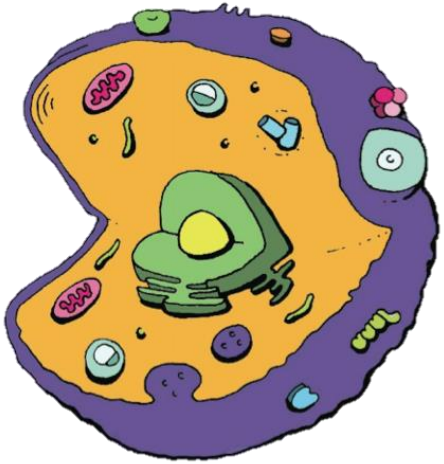


Cell EXPLORERS

Delivering STEM outreach and engagement in schools

NUI Galway
OÉ Gaillimh
School of Natural Sciences

Science Foundation Ireland
sfi
For what's next

Inform, Inspire, Involve

cell EXPLORERS

@cellexplorers

www.cellexplorers.com

Cell EXPLORERS
Public engagement objectives

1. To promote modern biology, biomedical sciences and research in both
2. To combat stereotypical images of scientists
3. To change perceptions of science and inform on scientific careers
4. To contribute to addressing the national shortfall of science graduates in Ireland

Specific activity setup

Hands-on: every child does each activity

Small demonstrator to pupil ratios

Real science role models

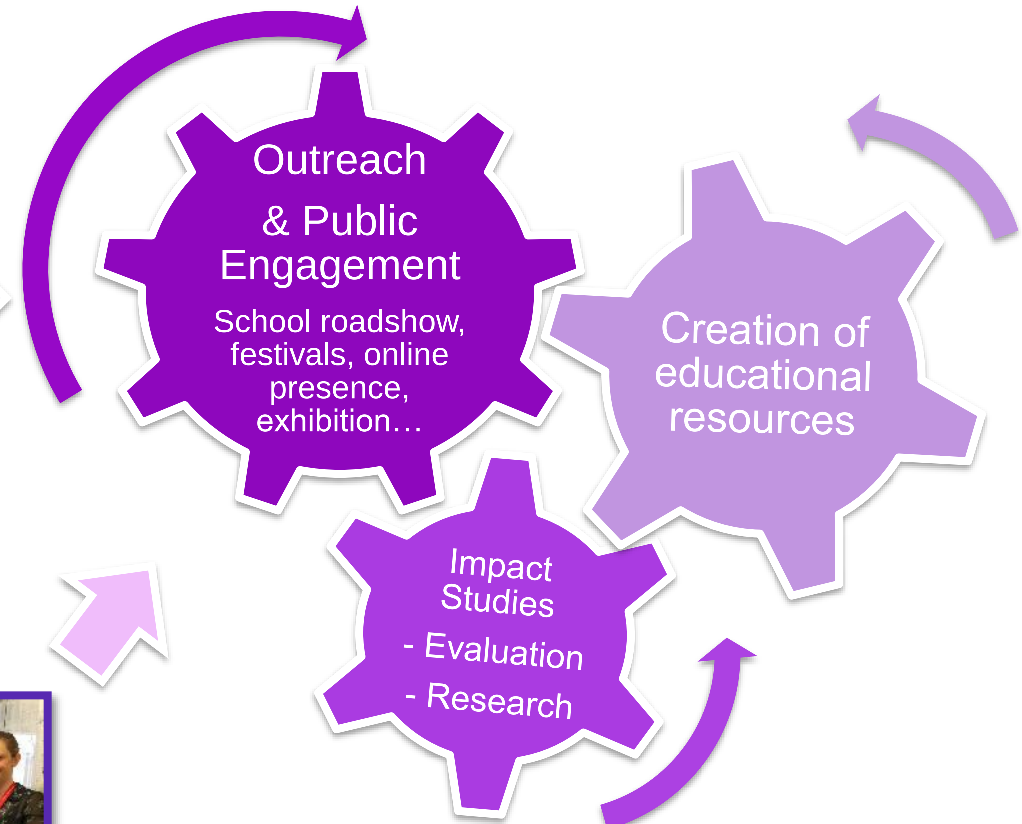
Real science: provide an authentic scientific experience

