



Festival de Química

a model to globally communicate the
value of chemistry in our daily lives:
history and impact

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Office of Outreach



WHAT IS THE CHEMISTRY FESTIVAL?



Is a community outreach event joining the efforts of hundreds of volunteers that, through chemistry hands-on activities, emphasize the relevance of chemistry in daily life.

- The hands-on activities are designed for the general public, especially for children, to :
 - Promote the understanding of chemistry in their lives.
 - Communicate the value and impact of chemistry in a relax educational environment.



WHY USE IT AS A MODEL?

The Chemistry Festival has amazing impacts on children, improving their attitudes and interest in Chemistry.

It excites scientist volunteers.

Is a strategy that promotes that people from the general community interact with science enthusiasts.

Great opportunity to engage International Chapters and Students' International chapters.



ACS Strategic Plan

SUPPORT EXCELLENCE IN EDUCATION

Foster the development of the most innovative, relevant, and effective chemistry and chemistry-related education.



COMMUNICATE CHEMISTRY'S VALUE

Communicate — to the public and to policymakers — the vital role of chemical professionals and chemistry in addressing the world's challenges.

LEARNING ENVIRONMENTS

Formal learning

Takes place in a classroom.
Learning occurs in a structured and organized environment.

Non-formal learning

Takes place outside the classroom. Learning is embedded as the main objective of the activity.

Informal learning

Takes place anywhere. Learning is a result of daily activities; it is unintentional.



WHAT IS THE IMPORTANCE OF NON-FORMAL LEARNING?

According to Falk and Dierking:

- Most of a person's science education is done outside a formal environment
- Less than 5 percent of a person's life is spent inside a classroom
- The best way to increase to the public's understanding of science is in the remaining 95 percent of their lives



Falk J, Dierking L. (2010). The 95 percent solution: school is not where most of Americans learn most of their science. American Scientist, 98, 486-93.

EXPERIENCES IN INFORMAL ENVIRONMENTS

These are characterized by being:

- learner-motivated
- voluntary, personal
- collaborative
- contextually relevant
 - guided by learner interests
 - enable learners to connect with their own interests
 - allow in-depth exploration of current or relevant topics
 - provide an interactive space for ongoing learning

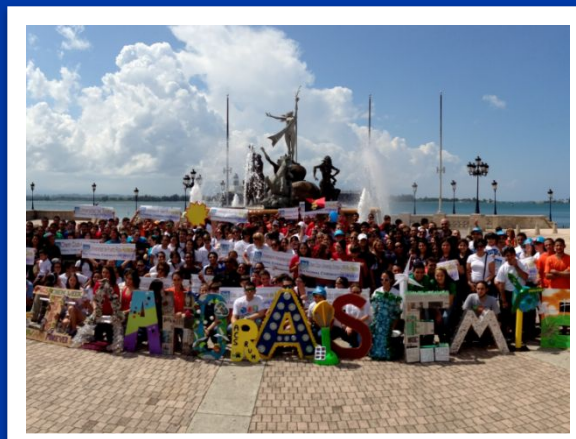


26	55.85	16	32.07	22	47.87	23	50.94	13	26.98
Fe	S	Ti	V	Al					
Iron	Sulfur	Titanium	Vanadium	Aluminum					

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Chemistry Festival Puerto Rico



CHEMISTRY FESTIVALS IN PUERTO RICO



Started in Puerto Rico in 2005

Have joined the efforts of many volunteers:

- ACS Student Chapters from public and private institutions
- Other sister professional societies
- ACS Members and Committees (eg: Younger Chemists Com., Women Com, etc.)
- Teachers
- High School students (ChemClubs)
- Total of volunteers could be more than 500!
- Is an event where the Puerto Rican volunteers evidence their commitment and passion for demonstrating the value of chemistry in our lives.

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Puerto Rico - 2013



Puerto Rico - 2014



Puerto Rico - 2016



ANNUAL FESTIVALS IN PUERTO RICO LAUNCH CCED AND NCW



**More that 500
volunteers in each
one**

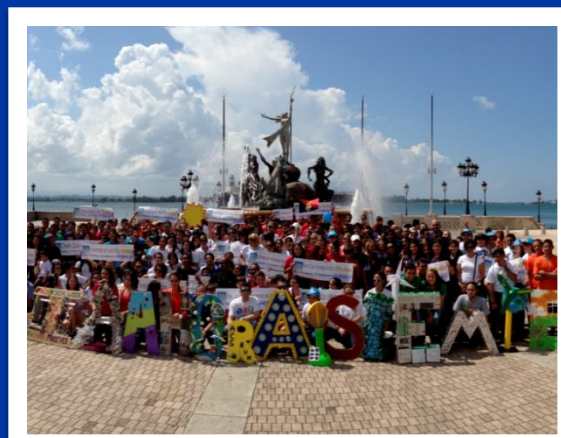


**More than 2,500
participants in
each one**



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International Chemistry Festivals

