Amgen Biotech Experience

Scientific Discovery for the Classroom

ABE site Italy

Direttore: *Anna Pascucci*, ANISN – Associazione Nazionale Insegnanti di Scienze Naturali
Coordinatore: *Aldo Donizetti,* Università di Napoli Federico II

Programma Formativo della fase pilota

23 – 24 Gennaio 2017 e 7 – 8 Marzo 2017

Dipartimento di Biologia – Complesso Universitario Monte S.Angelo – Napoli

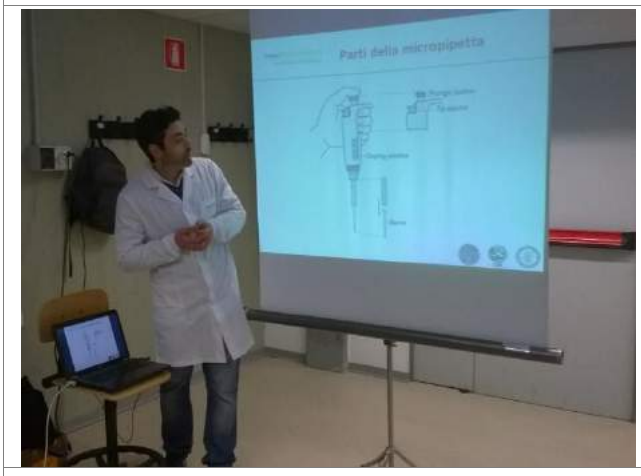
Indirizzi di saluto

L'AMGEN BIOTECH EXPERIENCE in Italia: le sfide del programma in Italia

Laboratorio ABE 1.1 e Laboratorio ABE 1.2

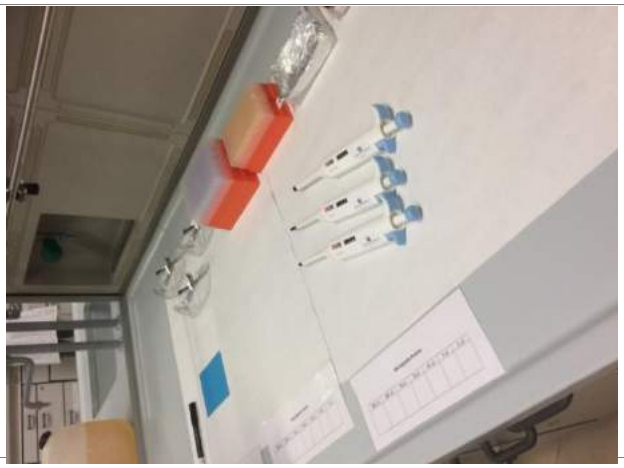
Introduzione all'uso delle micropipette e Elettroforesi su gel

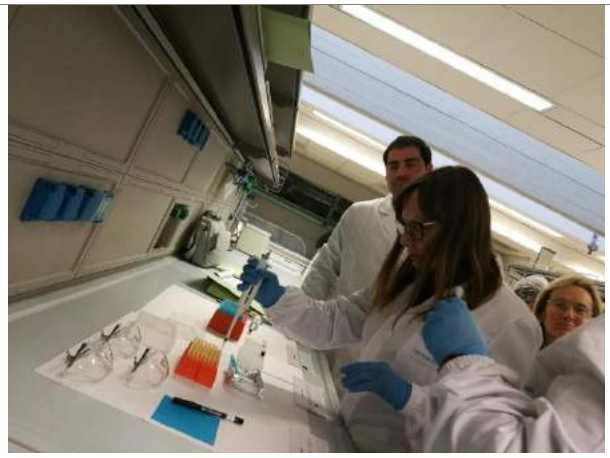
Presentazione, Attività sperimentale e discussione

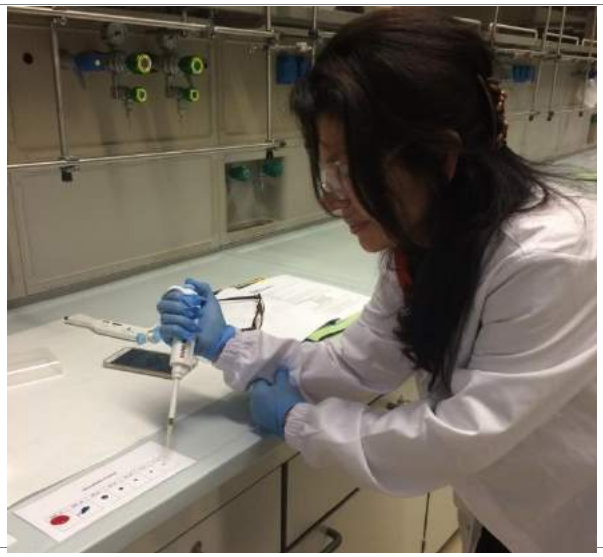


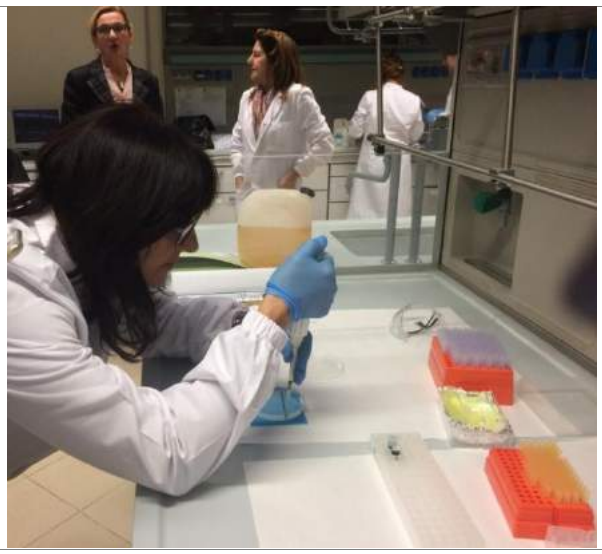

Uso della Micropipetta
"Cosa fare"

