

Secrets of life revealed by new technologies

Belarusian scientists using hair follicles as latest source of stem cells

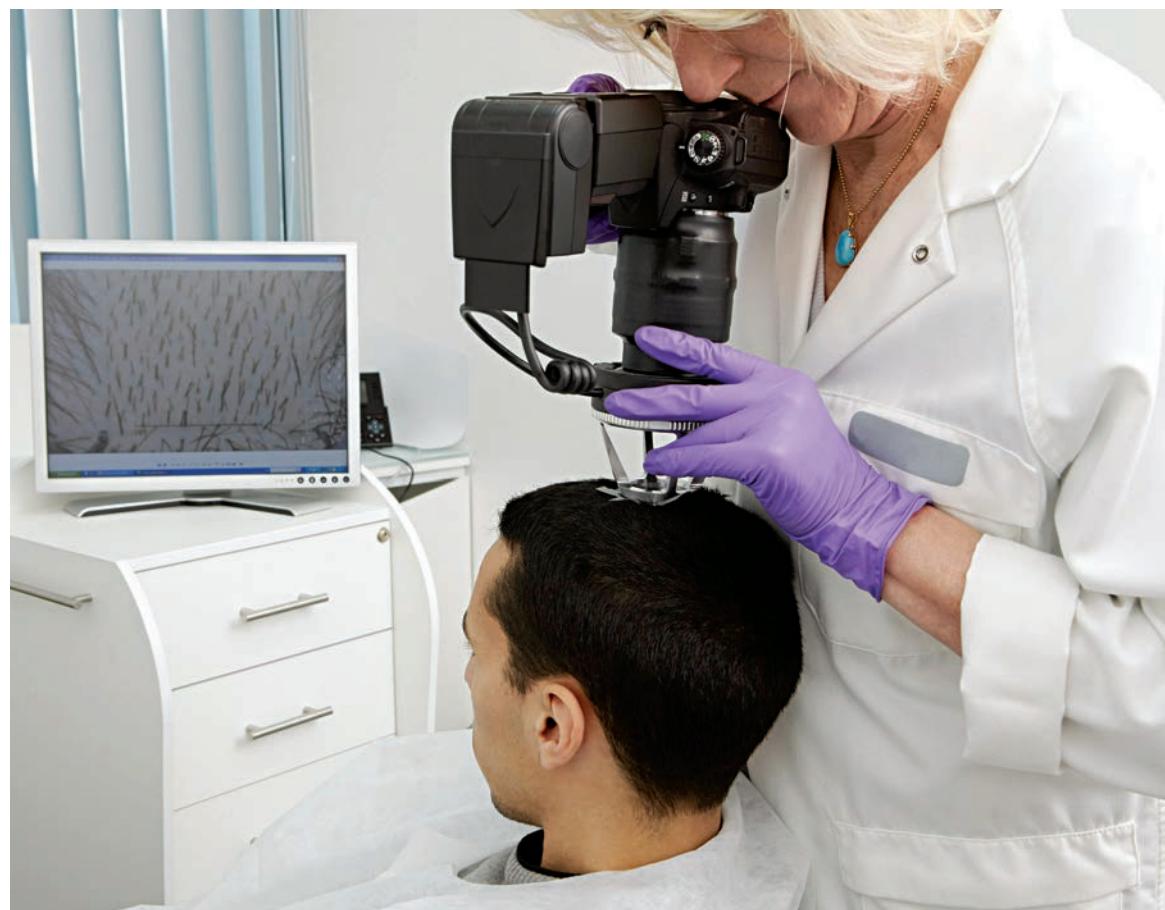
By Dmitry Sergeev

People once believed that the human soul resided in a person's hair. They later abandoned this assumption but it turns out that they were close to the truth, since our hair roots or follicles contain stem cells, which can be used to 'repair' any organ of the body.

Unlike bone marrow, funicular or adipose tissue — powerful factories for stem cells — hair follicles are like tiny laboratories manufacturing 'base' cells. Volumes are small but, of course, harvesting them is far easier! Bone marrow puncture is known to be painful and extremely invasive.

The Institute of Genetics and Cytology, at the National Academy of Sciences of Belarus, has spent five years developing methods of collecting and replicating human stem cells from hair follicles, explains Nina Balashenko, a junior research officer at the Institute. "The approach enables us to cultivate cell cultures from a small amount of initial material, for use in regenerative medicine: healing trophic ulcers and other skin diseases and restoring skin after burns and injuries." Naturally, the body has the best chance of accepting cells when they originate from its own direct source, rather than from relatives.

She continues, "We are now conducting a series of experiments to discover whether these cells are secure



Innovative stem cell research conducted at Academy of Sciences

and whether they can be 'specialised' to suit particular needs. Caution is vital, since stem cells are like cancer cells in some respects, making them more likely to become malignant than ordi-

nary cells. We need to be able to guarantee that this won't happen."