Involve the whole family

Remain informal, engaging & fun

Cell EXPLORERS working model

Volunteers
Students / Staff



Project students
Curriculum-based

Benefits
- Society
- University
- Students

Multiple benefits of the programme

Community & Society
(Public, schools, civic society, industry, workforce)

Engage local community

HEI mission

Train workforce & STEM advocates

The programme is expanding…

	2012	2018
	1 team	10 teams
Team members	10	274
Direct Reach	30	6316

xplore
Innovation through student & staff collaboration

Science Foundation Ireland sfi For what's next

NUI Galway OÉ Gaillimh

Galway University FOUNDATION

National team network

13 teams based in 3rd level higher education institutions

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Team Locations — New teams 2019

Reach in 2015-16 — Reach added in 2017

1 NUI Galway OÉ Gaillimh School of Natural Sciences

2 AIT Connect & Discover

3 Dundalk Institute of Technology

4 Institute of Technology Tralee

5 University of Limerick

6 Institute of Technology Carlow

7 lyit Letterkenny Institute of Technology

cell EXPLORERS

8 Maynooth University National University of Ireland Maynooth

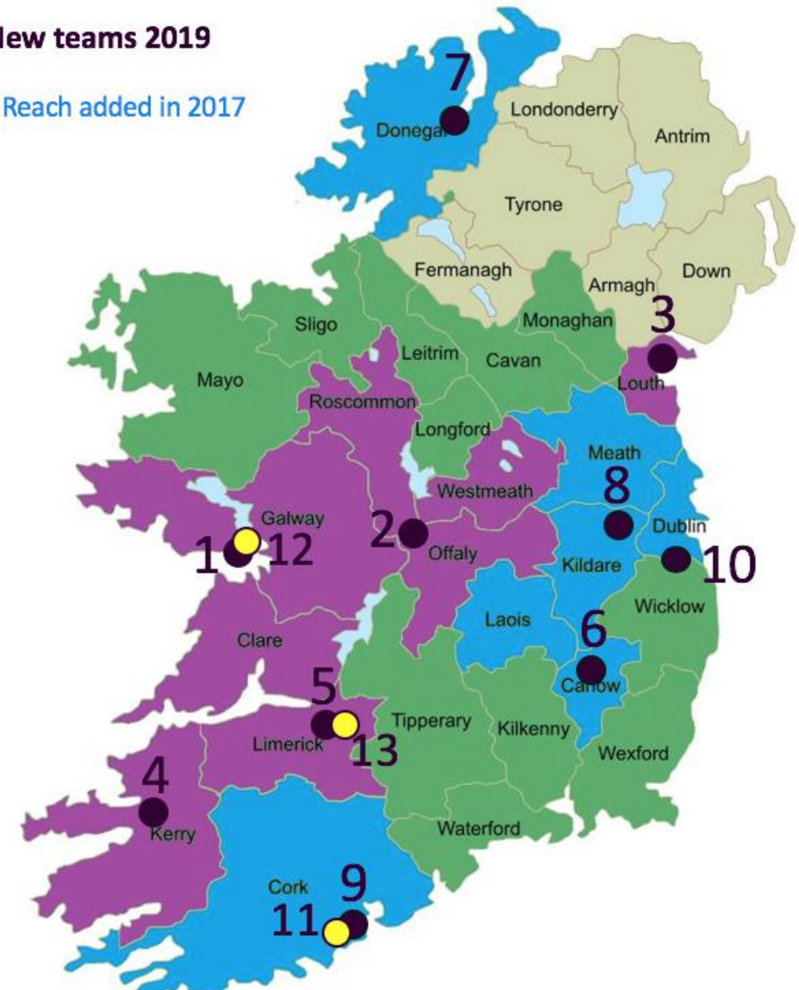
9 UCC

10 UCD Dublin

11 CIT Cork Institute of Technology

12 GMIT

13 LIT



Specific Objective 1

To maintain the Cell EXPLORERS national network in all regions in Ireland

5 NEW TEAMS in 2018 = 109 active members

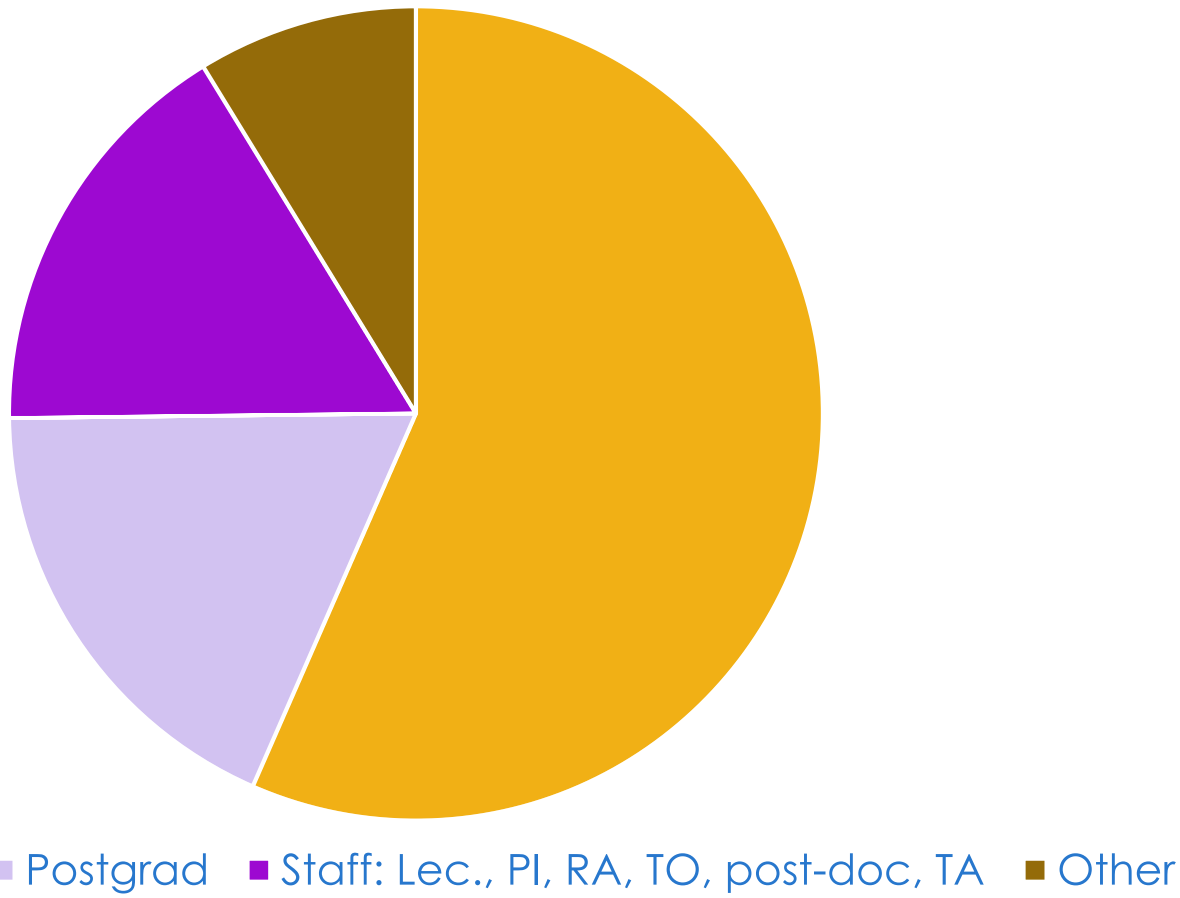
5 long-term TEAMS (one inactive) = 165 active members