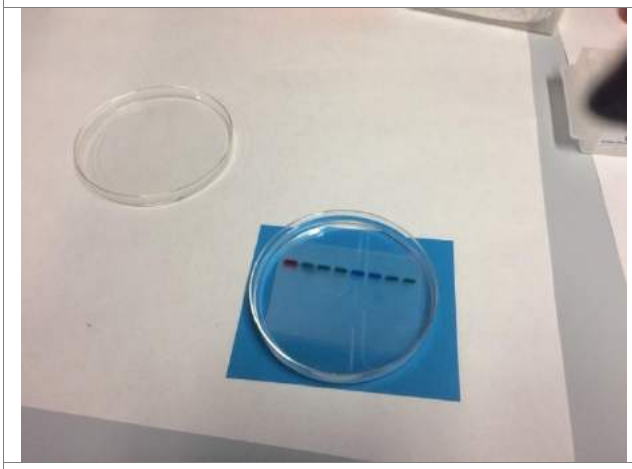

Pressione a differenti volumi

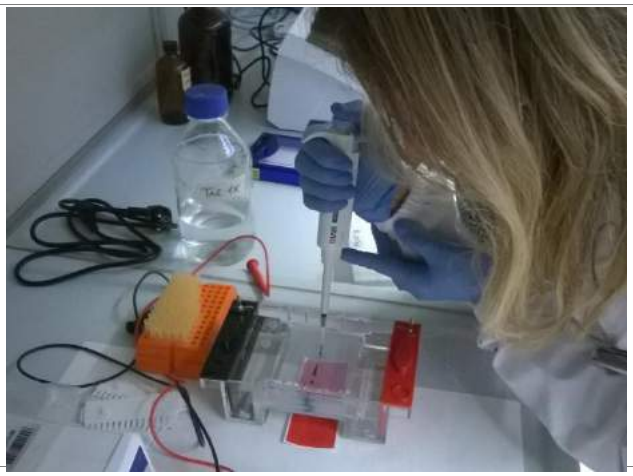


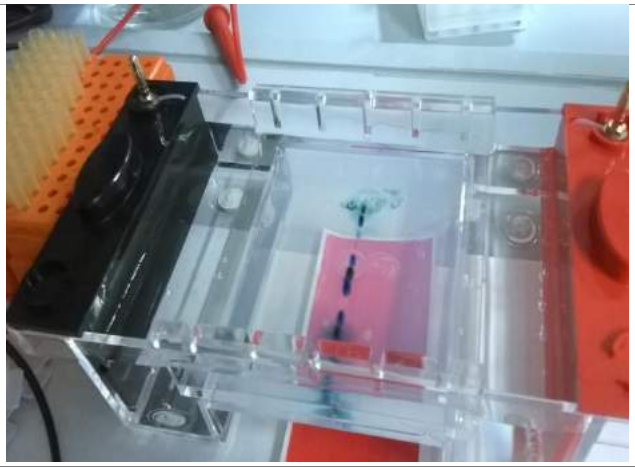


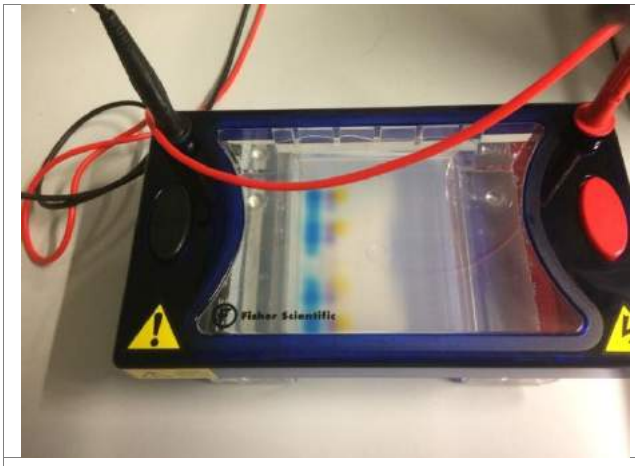








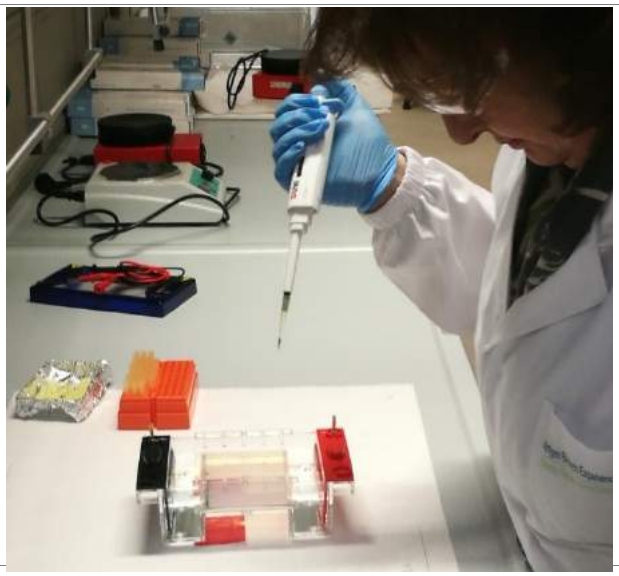


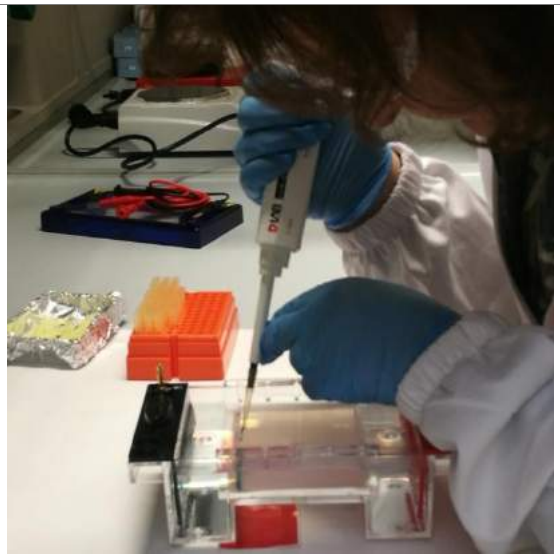


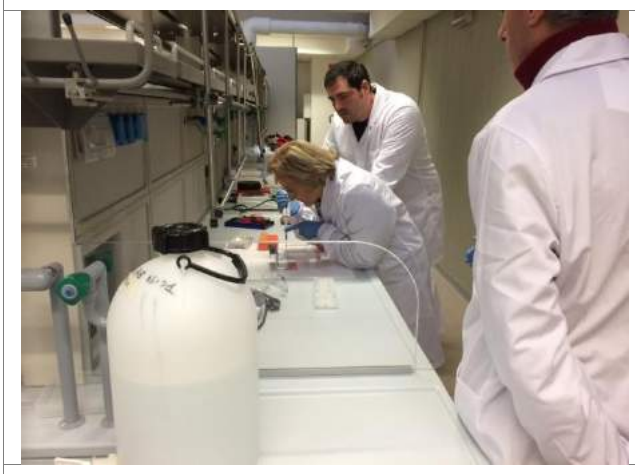
Insegnamento e apprendimento con l'Inquiry: le sfide dell'impianto metodologico

