

# Talent is universal, opportunity not!

## How Amgen Biotech Experience (ABE) program innovates teaching and learning

### Biotechnology at school



*Anna Pascucci*  
ABE Italy director

Educational Session IBO 2019  
July 20<sup>th</sup>, 2019  
Szeged, Hungary

**AMGEN**® Biotech Experience  
Scientific Discovery for the Classroom  
Italy

# OUTLINE



**Vision**



**Background**



**ABE: Strategies & Results**

# OUTLINE



## Vision







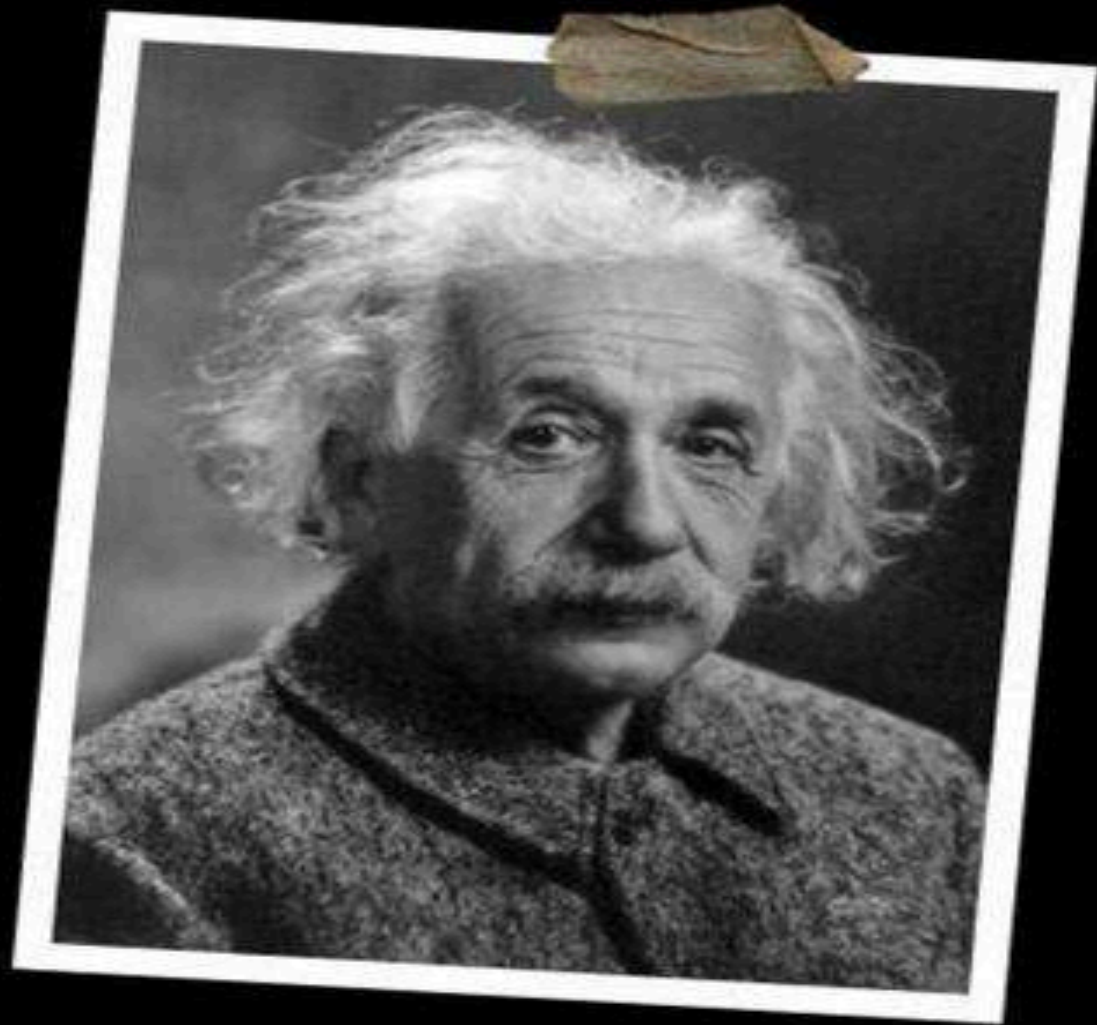
Education.... Is not a puzzled expression of energy



Jakson Pollock, Autumn Rhythm (Number 30), 1950



**"Education is not  
the learning of  
facts, but the  
training of the mind  
to think."  
-Albert Einstein**



“Successful changes in Science Education **require** a **coherent set of ideas about change, deep understanding** of the **needs, vision** of the **keys challenges, competences to design complex architecture** and to set up and carry out a **coherent set of actions**”.