Change of coordinators in 2019

NETWORK 2018 = 9 active teams with 274 active members

Specific Objective 1

To maintain the Cell EXPLORERS national network in all regions in Ireland



Specific Objective 2

To run the Fantastic DNA roadshow in schools, within teams' geographical areas

Road Show:

9 Teams (⇩ 10%)

190 Volunteers (⇩6.4%)

64 Schools (⇧8.5%)

99 Classes (⇩9.4%)

2457 Children (⇩9.1%) 1912 in their classroom

99 Teachers (⇩11.1%)

Reach counties of low levels of STEM intervention and schools in disadvantaged area

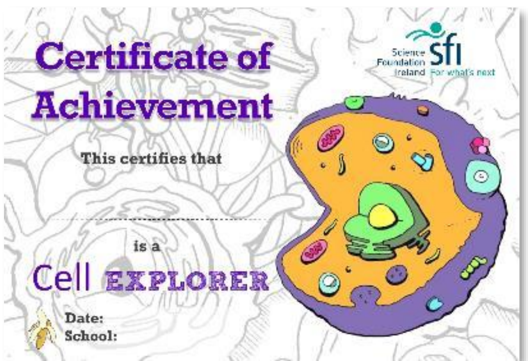
13 counties, including 9 having low levels of STEM intervention

20 DEIS schools (32%)

37% of school in rural area

Feedback from 1351 Children, 58 Teachers

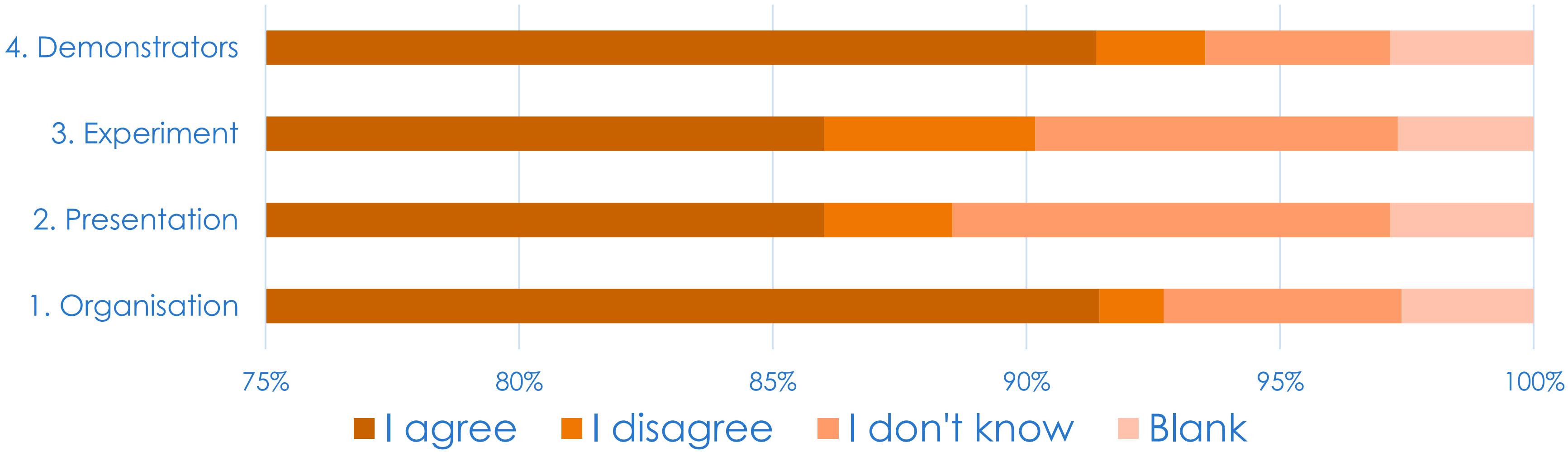
The 'Fantastic DNA' session



- **Public targeted:** 9-14 years old
  - Perception of science
  - Decide if science is for them
  - Consider science as a career
- **Break stereotypes about scientists:** Science role models in the classroom
- **Modern biology**: extra curricular, an introduction to DNA
- **Engagement**: real experiment, hands on, small group teaching
- **Change perceptions of science**: talk about the nature of science and careers

The session is well adapted to children

"What did you think of the CE session?" (n=1309)



What did you like best about Cell EXPLORERS session?

