



МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
СУМСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ
КАФЕДРА ІНОЗЕМНИХ МОВ
ЛІНГВІСТИЧНИЙ НАВЧАЛЬНО-МЕТОДИЧНИЙ ЦЕНТР

МАТЕРІАЛИ

**XIV ВСЕУКРАЇНСЬКОЇ
НАУКОВО-ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ
СТУДЕНТІВ, АСПІРАНТІВ ТА ВИКЛАДАЧІВ
ЛІНГВІСТИЧНОГО НАВЧАЛЬНО-МЕТОДИЧНОГО ЦЕНТРУ
КАФЕДРИ ІНОЗЕМНИХ МОВ**

«TO MAKE THE WORLD SMARTER AND SAFER»

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when user should operates with huge amount of data the solutions of corresponding scientific problems can be done by using parallel or grid-computations. This procedure is based on a usage of grid-cluster like one supercomputer. This supercomputer is composed of different HPC-clusters connected with each other through Internet. In this case we get supercomputer which consists of a lot of big volume of memory and big set of high performance computers. The parts of grid-cluster are located around the world in one or different countries and are independent on each other. They are only connected through a network. This technology is used to calculation of the difficult tasks requiring significantly computation resources. The reason to create this procedure for computation process was emerged when the biggest laboratories of scientific research (CERN in Switzerland, ORNL in the USA) were out of needed computation memory and resources.

Nowadays each scientific institute or University has its own HPC clusters to perform numerical modeling of physical and chemical processes. Every country with developed scientific power has one or several grid clusters. In Ukraine the most of academic institutes connect their HPC clusters into National Ukrainian Grid supported by National Academy of Science of Ukraine. For example, in Institute of Applied Physics located in Sumy city the HPC cluster is connected into Ukrainian National Grid network. This cluster is used by scientists of this Institute and scientists from other institutes in Ukraine and other countries over the world.

BIOFUTURE

A. Kravchenko – Sumy State University, group IN – 92

I. A. Morozova – El Adviser

Today I would like to tell you about magnificent invention with a huge potential humanity came up with recently. The team of scientists from University of Vermont, Tufts and Harvard University have constructed a first-ever robot entirely out of living

cells.

They named the invention as “xenobots”, because they are made of heart and skin cells harvested from embryonic African clawed frogs (*Xenopus laevis*). Basically, they are submillimeter-small blobs containing between 500 and 1000 cells built in lego-like way with the help of supercomputer and complex algorithms.

Xenobots can move and live on their own nutrients up to one week, after this period they simply become a pile of dead cells. This is their “environmental” advantage over metal and plastic brothers. What’s more after recycling xenobots can enrich the soil with their organics or even become future oil.

Xenobots are living beings and completely organic, their DNA is 100% frog’s DNA, but still they cannot be attributed to any known life form or species. These robots create their own “programmed life form”. However, it is impossible for them to reproduce or evolve on their own. At least for now.

Another amazing thing about these tiny wonders is they are self-organized and can easily work in groups to move objects in one place. So of course, the most important point in an area of their application is medicine. And the most obvious purpose is targeted drug delivery, which raises the question of using them as a bioweapon. The ethics and limits of this field of research is yet to be considered.

Evaluating dangers is surely important but let’s concentrate on positive things for now. Xenobots can help to clean up environment, remove microplastic from the oceans and work in areas hostile to humans. For example, they also can reduce radioactive pollution and work with nuclear waste, recycle it or even, in theory, enrich it back. But, in my opinion the most interesting usage of xenobots is terra-forming. Theoretically they can morph the environment on our and other planets. Which will help us in an upcoming expansion to Mars.