**Science 19 Apr 2013:  
Vol. 340, Issue 6130**

***Education .... needs more than a good idea!***

# The value of the human interface

*“What emerges from a review of change efforts, both those successful and unsuccessful, is the presence or absence respectively of **person(s) who assist others in the adoption and implementation of plans for change.**”*

*This **“human interface”** was revealed as a significant factor in evaluations of early knowledge dissemination and utilization programs.*

*Persons who could link innovations and users, and provide implementation help and assistance, were noted in the change literature **as a necessary condition for success.**” (Hord, S. M. 1992)*



# OUTLINE



## Background



A. G. Khan '11





# THE COMMITMENT OF ANISN

## ASSOCIAZIONE NAZIONALE INSEGNANTI DI SCIENZE NATURALI

- Legal entity, non profit Association active in Science Education **since 1979**
- Association for **teachers training** and **students' enhancement of excellence** recognized by the Ministry of Education
- **26 Sections** in all Italian regions.
- **2000 members:** science teachers, scientists, researchers in science education
- **Local, National and International projects**
- Specific **working groups** (Teachers, trainers, scientists) for different activities.
- National and International Biology and Earth Science Olympiad





# ANISN & IBSE (Inquiry Based Science Education) National and European projects ( since 10 years)

12 well established  
IBSE reference centers  
12 twin partners

**FIBONACCI**  
2009- 2013

**SUSTAIN**  
2013- 2016

**SID**  
since 2011- 2012

**AMGEN TEACH**  
2014- 2019

**SCHOOL FOR INQUIRY**  
2017- 2019

**LINKS**  
2016 - 2019





# Reference centers for CPD

**10 IBSE – ANISN CENTERS** since 2009



Teachers involved each year

- 70 – 150 teachers
- 50 – 100 teachers
- 30 – 70 teachers
- 20 – 50 teachers

9 regions

750 schools

1.600 teachers

100.000 students (4 -16 ys)