1 **Extracting DNA** 25%

2 **Squashing banana** 15%

3 **Fishing the DNA** 12.5%

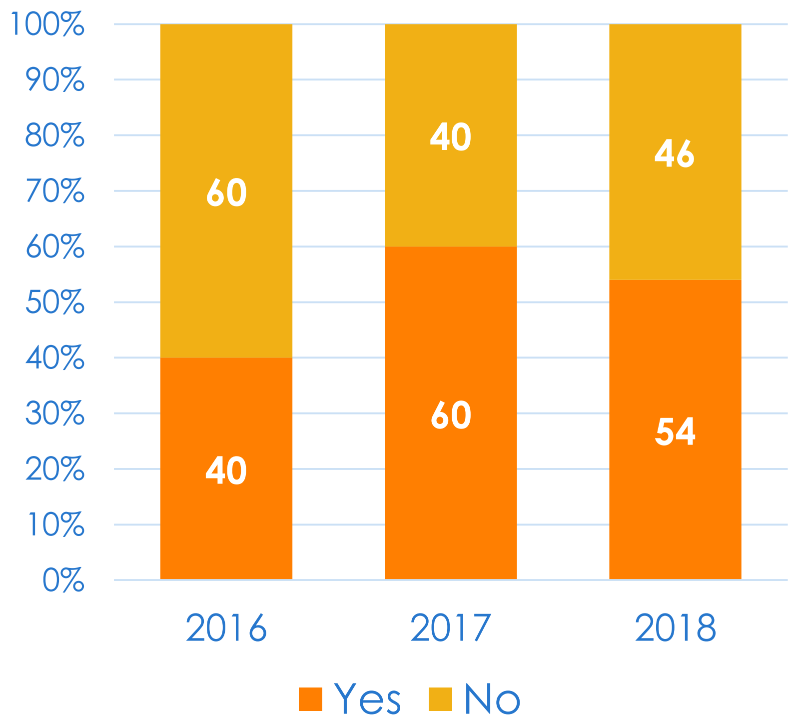
"It was fun mixing all the ingredients"

"The best part was that we got to bring the banana DNA home"

"The demonstrator was REALLY nice"

Meeting with a scientist is a positive experience for children

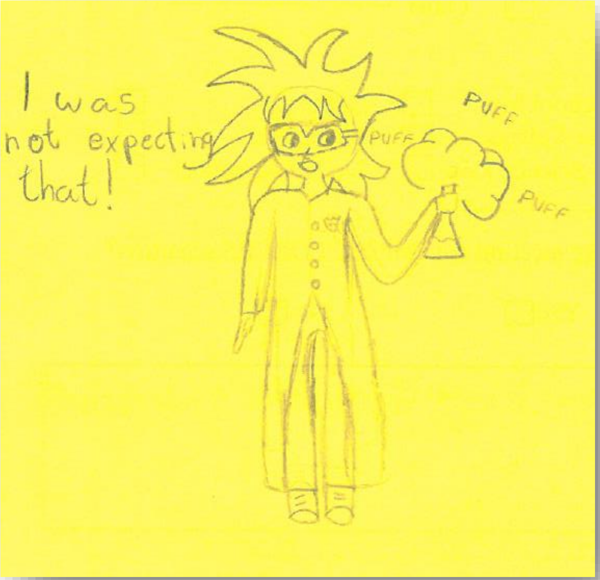
"Had you met a scientist before the Cell EXPLORERS?"



