On 21 June 2012, the European Commission will launch a communication campaign to encourage girls to study science-related subjects and to engage young women in research careers. Women remain largely under-represented in the science, technology and research fields in Europe, which constitutes a huge waste of talent. The campaign will challenge stereotypes on science and show young people, especially girls and young women, that science can be a great opportunity for their future. The campaign will also underline the importance of science and research in finding concrete solutions to our world’s problems (food and energy security, environment, healthy ageing etc.).

The first phase of the campaign will focus on young people from 13 to 18 years of age. A second phase will target young women.

On 21 June, on the Esplanade of the European Parliament, young girls and boys will be able to take part in a series of activities to get a taste of science and research, experiment, debate and have fun with science!

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DESCRIPTION OF THE ACTIVITIES

1) HANDS-ON SCIENTIFIC ACTIVITIES

6 workshops including 18 different activities will stimulate the curiosity and interest of young people in science (see details below). Through interactive experiments presented by enthusiastic, professional animators, they will, for example, find out more about the properties of light, heat and CO₂, build their own electronic dice, construct a real-life machine to save energy, measure the acidity of water samples, and exchange opinions on scientific topics (such as biotechnology) through team discussions.

These activities have been prepared by European Schoolnet (Workshops 1, 2, 3 and 4), INQUIRE (Workshop 5) and the Greenlight for Girls Foundation (Workshop 6)

European Schoolnet (EUN) is a network of 30 Ministries of Education in Europe and beyond. It was created more than 10 years ago to stimulate innovation in teaching and learning in its key stakeholders: Ministries of Education, schools, teachers and researchers. It has received the support of the European Union for various activities. www.eun.org/

INQUIRE is an EU-funded project on inquiry-based learning. Its activities cover topics connected with nature, chemistry, and physics and link them to conservation, human health and wellbeing - topics girls are particularly interested in. Activities consist of various experiments, group discussion and problem-solving activities, and engage students in active as well as creative thinking processes.

Greenlight for Girls Foundation is a Brussels-based organization founded in November 2011. It promotes science, technology, engineering and mathematics (STEM) to girls of all ages and backgrounds in order to stimulate greater participation of girls, young women and career-age women in STEM-related studies and careers.

2) MEETING YOUNG SCIENTISTS

Young scientists involved in Les Jeunesses Scientifiques de Belgique and other associations will be on the Esplanade to transmit their passion to teenagers and answer any questions on research studies and careers in science.

3) SCIENCE, A SOURCE OF INSPIRATION

Science can stir the imagination and creativity. On 21 June, a flashmob (collective choreography with music) will link science with music and dance.

The title of the flashmob is "Chain reaction" because the choreography is inspired by chain reactions in physics and chemistry.

The shooting of a video clip of the flashmob will take place at 17:15. Anyone can participate! Rehearsals for participants will take place during the afternoon.
DETAILED DESCRIPTION OF THE WORKSHOPS

Activities for teenagers aged 13 to 18.

The activities of the workshops will help students appreciate the role of science and research in the fields of chemistry, physics, and bio-chemistry. Students will also be introduced to important topics related to water quality, health and energy. We will demonstrate how science is key to developing solutions to pressing issues in our society.

WORKSHOP 1: EXPERIMENTS ON CHEMICAL AND PHYSICAL PROPERTIES

This workshop is organised by Scientix – the community for science education in Europe (www.scientix.eu). This project, managed by European Schoolnet, is supported by the European Union. It is open for teachers, researchers, policy makers, parents and anyone interested in science education. The workshop is based on five activities performed during The Xperimania Science Ambassadors’ tour in spring 2010, which reached nearly 400 students in schools across Europe.

1.1 LIGHT STICK EXPERIMENT
Properties: durability, flexibility, transparency, reactivity

Observe what happens when you bend a plastic stick with luminous chemicals inside. Does the plastic break? What happens to the liquid inside the stick?