70 trainers

12 regional coordinators

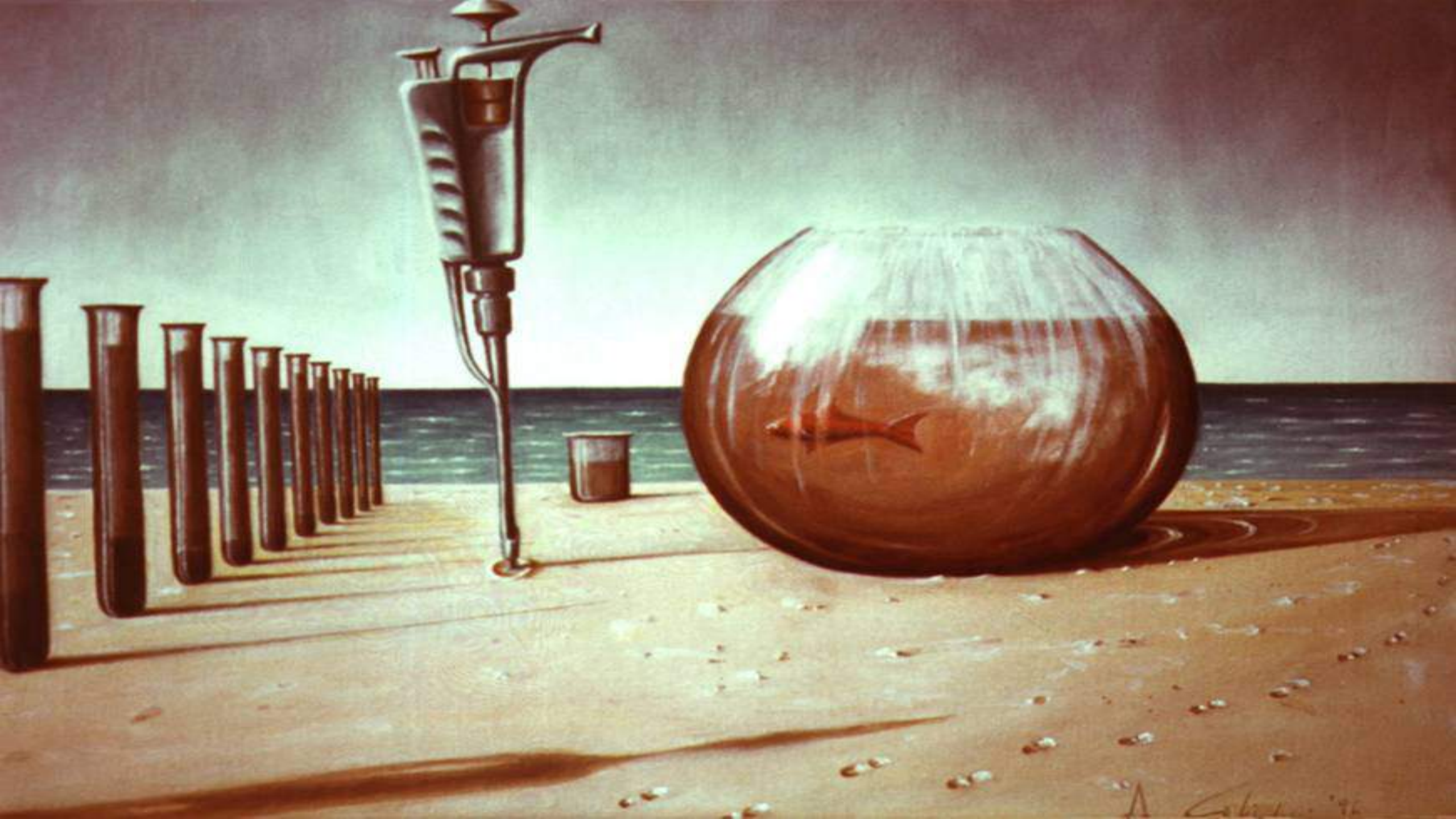


# OUTLINE



## ABE: Strategies & Results





A. Bierstadt '16

WHAT IS ABE?

WHERE WE ARE

IMPACT & STORIES

GET INVOLVED

BLOG

**The Amgen Biotech Experience (ABE) is an innovative science education program that empowers teachers to bring biotechnology to their classrooms. ABE provides teacher professional development, curriculum materials, and research-grade equipment and supplies to secondary schools.**



