask students to think further about community issues that are important to them and bring in two or three more ideas. As an extension, students could write a brief, one-page essay about the different sides of one specific issue or conduct interviews with friends or relatives to learn about other sides of the issue. Suggested timeline: one week.

## STEP TWO

### Talk about a solution, and introduce the competition.

Your students are already thinking about the community problems that are important to them. The next step is to let them know they have the power to make a change. This is their chance to come up with an innovative solution using science and technology.

Choose one of the community problems that was discussed earlier and ask students to share any new thoughts on that issue since your first discussion. Then ask them to brainstorm possible

scientific or technological solutions for that problem. How could the community work together to solve the problem? What would be the best solution? Would everyone involved agree on one solution? What resources would be necessary — time, financial support, materials or supplies, etc.? Are the needed resources readily available in your community? Again, make sure that everyone has a chance to voice an opinion.

Introduce the competition project by photocopying the "Student's Guide to the Christopher Columbus Awards" and reviewing it with students. Let students know that this is their chance to choose a community issue that's important to them, identify an innovative solution using science, technology, engineering and math, and refine the solution — and they'll be competing for a place at the National Championship Event, a grant to develop their solution and a \$2,000 scholarship for each student team member!

Ask students to form teams of three to four members each. Students may wish to choose teams based on their particular talents or shared interest in a community issue. Work with teams to narrow their lists of community issues to one problem they want to address. Help students evaluate the nature of their community issues and the feasibility of their solutions to reach their final decision.

**Team Exercise:** Have teams decide which community problem they want to address and spend some time brainstorming scientific and technological solutions. Each student should write out three or four possible innovative solutions for the issue. Encourage students to engage in creative thinking as they develop their solution ideas — at this stage, all ideas are acceptable, and the more the better. Suggested timeline: one week.

## STEP THREE

### Review basic research techniques.

This step takes the competition project from minds-on to hands-on. When each team has selected a community problem to address, discuss how to conduct inquiry-based research in the community. Students first will need to gather background information to learn as much as they can about the problem. Students should brainstorm potential resources they could use and how to make use of those resources. Community mentors who are experts or have an interest in a particular issue can help students fine-tune their approach to the problem and its solution. Remind students to take into account differing opinions on their issue — their research should be well-rounded, not one-sided.

**Team Exercise:** Have teams conduct research and write



Christopher Columbus Academy Session

a one-page essay identifying their problem and explaining how they chose that problem, why it's important to the team and to the community and what would happen if this issue is not addressed. This will serve as the team's first draft of Section 1 of the competition entry (see p. 8). Suggested timeline: one to two weeks.

## STEP FOUR

### Begin more in-depth research.

Discuss scientific methods and ways of conducting more in-depth, inquiry-based research. Help students understand that the answer to a problem can be confirmed by forming a hypothesis, testing it, refining the solution and testing again until they can prove that it works. But before they can begin testing, they need to learn more about the problem and their proposed solutions.

Have team members summarize their community issue and proposed solutions for the group and/or collect their first draft of Section 1 to review for an assignment grade. Allow time for team members to work together to create a basic plan or strategy for conducting in-depth research on their problem and solution.

**Team Exercise:** Have students research their community issue to learn as much as they can about the problem and its potential solutions. As they conduct their research, students should keep a list of the resources they used (people, organizations, the Internet, etc.), the information they used to understand the issue and the steps they took to formulate their proposed solution. Have students use this information to write their first draft of Section 2 of the competition entry (see p. 8). Suggested timeline: two to four weeks.

## STEP FIVE

### Formulate and test a solution.

Students' next step is to test how their solutions will work. Review basic information about scientific testing, methodology, using variables, analyzing data, etc. Have students narrow their proposed solutions to the one or two choices they think are best. As students test their solutions, they may find that one idea works better than another, or that one isn't very practical. Remind students that a solution should work when tested under various conditions. Students will need to control variables and record data as they test.

Allow time for teams to review the research they've conducted and create a strategy for testing their proposed solution. You shouldn't tell students how to test their solution, but you can ask questions about the project to guide them in a reasonable direction.

**Team Exercise:** Have students test their proposed solution. As they test, they should also complete Section 3 of the competition entry, explaining how they organized the test, what problems or

variables they accounted for, the results of their test and any re-testing they needed to do. Suggested timeline: three to four weeks.

## STEP SIX

### Discuss the results of students' tests.

Ask teams to discuss what their research and testing revealed. If their results appear skewed or inconclusive, guide them to adjust the test variables or think of a different way to test their solution.

**Team Exercise:** Have students complete Section 4 of the competition entry, explaining their solution and how it could be made a reality in their community. Students will also need to address any challenges to implementing their solution. Any additional tests the team needs to conduct should be completed by the next deadline. Suggested timeline: one to two weeks.

## STEP SEVEN

### Prepare the competition entry materials.

Students already have completed a first draft of the four written sections of the competition entry. Review basic editing and proofreading tips they should use to refine their written entry. You may want to photocopy and share with the students the Entry Guidelines found on page 8 of this guide.

