

Multidisciplinary team receives prize in Boston

Students design a bacterium which gives medical treatment

In early November, twelve students defended the colours of K.U.Leuven at the fourth International Genetically Engineered Machines Jamboree competition in Boston. They received a gold medal for their Dr. Coli, a bacterium which administers medication in line with the patient's requirements.

Wim Troch

Synthetic biology is the biology of the future. It is the branch of science which builds or adapts living cells for specific tasks. For instance, bacteria can be developed which purify water or give off light at night. Juggling with DNA blocks – Bio-Bricks – in this way opens up infinite possibilities.

On 8 and 9 November, 84 student teams from all over the world gathered at MIT in Boston for the International Genetically Engineered Machines (iGEM) Jamboree. Belgium was represented for the first time, with a team of twelve students from the faculties of Bioscience Engineering, Engineering and Science. The students were accompanied by professors, assistants and doctoral students from Leuven's BioSCENTER, a platform created this spring which brings together all scientists conducting biological and biotechnological research within K.U.Leuven.

Tailored action

The students joined forces to develop Dr. Coli, a bacterium which administers medicines internally according to the patient's requirements. We asked three students from the team exactly how it does this.

Stefanie Roberfroid: "Dr. Coli is a self-regulating bacterium. The idea is that it receives a signal, for example from an infection, and then responds appropriately by producing a medicine. When it stops receiving the signal, in other words when the patient has recovered, it stops producing the medication and self-destructs."

Hanne Tytgat: "Dr. Coli can be taken in various different ways. It can be swallowed as a pill, but can also be used in yoghurt, for example. Its big advantage is that it is only active where it needs to be and for as long as it needs to be. That means medication which really is tailored to the patient's

needs."

"Dr. Coli – the name derives from *E. coli*, a bacterium found in the large intestine – has been developed for Crohn's disease, but in principle a bacterium can be developed for any disease. The type of medication which is produced will depend on the disease."

Is Dr. Coli something for the near future, or is building with DNA blocks a mere pipedream at present? Stefanie: "The project has not been completed yet – it is too big and complex. We have already obtained a lot of results, but a great deal of research is still needed." Antoine Vandermeersch: "Ethically, questions still remain about synthetic biology: what is possible, and what is permissible? There are enormous possibilities, but we have to use them sensibly and judiciously."

<http://www.kuleuven.be/bioscenter/igem/>