

Biomechanics aiming for global level

Few young scientists are lucky enough to immediately prepare a paper worthy of being presented at an international conference. Yelizaveta Drozd is a research officer at the Belarusian National Academy of Sciences' Heat and Mass Transfer Institute. However, her four years of hands on experience do not fully reflect her research skills.

By Denis Timofeev

The would-be bio-physicist became interested in scientific studies as a student at the Belarusian State University's Physical Department. She was transferred to the famous university's laboratory of nano-processes and technologies as an innovative and capable specialist rather than as a shy graduate simply assisting more experienced colleagues. Moreover, Yelizaveta was awarded a Presidential grant for post-graduate students and another from the World Federation of Scientists (which encourages young researchers preparing intriguing projects).

At present, she is awaiting approval for her PhD thesis, from the Higher Attestation Commission (the first paper countrywide on bio-mechanics, prepared as part of the *Innovative Bio-technologies* sci-tech programme). Her thesis is named 'Developing a Miniature Bio-reactor for Optical and Contact-Probe Analysis of Living Cells in Vitro'. It means little to non-specialists, so the young bio-physicist explains the significance to us. "At

present, both optical and atomic-powered microscopes are used in medical-biological and genetic studies, to computer monitor living cells. The former make it possible to observe live objects for a long period of time — which is truly valuable for science. However, the definition of such images not always satisfactory. An atomic-powered microscope ensures a more detailed 3D picture, though leaving little time for cells to live. We've united both instruments by, firstly, researching the 'elastic modulus' of biological cells (using atomic-powered microscopy); this can provide additional data in early diagnostics. Secondly, we've developed a special cage where, using a life support system, cells can more easily endure external influence and be studied for longer," she tells us.

The probe of this atomic-powered microscope 'touches' a cell and, judging by its reaction, calculates its elasticity; the latter carries valuable diagnostic information. For example, jointly with colleagues



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Candidate of physico-mathematical sciences, Yelizaveta Drozd

from the Cardiology Republican Scientific-Practical Centre, Ms. Drozd has found that erythrocytes are more rigid in people suffering from Type Two Diabetes. In turn, cells' elasticity softens where lung cancer is present. According to scientists, it's important that not only the effect is detected but its degree. Similar information is valuable

for the early diagnosis of diseases and, pleasingly, Belarusian scientists are pioneers in this sphere. Ms. Drozd believes that it's vital to use this new knowledge wisely — to develop practical applications, establish production and ensure efficient work for the benefit of medicine, bio-technologies and science.

Children's Investment Forum full of ideas

By Tatiana Bolgova

Gomel schoolchildren create Belarus' first Internet store selling handicrafts

Pupils from Gomel's general education school #38 are creating Belarus' first Internet shop to sell hand-crafted items. Jointly with their computer science teacher, Yelena Mokhareva, they've developed an online Internet shop — soon to be launched. Teachers and pupils from Gomel's general education schools will be among the first sellers, advertising their embroidered pictures, and gifts made from beads, clay and other materials.

It's hoped that artists, folk craftsmen and pensioners will join in the entrepreneurial endeavour. "We've conducted polls and discovered that many people in our city are keen to sell their own pieces, as well as buying unique goods," notes Ms. Mokhareva.

Yelena Kovaleva, the Deputy Head of the Gomel City Executive Committee's Education Department, tells us that school #38's Internet shop project has won the final stage of the Children's *For the Prosperity of Our Native City* Investment Forum, organised in Gomel. It will be supported by city authorities.

The Forum has been held for two years in a row now, under the initiative of the city's education department. It aims to support the implementation of contemporary research and training methods in schools.

The 5-11th grade pupils were asked to come up with innovative ways of aiding the socio-economic development of the city. In total, 61 ideas were sent in by 50 secondary schools in Gomel.

Countries' partnership of strategic status

By Alina Grishkevich

Belarus-China trade up almost 100-fold over two decades

Our two countries began with a trade turnover of about \$30m; now, the figure has reached almost \$3bn — as announced by Belarus' Foreign Minister, Sergei Martynov. Speaking at a solemn event dedicated to the 20th anniversary of Belarusian-Chinese diplomatic relations, he stressed that, by historical standards, this is a relatively short period. However, it has been hugely significant, as Belarus has been building and strengthening its statehood and independence, while China has been rapidly building its power. Both have been successfully



liaising and achieving good results. Belarusian-Chinese co-operation is successfully developing at presidential and governmental levels, as well as between ordinary citizens. At present, the states are closely collaborating in a host of spheres — including spacecraft development.

According to the Minister, our strategic partnership was fixed in documents signed during a visit by the President of Belarus, Alexander Lukashenko, to Beijing, in 2009. The two leaders signed a joint declaration guiding bilateral relations at a strategic level.

Family offers home comfort

Last year, four family-style orphanages opened in the Gomel Region

By Tatiana Bolgova

The orphanages were established in the Svetlogorsk and Zhlobin districts, in addition to the cities of Kalinkovichi and Rechitsa — funded by a state investment programme and regional budgets, alongside donations by Belarusbank and sponsors. The families are now raising around 40 children in fully equipped cottages, with furniture and children's playgrounds.

Another foster family with seven children, from Gomel, moved to a new two-storey cottage last year, in the Novobelitsk District, funded by the city budget. Previously, the family had lived at a former orphanage for parentless children and those without parental care.

The Gomel Regional Executive Committee's Education Department states that, in 2012, another four family-style orphanages are to open in the southern-eastern region of



The Sentsov family has 18 adopted children

the country. One, in Korma (district centre), is to welcome its new hosts very soon.

In recent years, 25 family-style orphanages have opened in the Gomel Region (including eight under the *Children of Belarus* state programme), housing over 180 children. As a result, traditional board-

ing schools for parentless children and those without parental care have closed in Gomel and Svetlogorsk. At the moment, about 5,000 orphans live in the region, but only 13 percent live in boarding schools; others are being raised by families (foster and guardian families or family-style orphanages).