98% of children liked meeting the Cell EXPLORERS scientists

(95% in 2017)

Meeting with a scientist is a positive experience for children



"I would like to be a scientist one day"

"I never met a scientist"

"Instead of just telling us they let us do things"

"It was really interesting to find out things we didn't know"

"It was nice to do an experiment with real scientist"

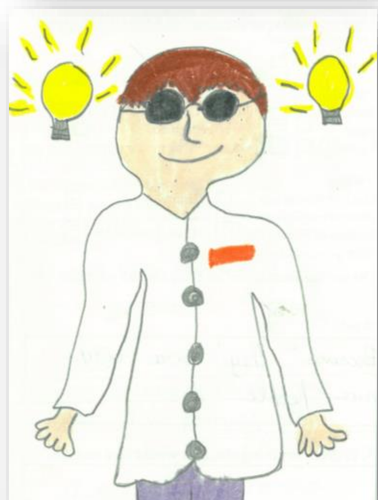
"When they were speaking I understood everything"

"They were friendly and helpful"

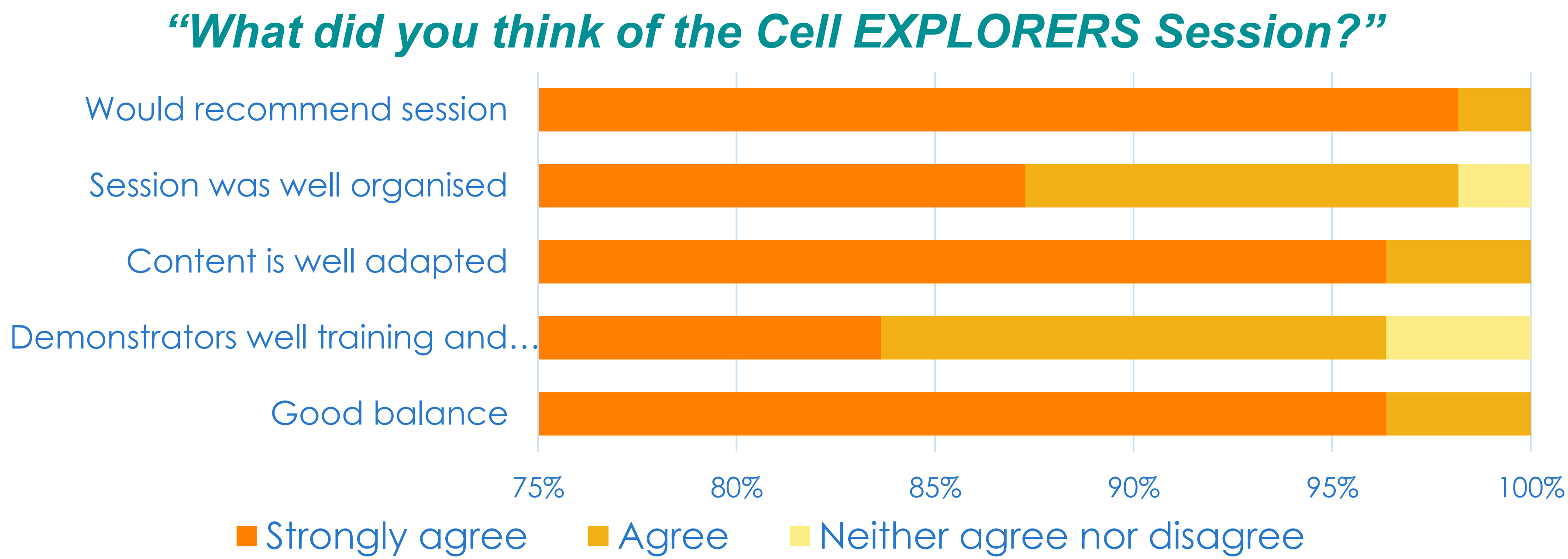
"If you don't understand something they were ready to help with a nice attitude"

"It was amazing and encouraged me to be a vet, and that is not that bad"