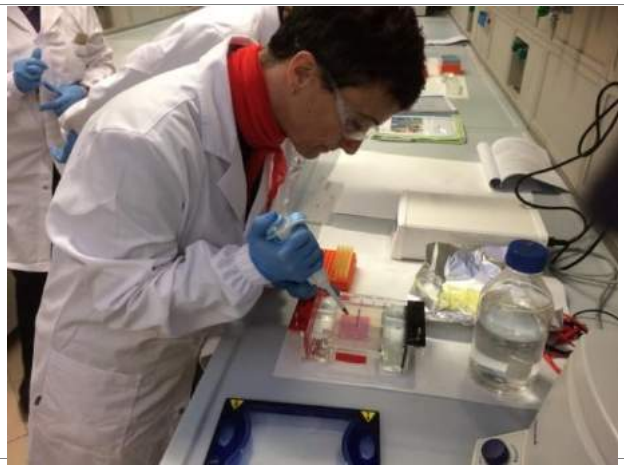

Laboratorio ABE 2: *Digestione con enzimi di restrizione*
Laboratorio ABE 3: *Reazione di ligazione*
Presentazione, Attività sperimentale e discussione

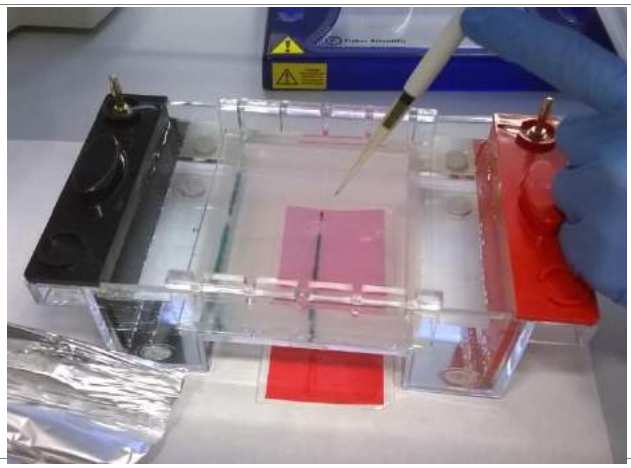








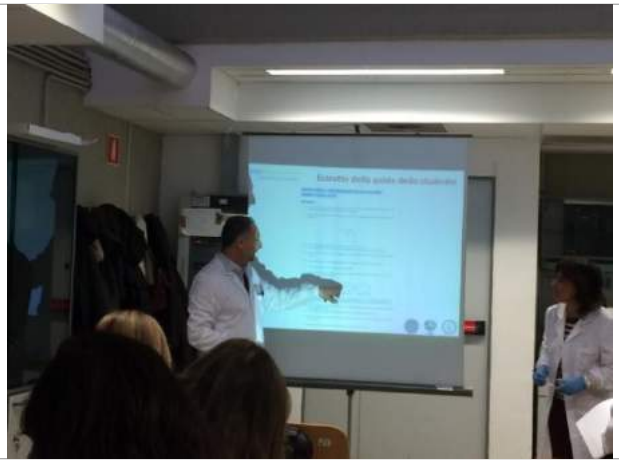
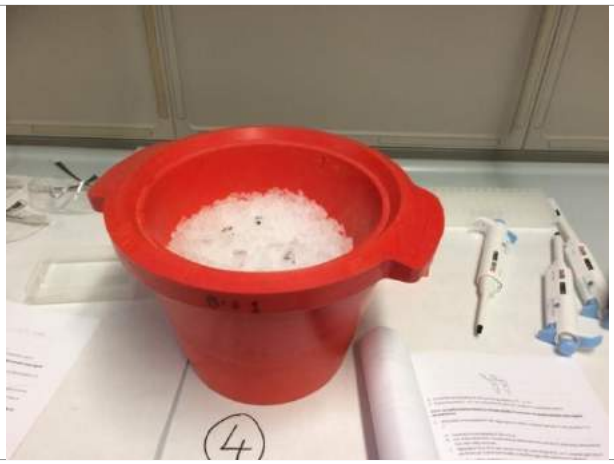


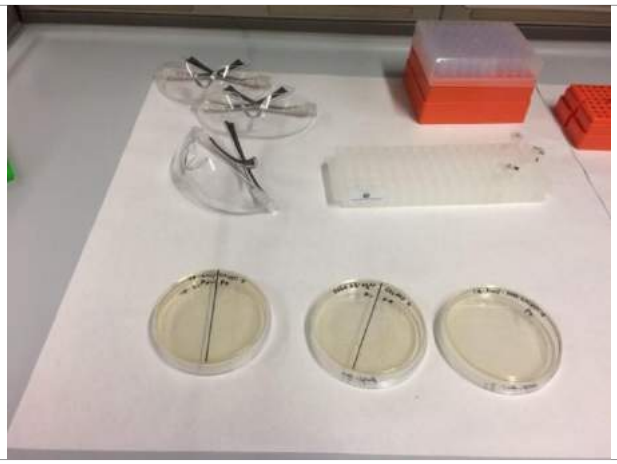
Laboratorio ABE 4: ***Verifica del risultato della digestione enzimatica***