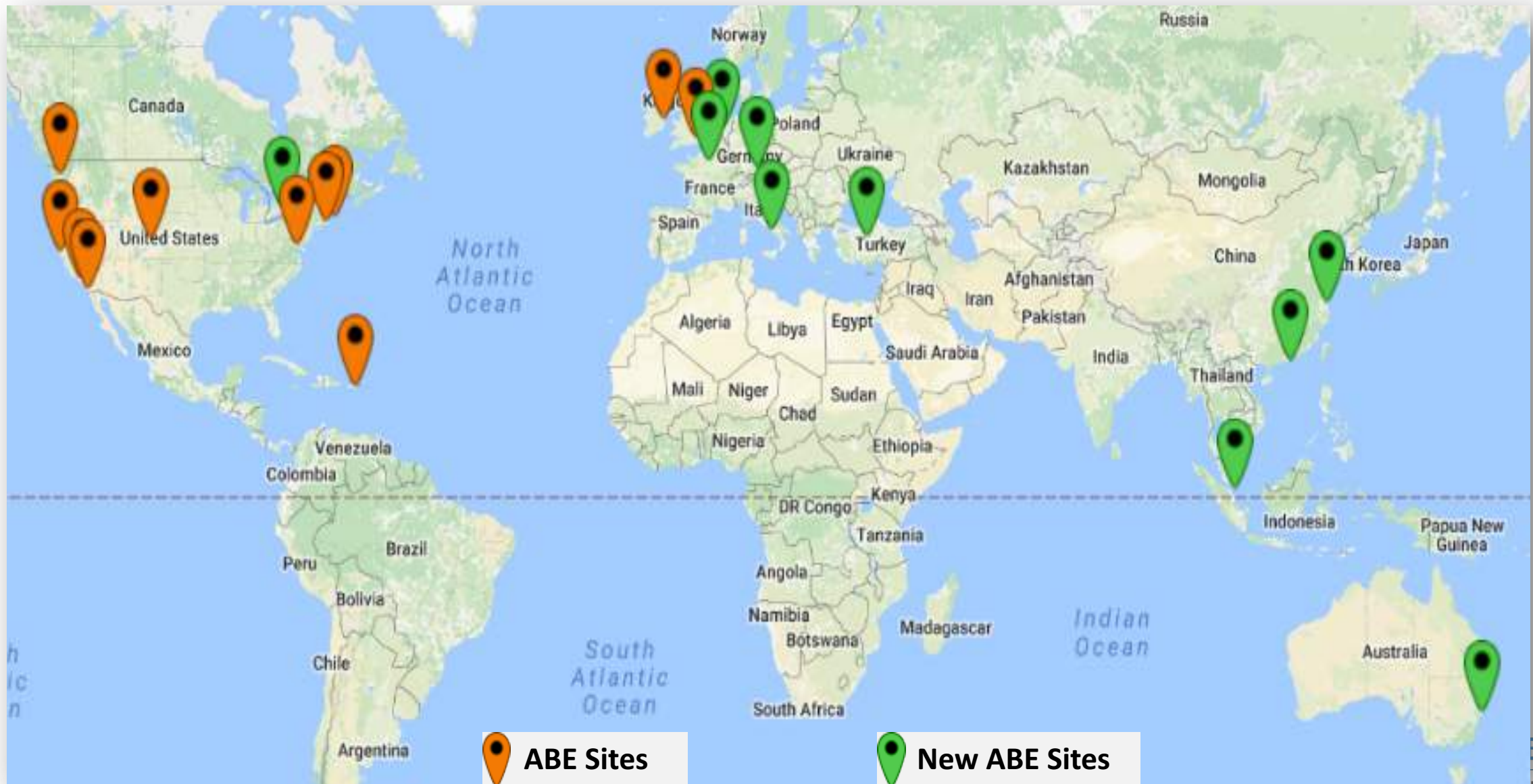
# ABE : KEY FACTS

- ABE is an **International** Educational program developed since 30 years in USA through a unique collaboration of **Amgen scientists and science educators**. It is supported by **AMGEN Foundation** and coordinated by **Education Development Center (EDC)**.
- ABE provides **free of charge** teacher professional development, lab curriculum and research-grade equipment.
- Independent and rigorous evaluation data from WestEd found that students exposed to ABE have **significant and substantial learning** in biotechnology and increased **interest and confidence in doing science**.
- ABE is featured in Change the Equation's STEMWorks, a third-party verified list of **high-quality education programs**.



# ABE SITES

# AMGEN BIOTECH EXPERIENCE PROGRAM



 **ABE Sites**

 **New ABE Sites**

[Experience](#)