1.2 MOVING FISH EXPERIMENT
Properties: water absorption

Observe what happens when a small fish made of a thin piece of cellophane is placed on your palm. Why does the fish move and curl around? Why doesn’t it move on the table?

1.3 PERIODIC TABLE EXPERIMENT
Properties: heat sensitivity

Observe what happens when you touch the special paper showing the periodic table. Why does the paper change colour and display the fingerprint? Does this happen if it is touched with a pen or a glove? Why does the fingerprint disappear after a while?

1.4 MAGIC BRACELET EXPERIMENT
Properties: light sensitivity

Observe what happens when a bracelet made of white beads is taken outside. Why does the bracelet change colour?

1.5 WATER ABSORPTION EXPERIMENT
Properties: water absorption

Find out why nappies keep babies’ pants dry. Observe what is inside a nappy and how it reacts to water. What is the white powder found in a nappy? What happened to the water when mixed with the powder?
WORKSHOP 2: NEW TECHNOLOGIES

This workshop includes activities from two EUN projects: inGenious and the Future Classroom Lab.

inGenious is a joint initiative launched by European Schoolnet and the European Roundtable of Industrialists (ERT) aiming to reinforce young Europeans’ interest in science education and careers and thus address the future skills gap. The Future Classroom Lab at EUN provides a platform where policy makers can rethink their ICT strategies and where teachers, head teachers and ICT advisers can experiment with innovative pedagogical approaches within flexible learning environments.

2.1 ELECTRONIC DICE
This activity provides students with the opportunity to build their own electronic dice, which they can use instead of an ordinary one. It is intended to develop creating thinking, collaborative work, provide basic electronics knowledge and allow students to perform practical work.

2.2 LEGO
How can students learn and understand principles of mechanics and renewable energy better than by doing simple, exciting, hands-on activities? Lego will provide a number of activities where students can build their own real-life models and investigate energy supply, transfer, accumulation, conversion, and consumption. A small competition for the machines built will be organized for the participants.

WORKSHOP 3: WATER CHEMISTRY

This workshop enables young people to take measurements and to understand the importance of data gathering. The data obtained from the experiments can then be uploaded to a website to contribute to the global data collection.

3.1 THE SALINITY ACTIVITY
This activity will give students the opportunity to use a meter to measure the conductivity of water samples. Students will learn about salts and determine concentrations of salts in solutions.

3.2 THE ACIDITY ACTIVITY
Students will be learning about acidity, one of the most common chemical properties encountered around the home. At the same time they will be learning good experimental techniques to test the reliability of their results. Combining the results for the class will provide a robust result that can be recorded on the Global Map. Students will use colourful indicators to measure the pH of their local body of water.

WORKSHOP 4: SHAPING OPINIONS ON ENERGY AND HEALTH ISSUES

Being a scientist is not just about accumulating knowledge, it is also about a way of treating the information that is given to you: comparing sources, doing your own research, making analyses and especially forming your own opinions based on the information collected and analysis.
The activities of workshop 4 aim to get students familiar with shaping opinions through discussions about the ethical, legal and social aspects of science, in order to make responsible choices. The workshop raises essential questions such as: What do we want from this technology? What rules should be designed to ensure this technology is used soundly and in the best possible way? Which technology is best for a given situation?

The workshop includes 4 discussions on:
- energy
- waste and consumption
- biotechnology
- GMOs

Discussions on energy and waste come from the project U4Energy, the first pan-European project on energy education. Supervised by EUN and financed by the European Union, it has launched an energy-saving competition involving schools from all over Europe, where it is possible to share results beyond national boundaries and win prizes. [http://www.u4energy.eu/web/guest](http://www.u4energy.eu/web/guest)

Discussions on biotechnology and GMOs come from Xplore Health, an on-going European project based on an educational portal on cutting-edge health research that offers innovative multimedia and hands-on experiences to young people through the internet, schools, and science centres and museums. [http://www.xplorehealth.eu/en](http://www.xplorehealth.eu/en)

Each discussion will be introduced by an instructor who will present the issue at stake (see below for details of the questions). The discussion will involve two teams.