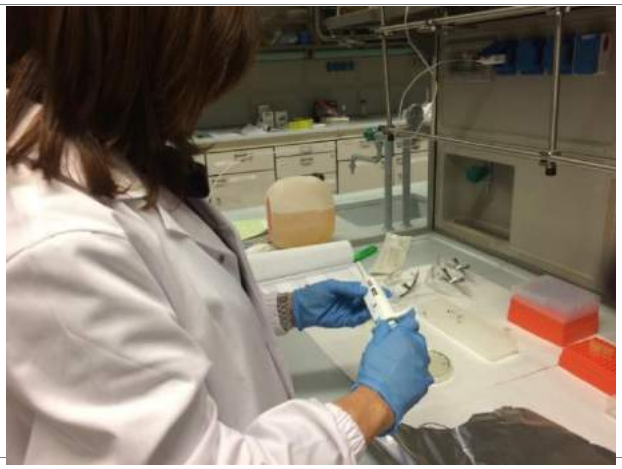
Riflessioni, problemi, domande

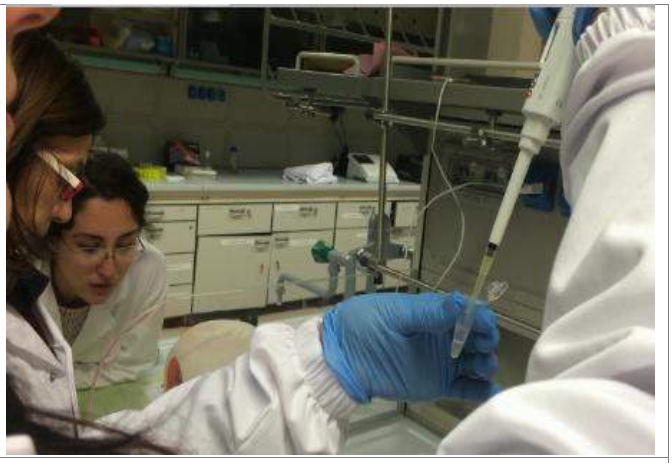

Laboratorio ABE 5 – *Trasformazione di E. Coli*

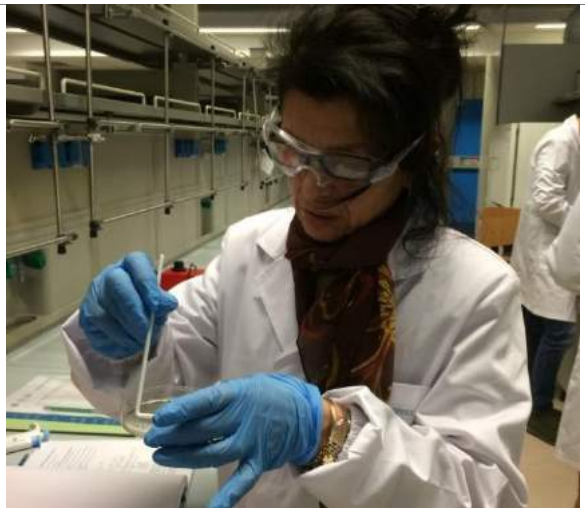
Presentazione, Attività sperimentale e risultati

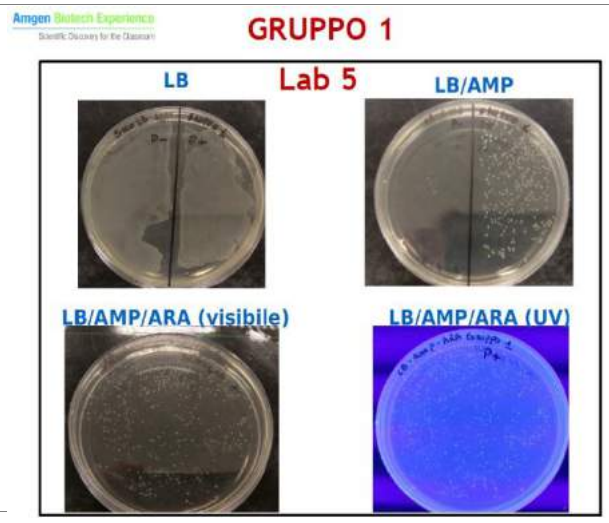




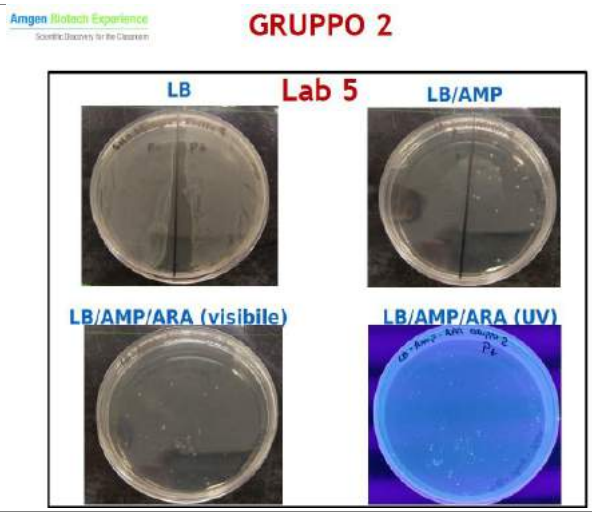






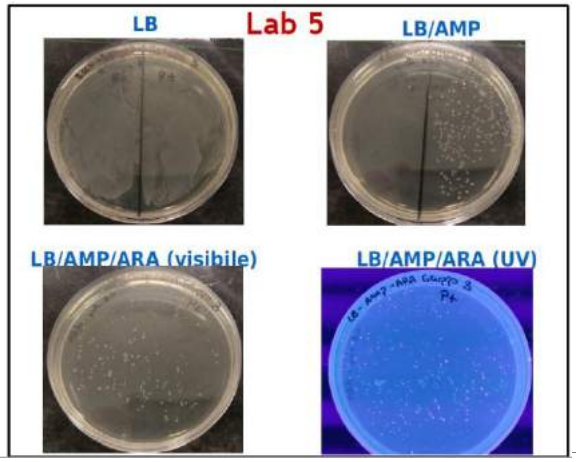



Amgen Biotech Experience
GRUPPO 1
LB
Lab 5
LB/AMP
LB/AMP/ARA (visibile)
LB/AMP/ARA (UV)


Amgen Biotech Experience
GRUPPO 2
LB
Lab 5
LB/AMP
LB/AMP/ARA (visibile)
LB/AMP/ARA (UV)

