



Teacher's Training
Supported by the EU

GENE TECHNOLOGY
IN EDUCATION
Cloning Experiments
in the Laboratory
and the Teaching
Method Self Organized
Learning

3rd–09th October, 2010



Oberstufenzentrum
Lise Meitner, Berlin

DESCRIPTION OF COURSE CONTENTS

In the European Union gene technology is a highly controversially discussed issue. The moral acceptance of scientific progress and technologies differs enormously in the various European countries. However, gene technology is an issue which scientists, teachers, instructors and students cannot avoid dealing with. The seminar's intention is to offer a practical course of gene technology (cloning experiments in the laboratory) and to promote the teaching method SOL (Self Organized Learning—or Self Determined Learning). Additionally, it provides the opportunity to discuss and evaluate different ethical opinions and thus strengthen the European collaboration among teachers.

Practical work in the laboratory: Cloning Experiment

- Transformation of a gene into a host cell (bacteria)
- Growing of transformants
- Isolation of Plasmid DNA
- Restriction and Polymerase Chain Reaction (PCR)

The teaching methodology SOL:

- Studying the basic principles of SOL
- Studying different methods of exercise
- Preparing an Advance Organiser with the subject Genetics
- Guide lines of group assessment and evaluation

We have chosen the subject Gene Technology mainly because the amount of genetic knowledge and the applications of gene technology have broadened to a great extent in recent decades. Many of the discoveries and applications either

have or might have social relevance in the future due to applications of genetics in medicine, agriculture and food design. These developments may have great impact on the personal situation as well as on the job situation of the students. The principles of DNA-cloning are basic knowledge for a profound understanding of genetic engineering. The teaching methodology SOL promotes not only the students' theoretical and scientific knowledge, but also facilitates the development of key transferable (soft) skills such as autonomous learning, preparing summaries and oral reports, peer tutoring, fostering a sense of responsibility and social conscience, which are often neglected in traditional lessons.

PROGRAMME OF THE COURSE

GENE TECHNOLOGY IN EDUCATION

Oberstufenzentrum Lise Meitner Berlin
3rd—11th October, 2010

Sunday, 3rd October

19:00 Welcome and dinner

Monday, 4th October

9:00 Introduction to the programme

9:30 Education in Germany—the system of education

10:15 Coffee break

10:45 Getting to know the training center Oberstufenzentrum Lise Meitner

11:45 General introduction to a cloning experiment, Green Fluorescent Protein

11:15 Introduction to the experiments of the week

12:30 Lunch break

14:00 Boat trip in the city center

16:00 Guided City Tour

20:00 Dinner

Tuesday, 5th October

- 8:15 Laboratory: Transformation of *E. coli* with GFP and plating of transformed cells



- 11:00 Gene Technology and its implications in Germany, *Prof. Dr. R. Kunze, Free University Berlin*
- 12:30 Lunch break
- 14:00 Reception at the municipality Berlin-Neukölln
- 20:00 Dinner

Wednesday, 6th October

- 9:00 Introduction: Have you ever heard of Self Organized Learning? Main aspects of SOL
- 9:30 Main aspects of SOL
- 10:30 Coffee break
- 10:45 SOL: Jigsaw classroom
- 12:00 Lunch break
- 13:00 SOL: Jigsaw classroom
- 15:30 Coffee break
- 15:15 Laboratory: Growing of transformants in liquid media over night
- 20:00 Dinner

Thursday, 7th October

- 9:00 Self Organized Learning—any questions?
- 9:15 Triangle talk / representatives
- 9:45 Feedback
- 10:00 How to use and construct an advance organizer
- 12:30 Lunch break
- 13:30 Laboratory: Isolation of plasmid-DNA, restriction, PCR
- 19:30 Concert in the Philharmonie or Konzerthaus am Gendarmenmarkt

Friday, 8th October

- 9:00 Laboratory: Electrophoresis and evaluation of the transformation experiments
- 10:30 Coffee break
- 10:45 Laboratory
- 12:30 Lunch break
- 13:30 Evaluation of the seminar
- 15:00 Coffee break
- 15:30 Introduction to the use of a teaching module "self organized learning and gene technology"
- 20:00 Dinner



Saturday, 9th October

- 9:00 Farewell breakfast

COURSE INFORMATION

Participation in the course, accommodation and journey can be sponsored by the EU within its programme

“Lifelong Learning Programme (LLL)”

For details please contact your National Agency of LLL:

http://ec.europa.eu/education/lifelong-learning-programme/doc1208_en.htm

You can find the course in the European Union Comenius-Grundtvig Training Database:

<http://ec.europa.eu/education/trainingdatabase/search.cfm>

under the reference number

DE-2010-1024-001



Title of the course

GENE TECHNOLOGY IN EDUCATION—cloning experiments in the laboratory and the teaching method SOL (Self Organized Learning or self determined learning)

Thematic field

Main field: General IST Courses

Secondary field: Pedagogy and didactics

School level

Secondary education, vocational / technical education, adult education

Target audience

Teachers and Trainers of Biology and Biochemistry, Teacher Trainers, Headmasters

Language used in the course

English

Dates of the course

DATE OF START: 3rd October, 2010

DATE OF END: 11th October, 2010

Number of places available

Maximum number of participants: 24

Price in Euro per participant

Accommodation & Subsistence: 550 €

Course fee (including materials): 750 €

Total: 1300 €

Cancellation fee: 200 €

Details of organizing institution

Name of contact person: Mr. Ulrich Mok

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