### 4.1.1 ENERGY

The discussion will focus on the planet’s energy consumption. The two discussion teams need to come up with ideas on how to improve the current situation and set concrete goals for 2030 while discussing the advantages and disadvantages of using different energy sources (wind, solar, hydrogen, nuclear, bio-diesel, wave, geothermal, oil, coal and any other sources they can come up with). Each team picks three sources they would like to argue for while finding disadvantages to the sources chosen by the other team.

### 4.1.2 WASTE AND CONSUMPTION

We have a waste bag filled with various waste. The objective is to make students think about how the various items in the garbage bin can be recycled. The two discussion teams need to come up with ideas on how to decompose, recycle or reduce waste. Each team will support one of these two approaches:

1. Reducing human waste by reducing consumption by policy regulation (e.g. better public transport, higher taxes on materials that are difficult to recycle and/or damaging for the environment, limitations on travel consumption, lower taxes for households that have low rates of waste, one computer per family etc.)

Versus

2. No regulations because we should only 1. Invest in waste recycling techniques and/or because we should 2. Invest in new technologies (biotechnologies to decompose materials and chemicals) to reduce waste.

### 4.2.1 BIOTECHNOLOGY

One team should try having a very positive approach to the advantages of all new biotechnological inventions, while the other team should bring arguments for concrete ethical limits to
biotechnology. The discussion is prepared on the basis of the following questions. Are there any limits in biotechnology science? What would you try to invent if you worked with biotechnology and what would be your challenges? Try to set your own ethical limits: what if you know there are environmental risks related to your invention, should it be invented anyway? Should laboratory experiments with animals be abandoned and what consequences would it have for humanity?

4.2.2 GMOS AND PROPERTY RIGHTS ON PLANTS

In this activity one team will have a very positive approach to the advantages of inventing new genetically modified plants (e.g. medical benefits and/or environmental benefits), while the other team should bring arguments for concrete ethical limits to the same (e.g. social and/or environmental impacts). What are the limits within which we should be able to modify nature?

WORKSHOP 5: PLANT DIVERSITY AND CLIMATE CHANGE

This workshop is developed by the European project INQUIRE which involves the *Jardin Botanique de Belgique*.

The idea is to experience CO₂ as a gas in the atmosphere and to show the role it plays in plant life.

5.1.1. CO₂ A PRETTY STRANGE GAS?
Experience that CO₂ is a heavy gas that can be poured from one glass into another. This activity aims to develop a basic understanding of gas as a substance, which is invisible and untouchable but still much more than nothing.

5.1.2. CO₂ AND PLANTS - THE MORE THE MERRIER?
Design your own experiment to find out whether the CO₂ concentration in water has an influence on plants' O₂ production. The activity aims to visualise existing ideas, to stimulate creative thinking and to facilitate argumentation.

5.1.3. WHAT ARE THE SECRETS OF THIS ELIXIR?
Which plants are in this magic drink and what can it be used for? How much do you know about medicinal plants and why should we take care not to lose them before we know them? Taste, observe closely and find out which plants have been used to make this magic drink, what they look like and what they contain. This activity develops observation skills, provides basic knowledge about plant ingredients and facilitates group discussion.

WORKSHOP 6: BECOME A DJ THANKS TO MATHS AND PHYSICS

This workshop is has been put together by Greenlight for Girls Foundation. It will explore the connection between science and music with Belgian icon and world-renowned female DJ & producer, DJ Sand (Sandrine Droubaix) and her partners, Norton White and Select, from Parallel. DJ Sand has been collaborating with Greenlight for Girls for 3 years to inspire young girls to study science thanks to music.

The workshop, will take teenagers “behind the decks” and teach them the science in music, including physics, acoustics, chemistry and mathematics, and the teenagers will put their science, math and creative talents to the test by making music of their own.