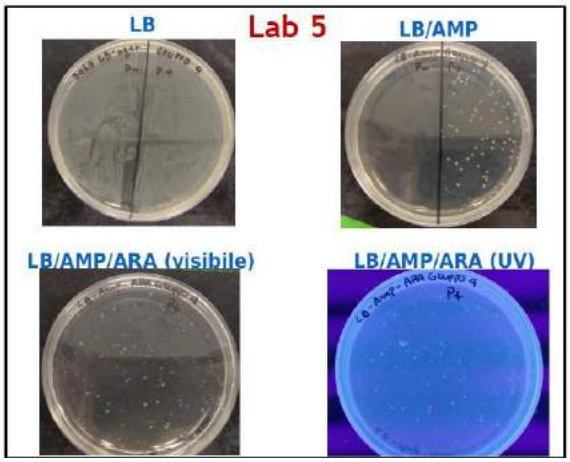
Amgen Biotech Experience
Scientific Discovery for the Classroom

GRUPPO 3



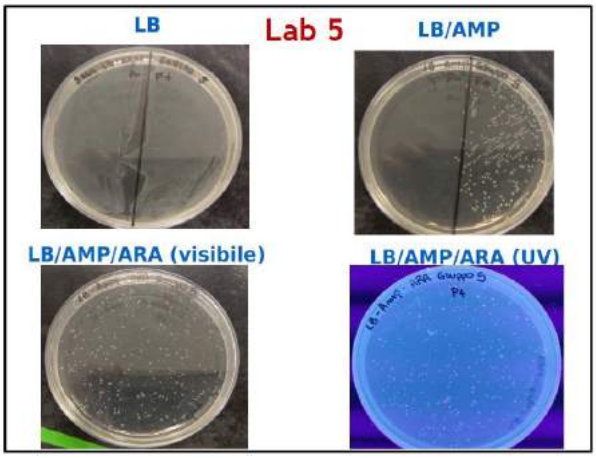
Amgen Biotech Experience
Scientific Discovery for the Classroom

GRUPPO 4



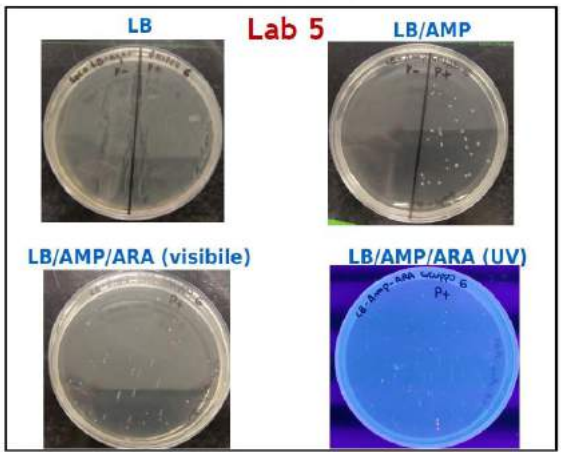
Amgen Biotech Experience
Scientific Discovery for the Classroom

GRUPPO 5



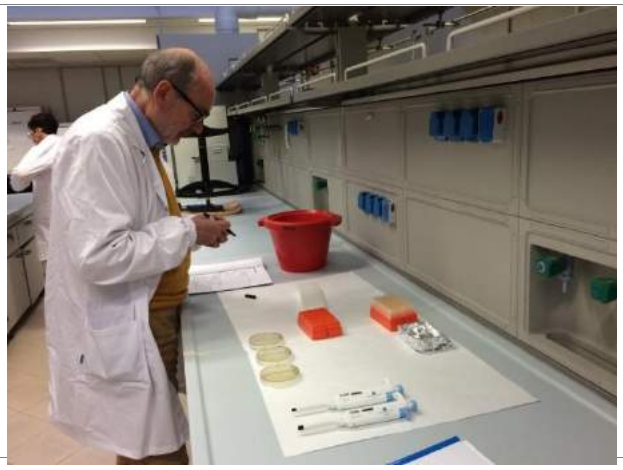
Amgen Biotech Experience
Scientific Discovery for the Classroom