29th Latin American Chemistry Congress Sept 2010, Cartagena, Colombia



300 middle-school students

300 high school teachers and students

Dr. Luis Echegoyen, former Director of Chemistry at the National Science Foundation, and Dr. Martin Chalfie, 2008 Nobel Prize winner, talk about how exciting it is to study and work in the chemistry field.

Dr. Ingrid Montes from the University of Puerto Rico performed the “Magic of Chemistry”; demonstrations

These events called the attention of the local media and were featured on the first page of the city’s local paper “El Universal”.



IUPAC WORLD CONGRESS IN PUERTO RICO-JULY 2011



Over 200 volunteers (Student Chapters, Faculty Advisors, Graduate Students from the UPR-Rio Piedras, Chem Clubs, Teachers and members / non members ACS)

Impact:

- Over 2,500 participants
- Over 200 IUPAC Congress international participants
- Special guests such as: Nobel Prize, Dr. Roald Hoffmann; President-Elect ACS -2012, Dr. Bassam Shakhshiri; Dr. Lynn Hogue, President ACS Committee on Community Activities; Presidents of Professional Associations from Thailand, Germany, Colombia, and Hungary; and Dr. Javier García, President Global Experiment Committee, among others. Senior officials of the ACS Examinations Institute and ACS.



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Hierro	Azufre	Titanio	Vanadio	Aluminio					

DE QUÍMICA



PLAZA LAS PALAPAS
DOMINGO 28 DE OCTUBRE DE 2012
4:00 - 7:00 PM
CANCUN, MEXICO



ACS
Chemistry for Life



American Chemical Society



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Chinese Chemical Society Congress Beijing, China

More than 1,000 participants!



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CHEMISTRY FESTIVALS - 2013

Bogotá, Colombia 2013



350



4,200



Bogotá, Colombia (2)

Santiago, Chile

Concepción, Chile



Santiago, Chile 2013



3,000

Concepción, Chile 2013



1,200

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Iron	Sulfur	Titanium	Vanadium	Aluminum					

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CHEMISTRY FESTIVALS - 2014



Bogotá, Colombia 2014



Bogotá, Colombia (2)

Santiago, Chile

Lima, Perú

Beijing, China

Shanghai, China



Beijing, China 2014



Shanghai, China 2014



2015 MARKS THE 10TH ANNIVERSARY OF THE CHEMISTRY FESTIVAL



WAS MOVED TO BE AN ACS PROGRAM

International Activities Committee created of a first-time grant program

6 International Festival Grants were given out in 2015

- Colombia
- Abuja, Nigeria
- Hungary
- Malaysia
- Shanghai
- Taiwan



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CHEMISTRY FESTIVALS - 2015

Abuja Nigeria 2015



250

Szeged, Hungary 2015



1,000

Abuja, Nigeria
 Querétaro, Mexico
 Bogotá, Colombia
 Santiago, Chile
 Szeged, Hungary
 Penang, Malaysia
 Shanghai, China
 Bronx, USA