# ABE SITES : PARTNERS INSTITUTIONS



THE CHINESE UNIVERSITY OF HONG KONG

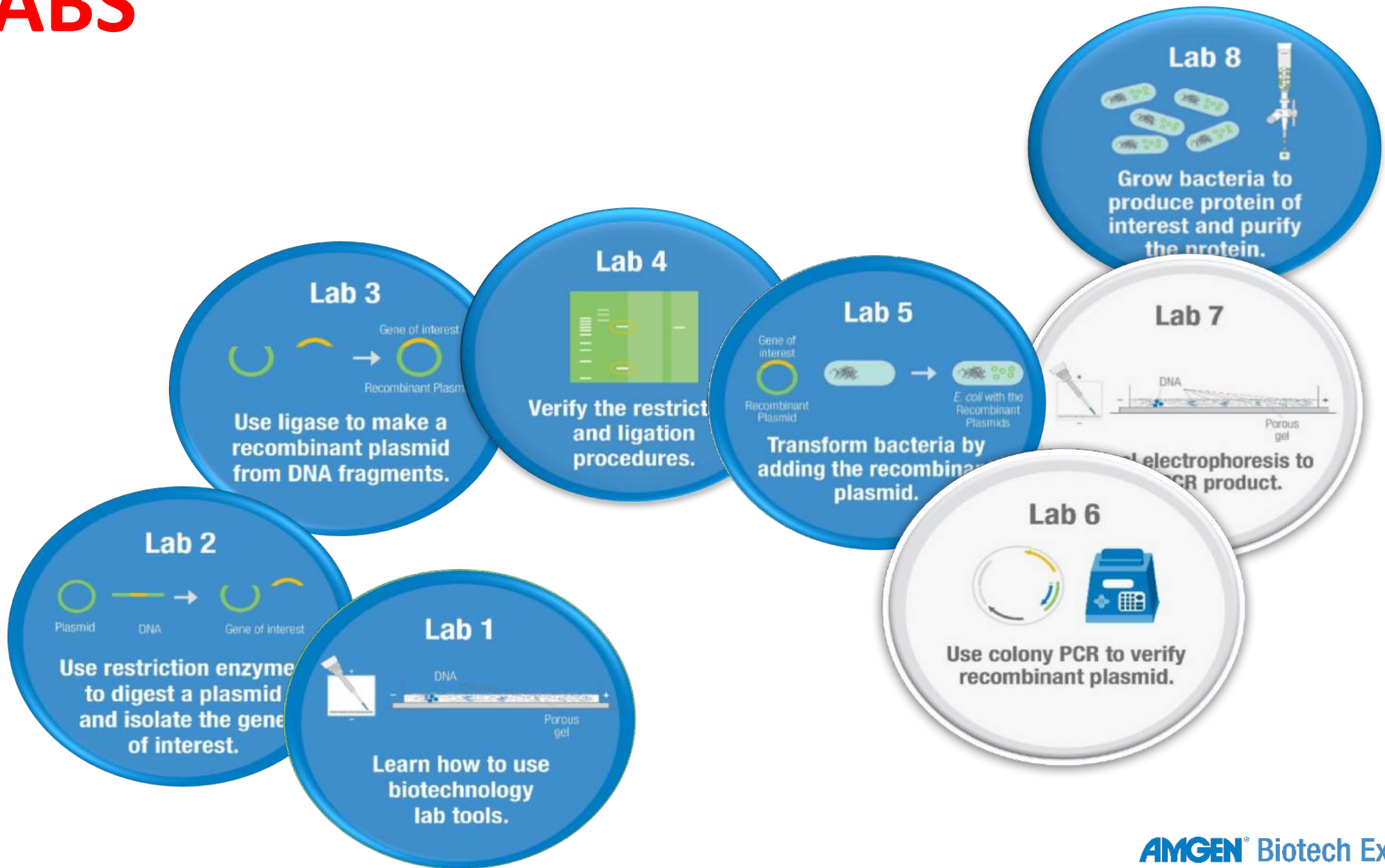


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Italy

# ABE LABS





# IMPACT



Students made a significant and substantial 20% gain in biotech learning



Over 80% of teachers reported greater interest, knowledge, and skills from their ABE training.



U.S. ABE schools that are serving low SES students.

The AMGEN Foundation's total past and current commitment to ABE now reaches more than **\$25 million.**

# ABE SITE ITALY

## AMGEN® Biotech Experience

Scientific Discovery for the Classroom  
Italy



- Cooperation between **ANISN** and **University of Naples**
- Cooperation with **ABE site Massachusetts at Harvard University**
- Cooperation with **ABE site France at Ecole Normale Supérieure**

# GOALS

ABE program aims to develop **mind habit** through a deep understanding of Biotechnology/ Molecular Biology issues with up to date **labs activities and inquiry approach.**

“Teaching and learning outside boxes”