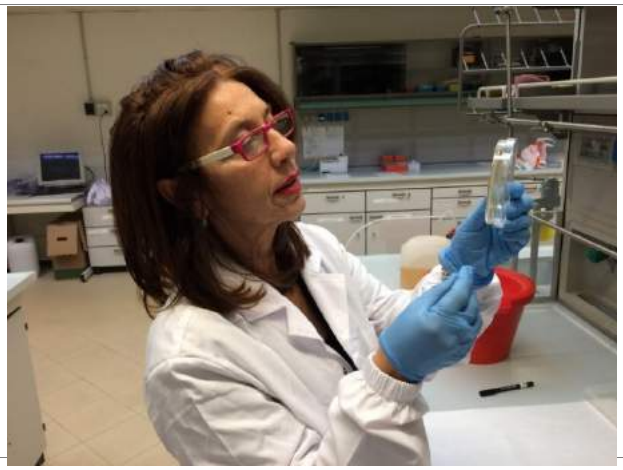
GRUPPO 6

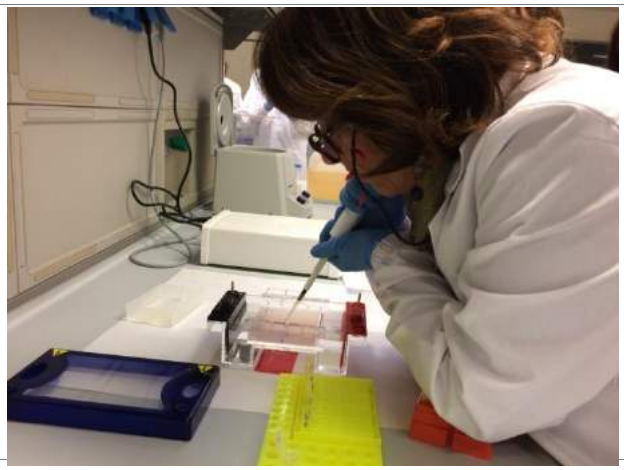


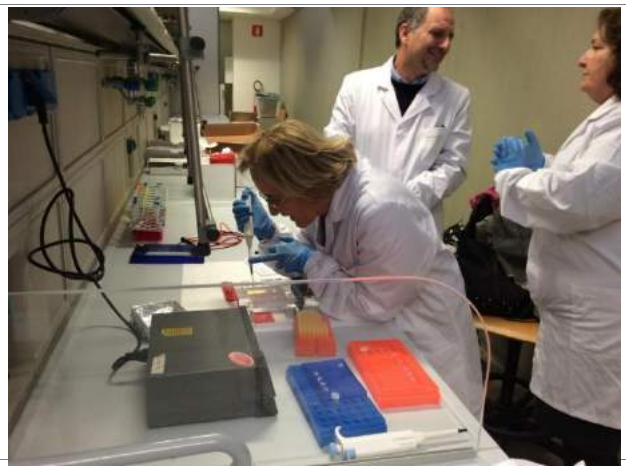
PCR da colonia batterica

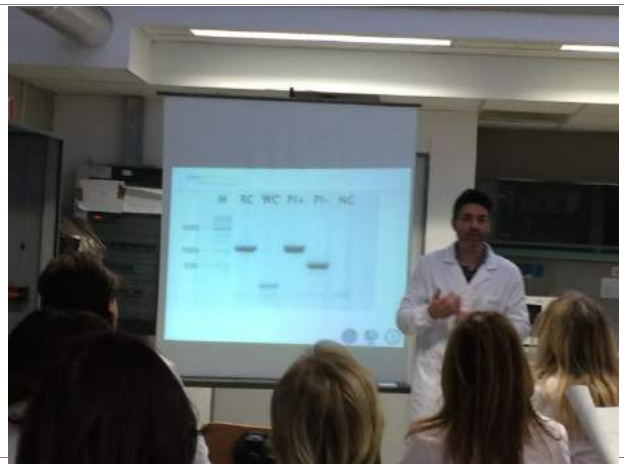
Presentazione, Attività sperimentale e discussione