Discuss the visual presentation options: PowerPoint, mechanical drawing, diagram, photographic series or video presentation. One of the visual options may lend itself better to explaining the specific problem and solution students have addressed. Work with students to decide how best to demonstrate their work.

**Team Exercise:** Students should review their written entry and finalize it within two weeks for coach review or a class grade. Give your comments back to students by mid-January so they can complete their entry and prepare it for submission to the competition.

Students also should prepare the visual component of their competition entry for your review. Remember, all entries must be uploaded by February 2, 2015. Make sure students allow enough time to finalize their entry materials by the deadline. Timeline should be adjusted to meet competition deadline.

## STEP EIGHT

### Finalize and submit the entry.

Use the Team Entry Checklist on page 14 of this guide to help the students review the written and visual entry materials they have prepared. It is especially important to review the visual presentation with students to check for clarity and sound consistency (if applicable). Upload the entry by **February 2, 2015**.

## Competition Rules and Resources

# Entry Guidelines

**A complete entry consists of 5 sections: 4 written and 1 visual. Entries must be uploaded or postmarked by February 2, 2015.**

## THE WRITTEN ENTRY – SECTIONS 1 THROUGH 4

### Section 1: Project Overview (Max. 1 page)

1. Clearly outline the team's problem and solution.
2. How did the team identify the problem?
3. How does the problem affect the community?
4. What will happen if the problem is not solved?

### Section 2: Research (Max. 3 pages)

1. What kind of resources did the team use (people, organizations, Internet, etc.)?
2. What information did the team gather for understanding its problem?
3. If appropriate, the team should present its research results in charts and graphs.
4. How did the team's research help to formulate a proposed solution using science and technology?

### Section 3: Testing (Max. 3 pages)

1. How did the team organize the test?
2. What problems or variables did it need to test?
3. What were the results of the testing?
4. Was the proposed solution supported by the test or did the team need to change the proposed solution? What did the re-testing show? Results can be presented in charts and graphs.

### Section 4: The Solution (Max. 3 pages)

1. Show the science and technology used and describe how the solution works in theory.
2. If the team had unlimited resources and time, how would it make its idea a reality in the community?
3. If the team won the \$25,000 Columbus Foundation Community Grant (see p. 12), what could the team achieve in one year?
4. What major challenges must the team overcome to make its idea a reality?

## WRITTEN ENTRY GUIDELINES

- All four written sections (Overview, Research, Testing and Solution) should be included in one document.
- Each page must contain the team name, be numbered and have section titles as shown above.
- Total written entry may not exceed 10 pages.
- Use only 8 1/2" x 11" paper with one-inch margin.
- Text must be 10-14 characters per inch, 12-point type, doubled-space
- A cover page should not be included. Entries are judged anonymously and will be assigned a reference number for identification.
- Count does not include bibliography (additional page).
- Please keep a copy of your entry for your records.

**When uploading your entry online** – team name must appear in the name of the text file and the Team - Form must be completed before submitting the entry.

## THE VISUAL PRESENTATION – SECTION 5

**Choose one of the five options to demonstrate your project concept.**

### OPTION 1: Mechanical/Blueprint Drawing

(Maximum size: two pages, 8 1/2" x 11")

- Consider using this option if the team would like to present its model/prototype in a mechanically or technically detailed format.
- Ask an expert for advice on scale and the use of symbols in the drawing.

### OPTION 2: Diagram

(Maximum size: two pages, 8 1/2" x 11")

- Consider this option if the team wants to represent the community problem and solution artistically.
- This option may demonstrate the artistic talents of one or more team members.

### OPTION 3: Photograph Series

(Maximum of four photos)

- Consider this option if actual pictures of a model/prototype or the community setting are important to understanding the solution.
- Make sure the photographs are clear and light enough to be photocopied.
- No more than four photos total and no collages.

### OPTION 4: DVD Presentation

(Length limit: five minutes)

- Accepted formats: mp4, mpg, avi, wmv, m4v, mov.
- Use this option if the team wants to act out its problem and solution or wants to actively demonstrate its model/prototype.
- DVDs will be judged on content. Please make sure the team's DVD is of good production quality. Students may use computer graphics in the DVD.

### OPTION 5: PowerPoint Presentation on CD

(No more than 20 slides maximum)

- Presentation will be judged on content and relevance.
- No video elements inside the slides.

## VISUAL PRESENTATION GUIDELINES

- One visual per entry. Please choose the option that best represents your entry/project.
- In the spirit of fair competition, teams are limited to spending \$100 on materials used to make the visual element of the entry (including the value of donated materials.)
- Please keep a copy of your visual for your records.

### When uploading your entry online:

- Team name must appear in the name of the visual file.
- The Team Member Information Form must be completed before submitting the entry.