Bogotá, Colombia 2015



600



6,000

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CHEMISTRY FESTIVALS - 2016

Pachuca, Mexico 2016



435

Lima, Peru 2016



1,000



800

Penang, Malaysia 2016

Dalian, China

Pachuca, Mexico

Lima, Peru

Penang, Malaysia

Tianjin, China

Yunlin County, Taiwan

Panama City, Panama

Lagos, Nigeria



800

Dalian, China 2016

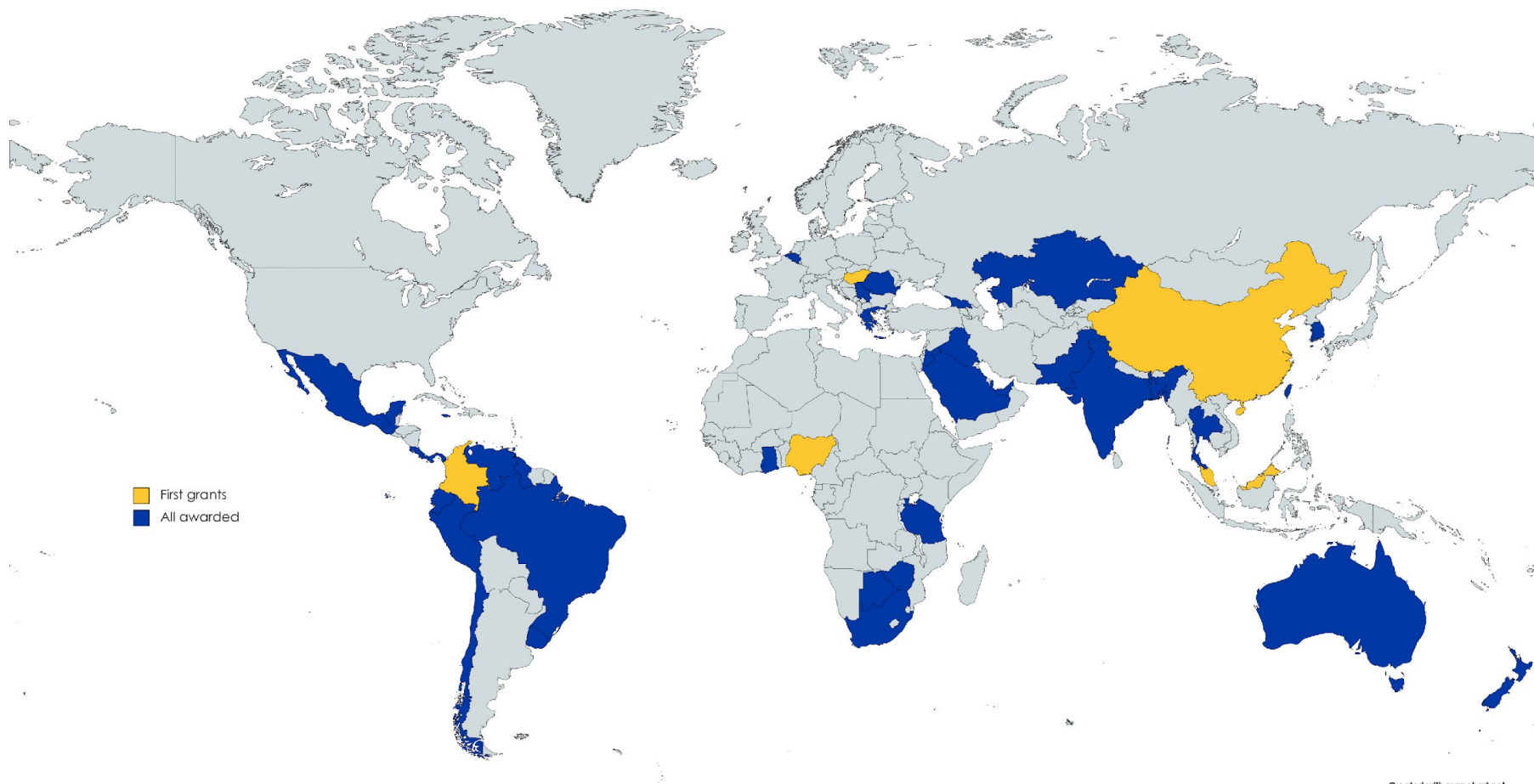


500

Lagos, Nigeria 2016

8 New Festivals
>218 Volunteers
>7,230 Kids!

Globalization of the Chemistry Festivals



Created with mapchart.net



Festival Training Institute



FESTIVAL TRAINING INSTITUTES BACKGROUND



- Designed to expand Chemistry Festival
- Invite delegations of 2, nominated by Chapter or Allied Society leadership, to participate in 2-3 days of training.
- Material developed by Ingrid Montes, Trish Kostiuik, and Lily Raines
- Local host plans Festival, provides culturally relevant experience, attends the FTI preceding theirs



Photo Credits: Ingrid Montes, Nadime Daire

FESTIVAL TRAINING INSTITUTES FEEDBACK

- 94% of FTI Alumni said they were **very satisfied** with their training
- 80% of FTI Alumni submitted Festival grant applications on schedule
- 100% were fully funded
- Each International Chapter/Candidate Chapter will be invited to participate, apply for funding, and host a Festival by **December, 2018**.