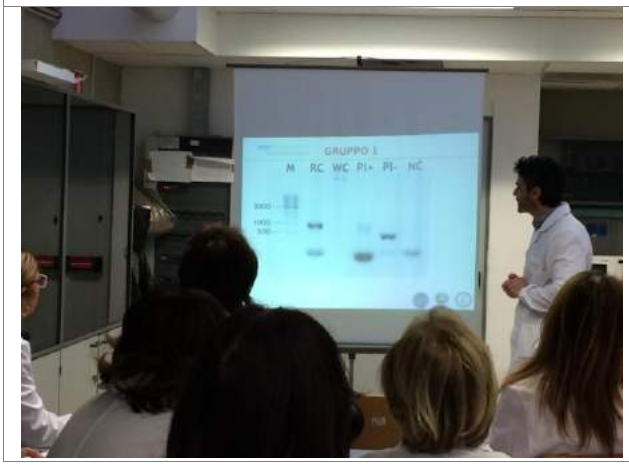


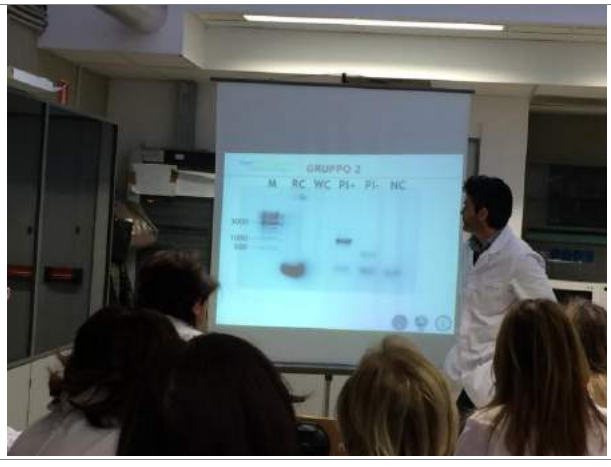


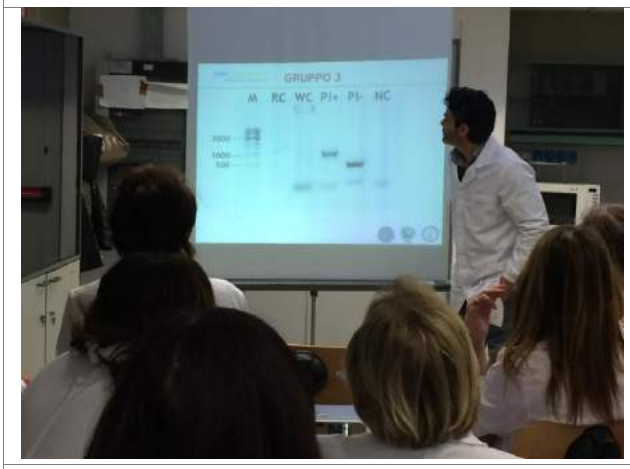


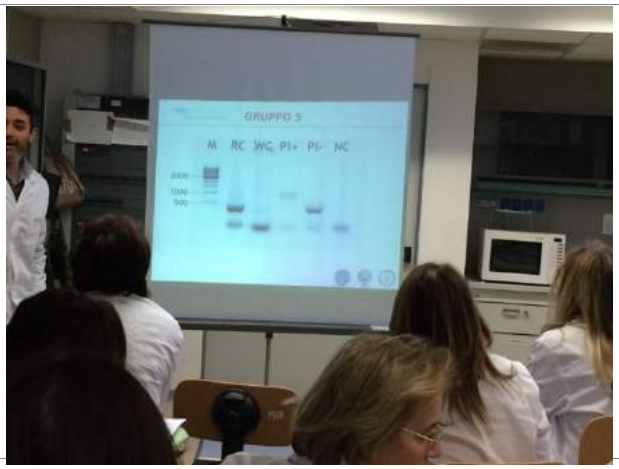



M RC WC PI+ PI- NC


GRUPPO 1
M RC WC PI+ PI- NC

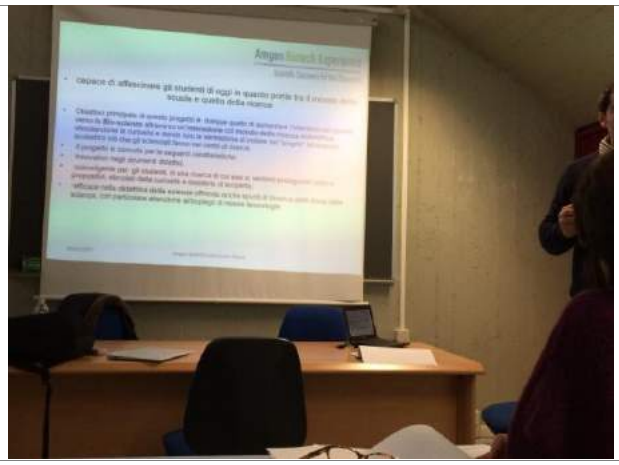

GRUPPO 2
M RC WC PI+ PI- NC

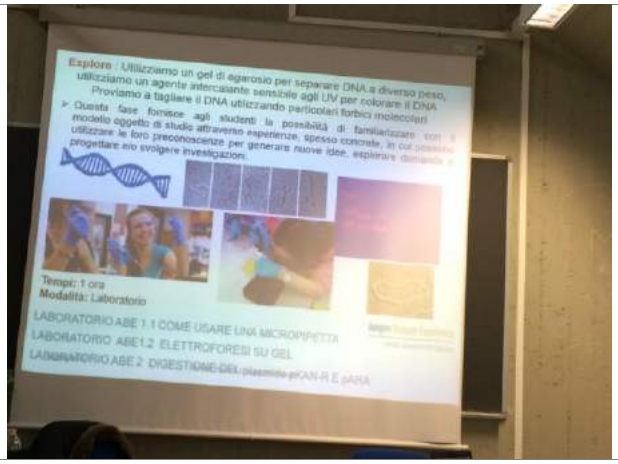




Feedback dall'analisi dei questionari docenti della fase 1 (23 – 24 gennaio 2017)

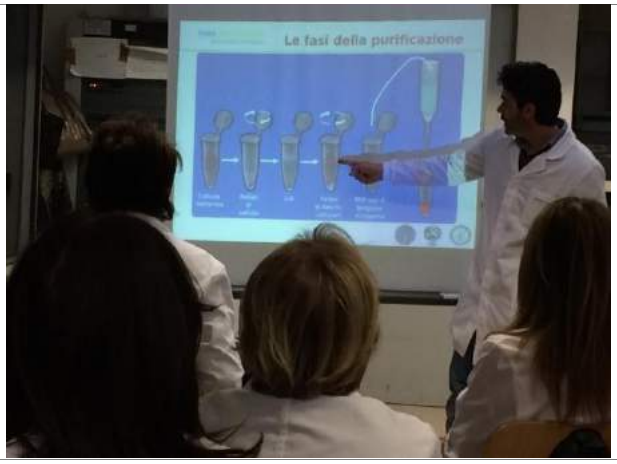
ABE labs, programmazione curricolare e impianto metodologico: alcuni spunti



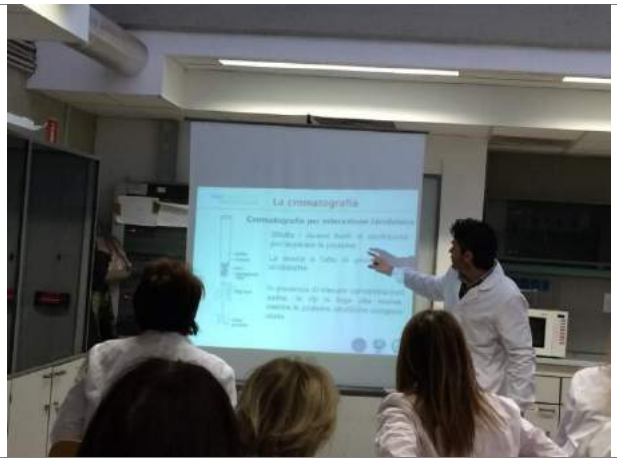


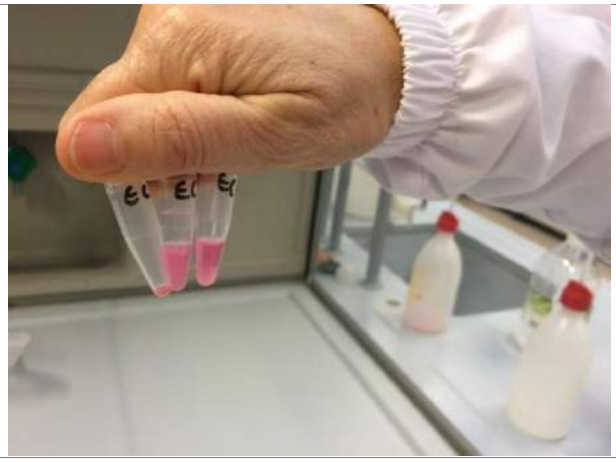
Laboratorio ABE 6: *Purificazione della proteina fluorescente*
Parte B: Isolare la proteina fluorescente mediante cromatografia su colonna