**Entries/projects that have been recognized as finalists or national award winners in another competition, as well as any entry that has been recognized as a semifinalist in a previous Christopher Columbus Awards competition year, may not be entered into the 2014-2015 Christopher Columbus Awards competition.**



# Christopher Columbus Fellowship Foundation

*...to produce new discoveries in all fields of endeavor for the benefit of mankind.*

The **Christopher Columbus Fellowship Foundation** was established by Congress in 1992 as an independent federal government agency.

The Foundations mission is: community service through science, technology, engineering, and mathematics (STEM) by middle school and high school students nationwide. STEM education's practical application is the focus of the Foundation.



Students are challenged through the Christopher Columbus Awards program to identify a problem in their community and apply the scientific method to create an innovative solution. Eight finalist teams of three to four students and their adult coaches attend the National Championship Week at the Christopher Columbus Academy in Walt Disney World. The finalists compete for valuable scholarships and a \$25,000 grant to bring the winning STEM solution to life in their communities.

Over 19,000 middle school students from across the country, many who are girls and minorities, have taken part in this unique STEM education program. Its application through volunteers, in-kind contributions, expert guidance and nurture provides tangible results. Notable winning teams include:

- 'Rez Protectors' from the Crow Reservation in Montana, an all-girl team, developed and spread straw block housing from indigenous materials;
- 'BEE Aware' of rural Elk Banner, North Carolina, this year's winner, developed a science-based community-wide outreach program to protect honey bee populations;
- 'Zero Waste' of Hockessin, Delaware, successfully launched a city-wide composting plan and brought their message of economic and efficient community action to the state legislature, Congress and the White House; and
- 'The River Rangers' of Myrtle Beach, South Carolina utilized technology to open up navigable waterways and to clear hurricane damage.

The program is regularly featured and praised in national and community forums. Participating students have to-date received eight U.S. patents and one provisional patent. They have also consistently represented the Foundation at the White House Science Fair for their achievements in STEM. Thousands of volunteer hours by coaches and mentors have been repeatedly recognized.

## Funding History –

In 1992, Congress commemorated the 500<sup>th</sup> anniversary of the discovery of the Americas by passing Public Law 102-281, the Christopher Columbus Quincentenary Coins and Fellowship Foundation. The Foundation received a \$7.6 million endowment from the surcharges on the sale of three denominations of specially minted coins sold by the United States Mint. It operated entirely under the endowment through 2007.



Since 2008, the Foundation, created by Congressman Frank Annunzio has operated through a combination of endowed funds, federal appropriations, and private sector contributions. To address the fact that the coin sales revenues had been depleted, Congress permanently authorized funding for the Foundation in the Omnibus Appropriations Act, 2009 with strong bipartisan support. The Foundation has received the following congressional appropriations to support its programs:

- FY 2008 – \$600,000
- FY 2009 – \$1,000,000
- FY 2010 – \$750,000
- FY 2011 – \$499,000
- FY 2012 – \$450,000
- FY 2013 – \$426,462
- FY 2014 – \$150,000
- FY 2015 – \$676,000 [Requested]

### **Public-Private-Partnership –**

The Foundation is actively seeking private and public funding sources to support existing and future programs. It has a proud tradition with leading federal agencies and private organizations, including the Bayer Corporation, Agusta Westland N.A., Xerox Corporation, U.S. Chamber of Commerce, the Association of Middle Level Education, and the American Farm Bureau Federation.

A new advisory group, Innovation Generation: A STEM Education Foundation, will undertake leadership of public and private sector nonprofit 501(c)3 promotion and support. iGEN, an independent private organization, has formed to encourage and enhance the STEM education vision and mission, and is a vital piece of the drive to fully utilize private sector efforts. In addition, the Foundation’s tax-exempt status has long received both in-kind and monetary contributions directly to the U.S. Treasury.

### **Awards Programming –**

The Foundation has a proud history of recognizing and providing financial awards to outstanding individuals and groups who innovate to serve their communities. Over time, as new discoveries and technological breakthroughs were made and our nation’s agenda evolved, the awards programs were modified. Once again, the Foundation has undertaken change to address a vital national priority of STEM education. New STEM applications utilizing agency and private sector cooperation are emerging.

In the near future, rededicated programs, built on the model created by the Christopher Columbus Awards, will recognize middle school and high school students working in agriscience and life sciences, as well as their STEM mentors and leaders:



Agriscience Awards

These awards honor middle school and high school student teams exemplifying excellence in the Agriculture based application of exact and natural sciences for community service.



ANNUNZIO AWARDS

This non cash award will be bestowed to STEM leaders – adults who exemplify, facilitate, and provide community service through the application of STEM.



LIFE SCIENCES AWARDS

Life Sciences Awards reward middle school and high school student teams strongly committed to protecting and advancing human health through science driven community and public service programs.

For more information, please contact:

Hall Northcott, Executive Director and CEO  
Jh.northcott@christophercolumbusfoundation.gov – (202) 401-9765