2020 FTI-Hosted by Jamaica





Chemistry Festival Program Key Data

Lily Raines

Sep 2022

Chemistry Festival Grants



Chemistry Festival Grants - Impact

Award Supported Events, 2015 - present	
Awardees	148
ACS Student Chapters	33
ACS Professional Chapters	56
Both	24
Other Groups/Individuals	35

Data as of 27 Sep 2022

Chemistry Festival Grants - Impact

Award Supported Events, 2015 - present	
Countries/Territories – Total Events	148
Asia	56
Latin America and the Caribbean	38
Africa	31
Europe	12
Middle East	11

Data as of 27 Sep 2022

Chemistry Festival Grants - Impact

Award Supported Events, 2015 - present

Volunteers Reported	> 3,500
Participants Reported	> 66,000



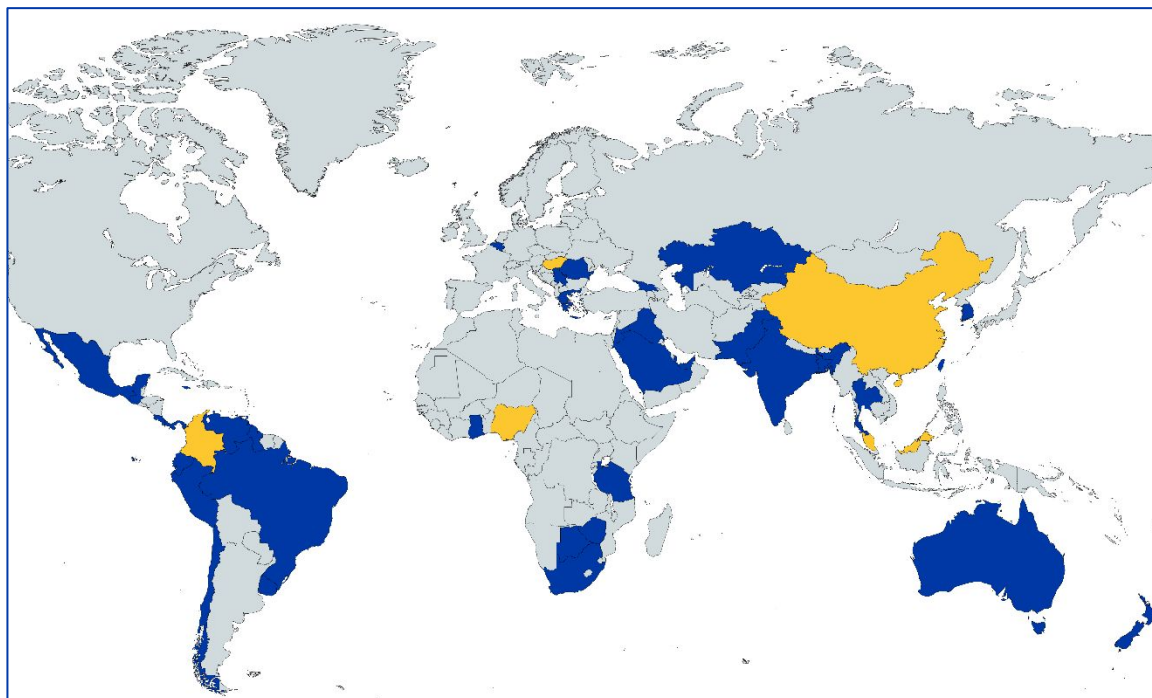
Data as of 27 Sep 2022

Chemistry Festival Grants - Impact

Award Supported Events, 2015 - present	
Survey Results Shared	~ 15,000 / 66,000 (23%) from 55 / 148 grants (37%)
% Yes – “Learn anything new?”	96%
% Yes – “Attend a similar event?”	96%
% Yes – “Share what you learned?”	92%
% Chemistry is interesting or very interesting	91%

Data as of 28 Sep 2022

*Respondents: 46% male 54% female | 24% Asia, 27% LATAM, 33% Africa, 9% Euro, 7% ME
4% <6yo, 5% 7-9 yo, 14% 10-12 yo, 32% 13-15 yo, 31% 16 – 18 yo, 15% >18 yo*



38 countries to date. Gold – 2015 awards. Blue – Awards to date. Created with www.mapchart.net

Festival training Institutes



Festival Training Institutes

In-person Events, 2016 - present	
Duration	3 – 5 days
Frequency	Approx. once annually
Participants	15 - 20
Program	<ul style="list-style-type: none"> • Festival Intro and History • Event Logistics • Funds and Fundraising • Safety • Engaging and Motivating Volunteers • Communicating Across Generations • Marketing • Evaluation • Long-term Planning
Conclusion	<ul style="list-style-type: none"> • Participant Presentations of Future Plans • Host Chemistry Festival

Festival Training Institutes

In-person Events, 2016 - present		
Year	Country	Host
2016	China	ACS Shanghai
2016	Panama	Florida State University, Panama City
2017	Malaysia	ACS Malaysia
2017	Hungary	ACS Hungary
2018	United Arab Emirates	American University of Sharjah SC
2019	Peru	ACS Peru
2022	Ghana	ACS Nigeria, University of Energy and Natural Resources SC