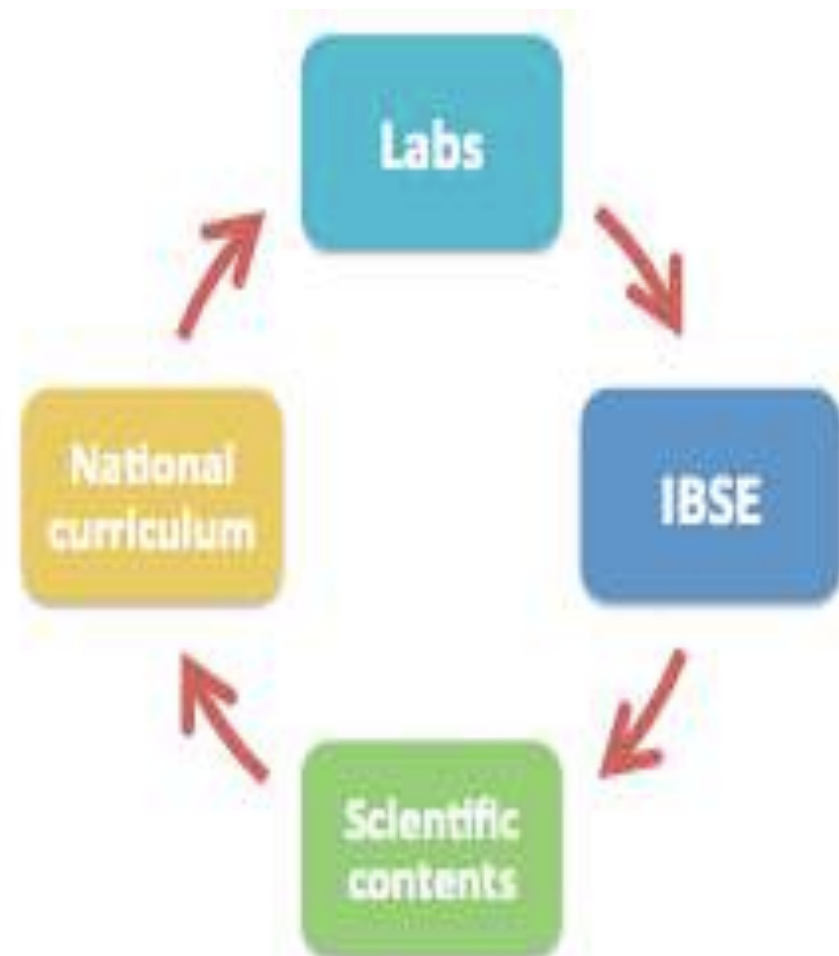


# *PROCESSES IN LEARNING ENVIRONMENTS : PAINTING' TECHNIQUES*



- **Strategies**
  - **Choices**
  - **Support**
  - **Observation**
  - **Reporting**
- 

# STRATEGIES: DESIGN OF THE TRAINING COURSES



## Colors of the PDi sessions



## ABE TRAINING COURSE...TRAINEES' COMMENTS

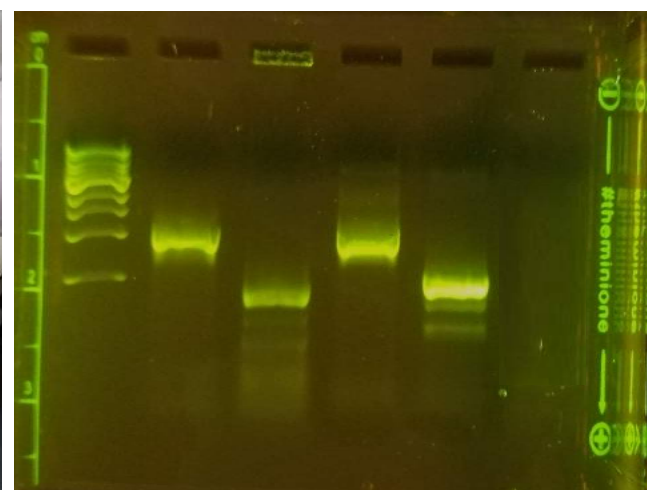
*“Knowledge of contents and inquiry methodology find their paces in ABE: methods and contents flow through swinging doors, and this synergy become astonishing and breathtaking for secondary school teachers.*