Evaluation of impact
Draw a Scientist – ‘DAST’



Teachers like Fantastic DNA



Top two beneficial aspects of the visit, as ranked by teachers:

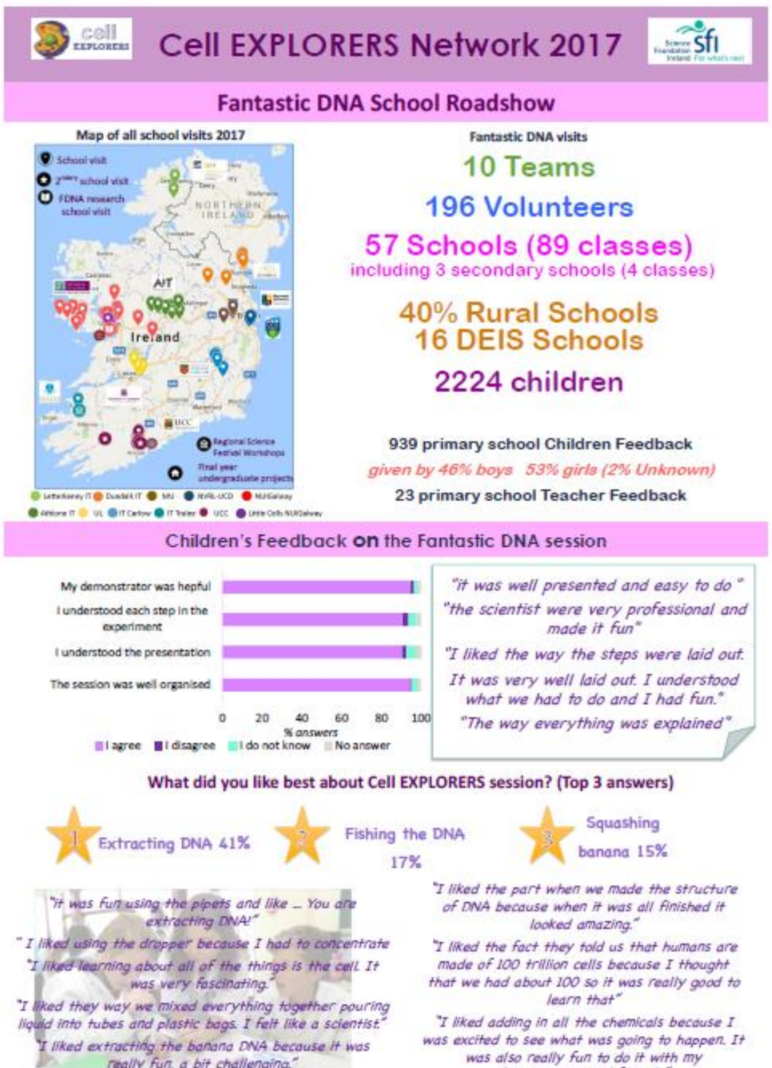
1. The opportunity for each child to do an experiment
2. Interactions between the children and science demonstrators