Festival Training Institutes

- *ACS has the organizational infrastructure and human capital to bring together members of the chemistry education community abroad. This is a unique position to make a substantial contribution in the development of chemistry around the globe. This will better happen if the efforts occur regionally.*
- *Thank you for your continued support and science outreach to developing countries that have limited funding opportunities.*
- *My experience during the FTI was very rewarding. It came in handy during the Chemistry Festival organized by my chapter. I really commend the person or group of persons who came up with the idea of FTI program.*
- *It is a really good initiative. The science must not be a party of an elite or reserved to small groups. "IT BELONGS TO US ALL." Thank you.*

Selected quotes, FTI alumni

Festival Training Institutes

In-person Events, 2016 - 2022					
Statement	Strongly Disagree	Somewhat Disagree	Neither	Somewhat Agree	Strongly Agree
The FTI properly prepared me to host an ACS Chemistry Festival.	0%	0%	0%	14%	86%
The training was a good use of my time.	0%	0%	0%	14%	86%
I shared what I learned at the FTI with others in my community.	0%	0%	0%	28%	72%
I would recommend this training to other colleagues, friends, and volunteers.	0%	0%	0%	17%	83%

Data as of 28 Sep 2022, n = 29

Festival Training Institutes

In-person Events, 2016 - 2022					
Statement	Strongly Disagree	Somewhat Disagree	Neither	Somewhat Agree	Strongly Agree
I used the safety practices taught during the FTI in all of my outreach events.	0%	0%	3%	21%	76%
I have worked with my ACS International Chapter to host the Festival and/or other outreach activities.	10%	3%	10%	21%	55%
I have worked with ACS International Student Chapter(s) to host the Festival and/or other outreach activities.	14%	10%	14%	17%	45%
My International Chapter/Group has a plan for who will lead the Festival and/or other outreach activities after me.	7%	7%	21%	24%	41%

Data as of 28 Sep 2022, n = 29

Festival Training Institutes

In-person Events, 2016 - 2022					
Statement	Strongly Disagree	Somewhat Disagree	Neither	Somewhat Agree	Strongly Agree
If I were no longer able to volunteer today, I am confident my International Chapter/Group would continue our volunteer work.	3%	0%	14%	24%	59%
I have stayed in contact with my fellow FTI participants.	3%	3%	21%	34%	38%

Data as of 28 Sep 2022, n = 29

Festival Training Institutes

In-person Events, 2016 - 2022					
Statement	Strongly Disagree	Somewhat Disagree	Neither	Somewhat Agree	Strongly Agree
3000 USD is too small of a grant award.	10%	34%	7%	24%	24%
3000 USD is a large enough grant award to support my outreach activities.	7%	21%	21%	41%	10%
3000 USD is too large of a grant award.	48%	41%	7%	0%	3%

Data as of 28 Sep 2022, n = 29

Festival Training Institutes

In-person Events, 2016 - 2022					
Statement	Strongly Disagree	Somewhat Disagree	Neither	Somewhat Agree	Strongly Agree
I would be interested in hosting an FTI/another FTI for countries and regions near my home.	0%	7%	14%	10%	69%
I would like to participate in other ACS workshops about science outreach and informal education.	0%	0%	3%	14%	83%
I would participate in more ACS activities if more events were held virtually.	0%	3%	38%	14%	45%
I would participate in more ACS activities if more in-person events were held in my region.	0%	0%	7%	24%	69%

Data as of 28 Sep 2022, n = 29

Festival Training Institutes

In-person Events, 2016 - present					
Statement	Strongly Disagree	Somewhat Disagree	Neither	Somewhat Agree	Strongly Agree
It would be easier for me to participate in ACS workshops if they were part of a larger congress or meeting, and not as stand-alone events.	0%	21%	41%	21%	17%
I would volunteer to translate Festival Activities into the language(s) spoken in my country.	0%	10%	14%	24%	52%
If specific support were available, I would consider organizing an ACS Chemistry Festival targeting refugees and/or internally displaced persons in my country.	0%	0%	14%	21%	66%
I can afford (through my university etc.) to travel to the U.S. for at least one ACS National Meeting each year	31%	28%	24%	3%	14%

Data as of 28 Sep 2022, n = 29

Final Reflection

Engage and sparks collaboration/ Syner amongst

- international members
- international chapters
- international student chapters
- sister societies

Is an ongoing event in many countries



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Acknowledgements

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Office of Science
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Dr. Lily Raines

Coordinators
Volunteers
You!