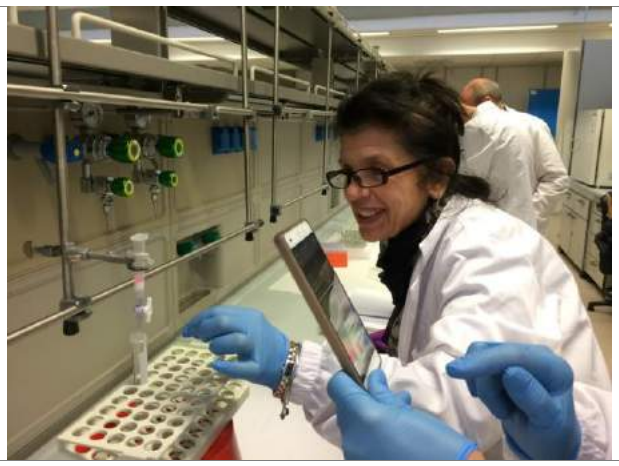
Presentazione, Attività sperimentale

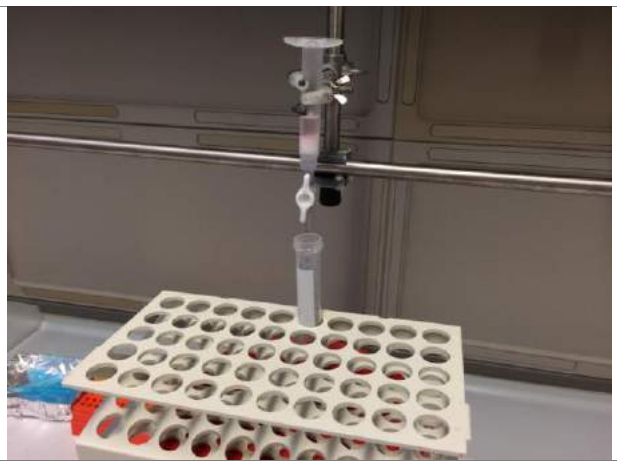

Le fasi della purificazione

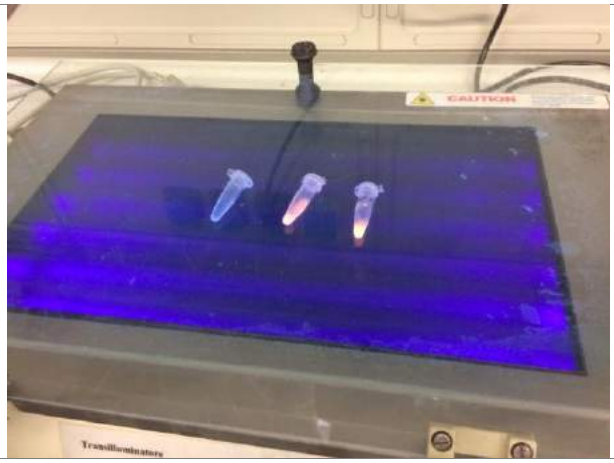

La proteina rfp
Caratteristiche


La cromatografia








CAUTION
Transilluminator

Science is a hands-on experience

Science is a hands-on experience: one cannot say to have really done science until they feel the satisfaction of seeing the results of their own experiments.

Unfortunately, science teaching in Italy is too often a purely theoretical matter, a sterile transfer of knowledge that does not, in fact, create in the students the enthusiasm and curiosity that make a scientist what it is.

We, as ANISN Alumni, have been lucky in this regard: thanks to the passion of our science teachers, we took part in the national phase of the Italian Natural Science Olympics, and our results enabled us to attend the training internships for the International Biology Olympiad. There we had the opportunity to have a complete "scientist experience", from the design of experiments, to their execution, to the analysis of the results, in a range of biological fields as diverse as botany, molecular biology, zoology and more.

Many of us then went on to pursue a career in science, and we all remember with fondness those moments that allowed us to make a conscious choice about our future.

We are aware that we are a minority in the large landscape of the Italian student population, and that many more students would benefit from this kind of experiences, if they had the chance to take part in them.

In a world where science progress is increasingly fast-paced and full of new challenges, science teaching must keep up; as never before, teachers need to be prepared to teach their students something different from what they have been taught during their education. The process of updating the teachers' formation cannot be left to the initiative of a few passionate people; it should rather be framed in an organised structure involving both national and international institutions, which must be able to engage teachers as well as students.

ANISN has been working in this direction for years and our participation to the training internships is only the tip of the iceberg of its commitment for the improvement of Natural Sciences teaching, as we had the opportunity to see with our own eyes thanks to our continuing involvement with the association.

In a well-structured community, the combined initiatives of each person can lead to tremendous results, and the Olympics themselves are a wonderful example of this; ANISN, though, cannot be left alone in the titanic task of spreading the new science teaching methodologies to the diverse community of the Italian teachers.

Amgen Biotech Experience is a unique opportunity for both teachers and students to experience the thrill of scientific discovery and it is an extraordinary way of meeting the emerging needs of the Italian educational community, both inspiring the new generation of scientists and reviving the scientific interest of the teachers.

The training internships we took part in changed our lives; hands-on involvement is what Italian students miss and need the most: Italian schools cannot pass the opportunity to join this international network, as it is the best way to ensure a real improvement of the quality of science teaching and to involve more young minds in the challenges of modern science.

"Science teaching must keep up"

ANISN Alumni

Caterina Baldassarre	*L.S. "G. Banzi Bazoli", Lecce*	Biological sciences *Scuola Normale Superiore* *University of Pisa*
Mauro Battipede	*L.S. "P.Frisi", Monza (MB)*	Biotechnologies *Scuola Normale Superiore* *University of Pisa*
Giorgio Bianchini	*L.S. "G. Banzi Bazoli", Lecce*	Conservation and Evolution *Scuola Normale Superiore* *University of Pisa*
Alessio Capobianco	*L.S. "L.B. Alberti", Cagliari*	PhD in Earth and Environmental Sciences *University of Michigan*
Daniele Cervettini	*L.S. "Leonardo da Vinci", Reggio Calabria*	PhD in Biological Science (MRC Laboratory of Molecular Biology) *University of Cambridge*
Cristina Concetti	*I.T.C. "A. Capriotti", S. Benedetto del Tronto, (AP)*	Neuroscience *Scuola Normale Superiore* *University of Pisa*
Francesca Corti	*L.S. "G. Marconi", Foligno (PG)*	Molecular Biology *Scuola Galileiana di Studi Superiori, University of Padova*
Alessandro Di Fabio	*L.S. "Leonardo da Vinci", Pescara*	Conservation and Evolution *Scuola Normale Superiore* *University of Pisa*
Pasquale Miglionico	*L.S. "Federico II di Svevia", Altamura (BA)*	Biological sciences *Scuola Normale Superiore* *University of Pisa*
Guido Narduzzi	*L.S. "M. Grigoletti", Pordenone*	Biological sciences *Scuola Normale Superiore* *University of Pisa*
Alessandro Passera	*L.S. "G.Ulivi", Parma*	Biological sciences *Scuola Normale Superiore* *University of Pisa*
Sebastiano Pindilli	*L.S. "Gemelli Careri", Oppido Mamertina (RC)*	Medicine and Surgery *Humanitas University*
Simone Potenti	*I.T.C.S. "F. Pacini", Pistoia*	Organic Chemistry *Scuola Normale Superiore* *University of Pisa*
Raffaele Sarnataro	*L.S. "V. Cuoco", Napoli*	Molecular and Cellular Biology *Scuola Normale Superiore* *University of Pisa*
Roberto Sartor	*L.S. "M. Grigoletti", Pordenone*	Medicine and Surgery *Scuola Superiore dell'Università degli Studi di Udine* *University of Udine*