*During this experience I filled my teacher suitcase with science tools and motivation, enthusiasm and expertise, eager to pass them to my students ”*

*(Luigina Renzi, Liceo scientifico Sansi, Spoleto (PG))*

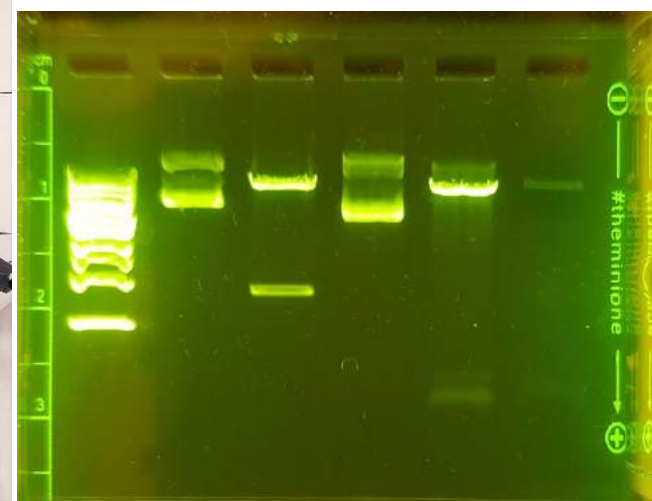


# CHOICES: THE MiniOne systems : A PILLAR FOR THE TEACHERS





# CHOICES: THE MiniOne : A PILLAR FOR THE STUDENTS



# CHOICES: ACTORS IN PLACES: EVOLVING COMMUNITIES

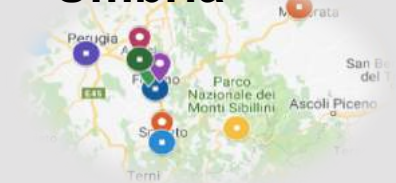


**ABE schools**

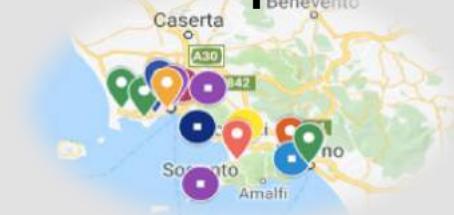
2018 - 2019

- 8 regions : 4 south (Naples) 4 center (Foligno)
- 36 schools: 18 veteran + 18 novice  
15 center (6 veteran + 9 novice)  
21 south (12 veteran + 9 novice)
- 60 Teachers: 24 veteran + 36 novice  
25 center (9 veteran + 16 novice)  
35 south (15 veteran + 20 novice)