Leading research officer Oleg Kvitko adds, "In order to cultivate and differentiate cells, allowing them

to be used for particular tissues, we need to use chemical agents: growth drivers and other additives. This is costly, so we've been seeking affordable alternatives and have found



some interesting solutions."

The results remain largely theoretical rather than applied but the next set of tests should prove the turning point. The 'Tsitomir' computer's thermoregulatory box reveals the secrets of cells, with the help of a microscope and computer video system. Mr. Kvitko designed the prototype to monitor live cells, building it in the laboratory from improvised materials. An industrial prototype has since been created jointly with the Planar Optoelectronic Systems enterprise, involving colleagues from the Institute of Heat and Mass Transfer at the National Academy of Sciences of Belarus. Works were conducted as part of the Standards and Scientific Devices state sci-tech programme.

The Belarusian 'Tsitomir' is many times cheaper and more compact than its foreign rivals, while ensuring a higher quality of research, thanks to the original methods of cell cultivation developed by geneticists. At the time of my visit, it was researching a cell culture in automatic mode; of course, the picture looked static but playback of the video showed the cells dividing, growing, dying, moving and responding to influence and change.

The technology is allowing Belarusian geneticists to construct a genealogical tree of cells — unique globally — following their life over long periods of time, generation after generation.

Motorcycles from the recent past

All models of motorcycle produced in Minsk on show at National History Museum

The unusual exhibition includes the legendary 'Minsk M1A' — launched over 60 years ago, having been first assembled at a Minsk factory on July 12th, 1951. Since then, 6.5 million models have been manufactured at the plant and many are still in use,

across 45 countries, the first 'Minsk M1A' among them.

The 'Minsk M1A' being exhibited at the National History Museum is no longer used on the road but a charming 60-year-old photo of a young girl on the first Belarusian motorcycle



Rare motorcycles draw attention

is displayed alongside.

Famous British *Top Gear* show host Richard Hammond drove across most of Vietnam on the 'Minsk M1A', noting that it was the 'AK-47' of motorcycles. He added, "It's reliable, simple and easy to repair. It's pro-

duced especially for states without roads."

Modern Belarusian motorcycles are also on show at the National History Museum: those used for cross-country journeys and on contemporary highways.

Uneasy battle with numbers

By Anton Ivanov

Belarusian team gains third place diploma at 5th International Tournament of Young Mathematicians in Romania

The National College in the Romanian city of Iași recently hosted a Maths Olympiad, welcoming teams from around the world. The Belarusian representatives included pupils from Minsk's gymnasium #41: Maxim Bezrukov (11th grade), Nikita Kondratenok (9th grade) and Darya Tikach (10th grade). Anton Shemyakov and Sergey Shemyakov (10th grade) and Andrey Shlyakhov (11th grade), from the Lyceum of the Belarusian State University, also joined the team.

Their supervisors were Maxim Vaskovsky, a senior lecturer with the Department of Applied Mathematics and Informatics of the BSU, and his assistant, Yevgeny Zhibrik.

The team competition saw pupils compete to solve mathematical tasks, pre-

senting and defending their solutions competently and convincingly. Rounds also involved questioning and reviewing the other teams' solutions.

This year, 13 teams from 7 countries fought for victory: Belarus, Bulgaria, Germany, Russia, Romania, France and China. Those from Romania, Belarus, Germany and France reached the final, with only 0.4 points separating first from seventh place.

Although the Belarusian team shared third place with one of the teams from France, its performance can be considered a success, due to three of the six members being from the 10th grade and one from the 9th.

Two universities organised the event: the University of Paris-Sud (France) and the Belarusian State University. The next tournament is to take place in Bremen, Germany. In fact, our Belarusian team has claimed a winning position in the last five international tournaments: three first places and two third.

Tiger stamps roar from envelopes

By Tatiana Svetlova

Grodno Zoo hosts international philatelic exhibition

The country's oldest zoo may soon be attracting philatelists from Belarus, Poland, Lithuania, Ukraine and Russia, thanks to Belpochta releasing postage stamps on

the theme of 'Zoos of Belarus'. These are to feature an Amur leopard, an European mouflon and a Siberian tiger. A special postmark and a 'First Day' envelope are also planned. The zoo is currently hosting an exhibition dedicated to the new stamps.

The designs are the work of the Grodno Department

of the Belarusian Philatelist's Union and Grodno Zoo, working with the Ministry of Communications and Information.

Grodno Zoo originally opened as an educational botanical gardens, initiated by Yan Kokhanovsky, who taught at a local boy's high school. After native animals

were installed, it became a zoological garden and, in 1939, became state property. The oldest zoo in Belarus regularly purchases new animals, while taking part in exchanges with another zoos and in breeding programmes. It is home to over 3000 animals and about 320 species.