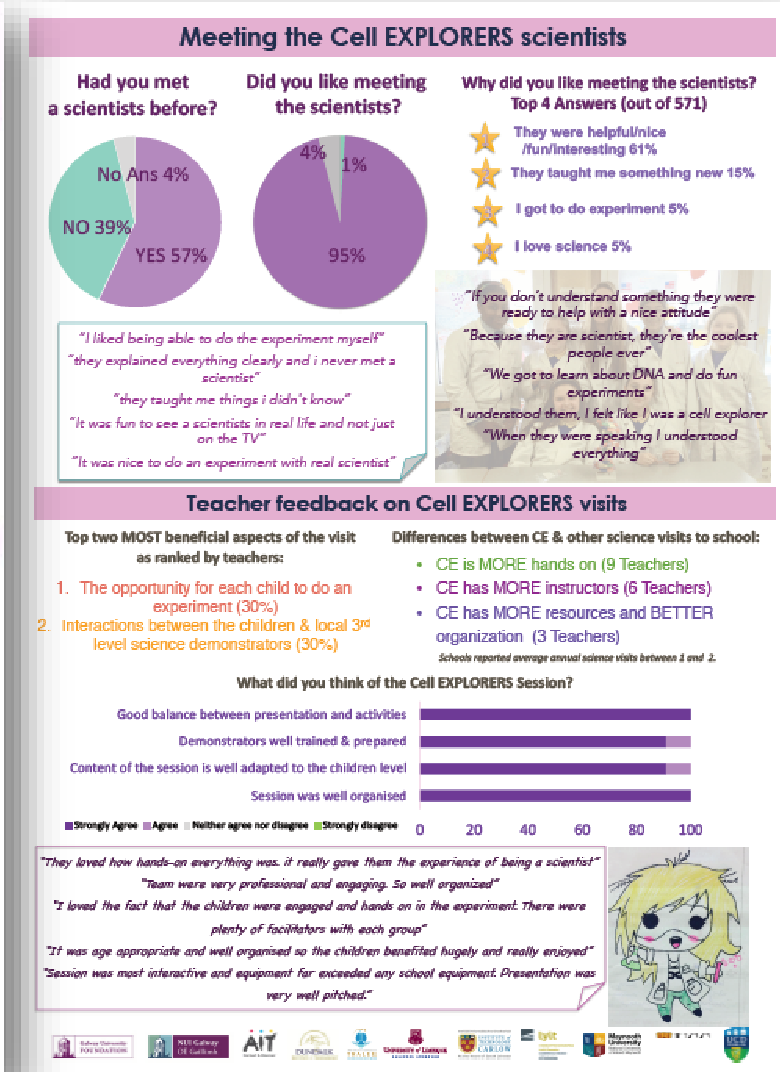
"They loved how hands-on everything was. it really gave them the experience of being a scientist"

"Team were very professional and engaging. So well organized"

"It was age appropriate & well organised so the children benefited hugely and really enjoyed"

Evaluation of impact





Volunteers - favourite aspects & gain

2017
N=47

Favourite aspect
n=45

Working with children & bringing excitement of science to the public

Top 5 reported skills gained

1. **Working with children 84%**
2. **Communication skills 76%**
3. **Teaching skills 76%**
4. **Working in a team 71%**
5. **Speaking in groups 64%**

Transferable skills

'I'm so much more confident in ***my self-esteem*** *and I have* ***benefited hugely from it!'***

'I have developed confidence and communication skills that I think will be ***very beneficial in the workplace****.'*

'It is a really ***good insight as to the type of work I might possibly want to do*** *going forward when I finish my degree.'*

2016 volunteers

89% **think their experience will help them in their studies/career**

91% **would volunteer again with Cell EXPLORERS in the future**

98% **would recommend to a friend**

Our Research

Conclusion:

Success achieved in using the combination of volunteering and curricular involvement of students to deliver public engagement in science

Future work:

- Volunteering: *How do we adapt it to ensure sustainability for HEIs?*
- Curricular component: *Develop a module and more curricular solutions*

Developing research in specific directions:

1. Impact on children's self-efficacy in science and their perception of science and scientists (Sarah Carroll, PhD candidate)
2. Volunteer team members' motivation for participation
3. Institutional values, support and commitment to outreach and public engagement (post-doctoral researcher)

Stay in touch!

https://www.cellexplorers.com/teacherzone

- If you use our resources, please let us know;
  - pictures
  - summary
  - link to class blog
  - modifications

Contact us with queries:

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Thank you!

- Funders
- Current and past team members and coordinators
- All children & teachers
- All partners:
  - ✓ Research centres
  - ✓ Outreach collaborators
  - ✓ Biochemistry, Microbiology
  - ✓ College of Science
  - ✓ School of Education
  - ✓ CELT
  - ✓ CKI
  - ✓ Schools & Teachers