**Umbria**

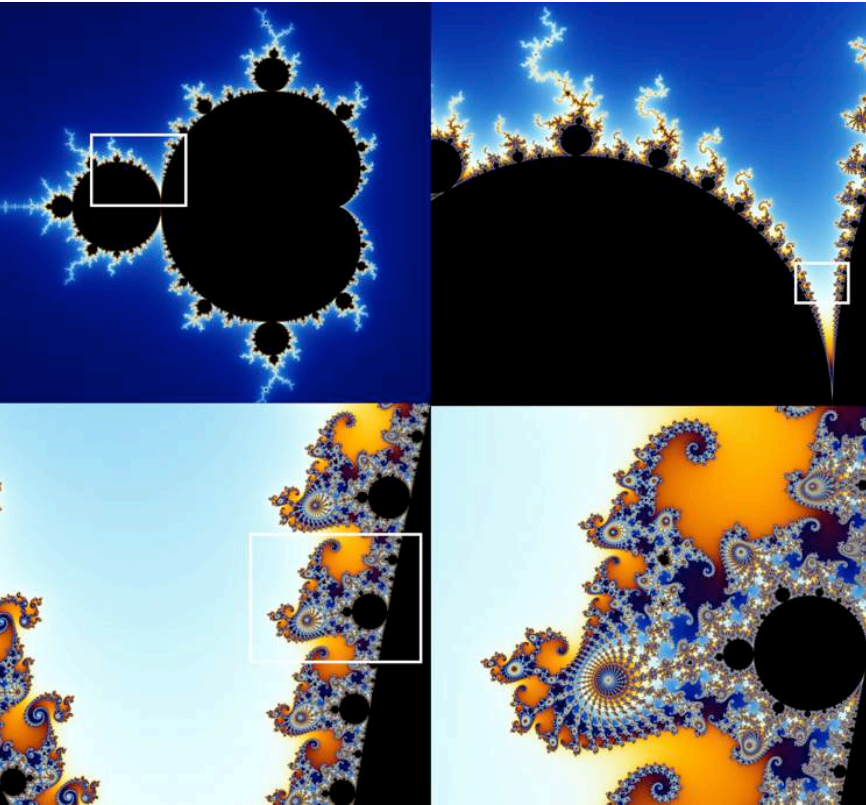


**Campania**





# MULTILEVEL SUPPORT & SHARING: CONNECTED COMMUNITIES



Communities'  
dimensions

**School level:** by ABE colleagues and headmaster

**Local level:** by ABE reference teachers (veteran) of local teachers/schools network

**National level:** by ABE staff; Google drive space; ABE site Italy website

# IMPACT: TEACHERS - SCHOOLS - STUDENTS

Year	Teachers trained (tt)	Schools	Students
2016 - 2017	18	8(12tt)	150
2017 - 2018	36	21(32tt)	800
2018 - 2019	60	36(60tt)	1.400
<b>Total</b>	<b>114</b>	<b>65(104tt)</b>	<b>2.350</b>

# PROCESSES: DEVELOPING COMMUNITIES OF PRACTICES

## PAINTING' COLORS ON CANVAS: STRATEGIES IN LEARNING ENVIRONMENTS

### Privileged actors

*Teachers and schools are proud of being selected for ABE*

*→ enhance the commitment*

*Teachers and headmasters take on responsibility of the success*

*→ foster attitude towards problem solving*

**Answer to needs through challenges to face not alone**

*→ develop a cooperative attitude and system vision*



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WHAT IS ABE?

STORIES

ABOUT

CONTACTS

The Amgen Biotech Experience (ABE) is an innovative science education program that empowers teachers to bring biotechnology to their classrooms. ABE provides teacher professional development, curriculum materials, and research-grade equipment and supplies to secondary schools.

[ABOUT ABE](#)

The ABE site Italy is the result of a partnership agreement between ANISN (National Association of Natural Science Teacher) and the University of Naples Federico II and it relies on international cooperation with a consolidated American and European network of ABE sites, which have been active for decades in prestigious Universities and teacher training centers.

[ABOUT ABE SITE ITALY](#)

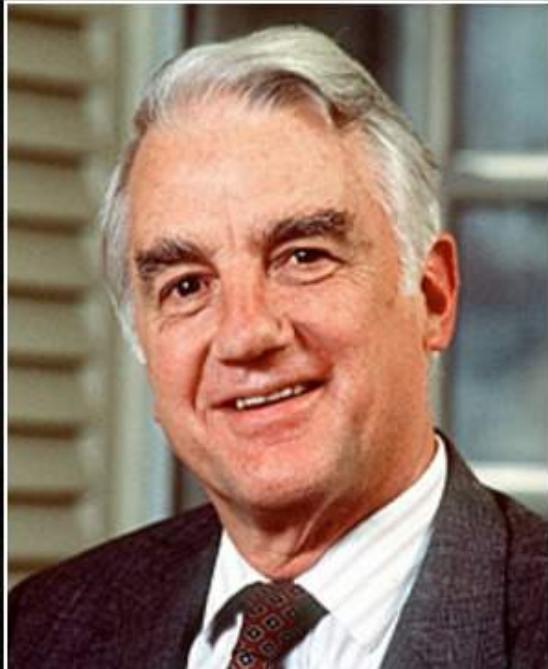


[MORE STORIES](#)

[REGISTRATION 2018-19](#)

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*“If you think education is expensive, **try ignorance.**”*

***Derek Bok***

former President, Harvard University

# THANKS FOR LISTENING !!

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