Object: dissemination activity.

Date: 21st February 2014

Duration: ½ day.

Place: Molecular Biosensors for Medical Diagnostics (MBx) group, Technical University Eindhoven (TUe)

Organizers: Stefano Cappelli, Fabiola Gutierrez Mejia, Emiel W.A. Visser.

Title: "What does a researcher do?"

Participants: 15 students from the Design Academy Eindhoven.

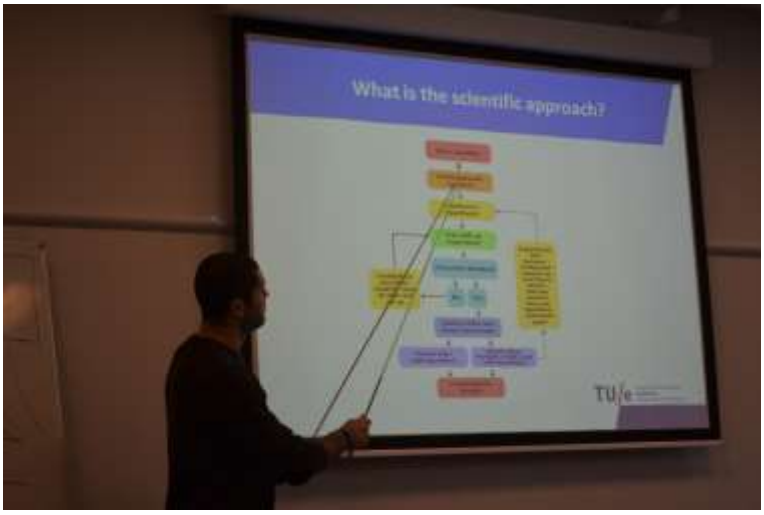
Aim: the aim of this dissemination activity is to give a general overview about the work of a researcher, to a non scientific audience.

Description

During this day 15 students from the Design Academy were invited to visit the MBx group. The goal was to show them in a general way what consists of the job of a researcher, with a particular emphasis on biosensors. The activity was divided in 3 parts as follows

1) Introduction

In the first hour a presentation was used to introduce them to the topic. The presentation was structured as follow: introduction to biosensors (general description and requirements), the research topics of the MBx group, what are antibodies and antigens (recognition mechanism), the use of magnetic particles, what is the scientific approach, how to apply the scientific method to a specific problem (detection of proteins).



2) Experimental part

In this part students had the possibility to try different experiments related to the detection of antigens. The main goal was to show them what the approach of experimentalists is. The students are first instructed how to behave in a biological lab and then divided in 3 groups. The experiments performed are the following:

a. Protein-G coated particles are incubated with a different amount of anti-biotin IgG antibodies. Then fluorescent biotinylated particles were used for the quantification of the amount of captured antibodies on the particles.
b. The students functionalized a superparamagnetic nanoparticle with fluorescent labeled DNA. By imaging the particles with epifluorescence illumination under a 200x magnification they could determine that a fluorescent shell was created around the particle.
c. Different concentration of BSA and anti-IgG antibodies are incubated on a glass substrate. Then protein-G coated particles are used to quantify the amount of active antibodies on the surface.

3) Discussion

Every group described their experience with the other students. Then a qualitative interpretation of the results was given, with emphasis on the general approach that a researcher needs to have.