

**FOLLOW YOUR OWN WAY****Malysheva Larisa**

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**Abstract**

This article contains an interview with Irina Kononova, the Head of the Laboratory "Arctic Medical Center" of the Yakut Scientific Center of Complex Medical Problems. Her example shows how self-actualization of personality positively affects the efficiency of scientific and research activity.

**Keywords:** woman's health, cervical cancer, the North, Arctic, Siberia.

This year, Normal and Pathological Physiology Department of Medical Institute of North-Eastern Federal University in Yakutsk, which is, in fact, the ascendant of medical education in the North-East of Russia, turns 65 years old. The Department opened its doors to students on September 1, 1958. The Department has always been headed by outstanding scientists and science promoters like Troitskaya, M.V., Belyavskaya, E.A., Kuzmin, I.S., Kochetkova, G.V., Tazlova R.S., and my mentor Petrova, Palmira Georgievna, the director of my scientific dissertation, Professor, Academician of the Academy of Sciences of the Sakha (Yakutia) Republic. Since 2021, the Head of the Department is Borisova, N.V., Palmira Georgievna was also her director.

For the anniversary of the Department, I decided to publish a series of articles about my colleagues, scientists who had a special impact on the development of medical science, and with whom I was brought together by fate during my postgraduate studies and work at the Department. From my point of view, publications showing a person's personal way in science support a

public concern about scientific and research activity and motivate young people to choose science and research as their future career. It is no secret that in the Russian Federation and here, in Yakutia, there is a problem of attracting and retaining young people in scientific and research activity [1,2].

My first article from the planned article series will be devoted to a graduate, the same as me, of Palmira Georgievna's scientific school. Maybe the reader will ask: "Why not about the mentor?", and the answer is: "Because it is possible to recognize a mentor by his or her students". There are magnificent publications about Petrova, P.G., a unique scientist, promoter and teacher who dedicated her scientific career to studying the impact of climatic and geographical and anthropogenic environmental factors on the health of the population of the North [3,4].

So, meet Irina Kononova, the Head of the Laboratory "Arctic Medical Center" of the Yakut Scientific Center of Complex Medical Problems. You can see her in picture 1, photo courtesy of Irina Kononova.



Picture 1. Irina Kononova at a conference on the science of cancer health disparities in racial/ethnic minorities and the medically underserved (San Francisco, 2018).

It is highly likely that the reader will have the following question: "Why her?", and I will answer: "It is because Irina is interesting to me not only as an extraordinary scientist and researcher but also as a standout leading her own way in science". It is well-known that self-actualization of personality positively affects the efficiency of scientific and research activity [5].

I decided to arrange this article in the form of an interview so that the readers shape a view of her.

- *Irina, please tell us about the research that you are currently conducting.*

- I am conducting research on cancer in the territories of the Russian Arctic and Siberia. I am particularly interested in studying inequalities in relation to the human papillomavirus associated cancer. The most common localization of such cancer is the cervix. Also, I am developing a device and a test with the help of which it is possible to improve the detection of precancerous conditions of the cervix and cervical cancer.

- *At scientific conferences, I had a chance to listen to your speeches about the problem of territorial differences in relation to cervical cancer, and I noticed your sincere concern about this problem. I am interested what is it based on? It is not just professional responsibility, isn't it?*

- Yes, you are right. In my speeches, I talk more about the problem of differences that can and should be avoided, which is not just about differences, but about disparities. The study of disparities related to people's health, women's health, especially of those who live in the territories of indigenous peoples and ethnical minorities of the North, is very important to me because they are related to my personal experiences. I belong to

the northern indigenous peoples, I am a Yakut, I come from Yakutia, like my ancestors. And I am a woman. Fortunately, no one from my close ones had cervical cancer, but the decease of my spouse's mother opened my eyes to the injustice to women that has developed in our society. I will not go into detail, except to say that her story is a struggle for survival, her own and her children's. That is why when I present the results of my research on cervical cancer through presentations and publications, I so vigorously draw the attention of the professional community to the vulnerability of women's health, especially to those who live in the territories of indigenous and ethnical minorities peoples of the North, namely in the Arctic and Siberia. I also suggest ways to get rid of the vulnerability. It gives me a sense of content from my work because in my work I have the opportunity to follow my own way, which I chose myself, and at the same time, contribute to the elimination of the existing injustice.

- *It is necessary to indicate here what do you mean by justice when talking about health?*

For me, justice, when it comes to health, is not in equal for everybody financing of medical care per capita, free for the patient, but in such medical care that provides opportunities for all people to achieve the so-called "equal health" regardless of ethnicity, place of residence, income, etc. I understand that health depends not only on the healthcare system but on many other factors depending on the will of the person himself that is why I am talking about the provision of opportunities. I consider that special free of charge medical care going beyond the current boundaries should be organized for women living in the territories of indigenous

and ethnical minorities peoples of the Arctic and Siberia.

- *Then, please explain the meaning of the term "equal health".*

This term is quite common in the international medical literature. In Russian science, it has been used relatively recently, and so far there is no single definition for it. As for my understanding, based on my professional opinion, "equal health" is a state of physical, mental and social well-being of a person provided by medical care, the quantity and quality of which corresponds to the needs of a person to maintain well-being. As you can notice, I base this on the definition of "health" given by the World Health Organization, but I complement it with my understanding of "equality".

- *Irina, it is known that cervical cancer is a problem in Russia. And earlier you said that women living in the Arctic and Siberia are especially vulnerable to cervical cancer. Tell me, please, what data has proven this?*

- I rely on state statistics data that anyone can find on the website of the Federal State Statistics Service and in the books of Moscow Research Oncological Institute named after Herzen, P.A. "Malignant neoplasms in Russia (morbidity and mortality)" and "The state of oncological care for the population of Russia". Books have been published every year since 2007. Having conducted a scientific analysis, I showed, and it is horrifying, that the situation with cervical cancer is much worse in the territories inhabited by indigenous peoples and ethnic minorities of the North than in the all-Russian situation. I am talking not only about our Sakha (Yakutia) Republic but also about Tyva, Buryatia, Karelia, Komi, Altai, Khakassia, Nenets and Chukotka Autonomous Regions. This is despite the fact that the all-Russian indicators themselves are more than 3 times higher than those ones established by the World Health Organization so that cervical cancer is no longer a global problem. I insist that my research is not local I think that for many people, like for me, the multi-ethnicity of the world matters.

- *And what do you propose to eliminate the vulnerability of women to cervical cancer? And how do your proposals differ from those already voiced by other specialists?*

- I will start with a proposal of anti - human papillomavirus vaccination for children. Human papillomavirus is the main cause of cervical cancer. I know that I am not the first to talk about this there are discussions about it all over Russia. But I propose my own algorithm for selecting categories of children who are primarily subjected to vaccination. I say children because vaccination against the human papillomavirus is effective when it is done in childhood. Surely, it is ideal if vaccination covers the whole Russia. But I am a realist. We have no domestic anti-human papillomavirus vaccines the price of foreign vaccines for us depends on the exchange rate that is why for me mass vaccination seems to be unrealistic today. It is quite obvious that there will not be enough vaccines for everyone at the beginning of vaccination that is why it is more reasonable to select the categories of children who should be vaccinated first. I propose an algorithm developed by

me, which takes into account the territorial indicators of cervical cancer, as well as territorial birth rates, the age of the mother at the birth of the child and the order of birth of the child to establish such categories. Yes, surely, birth rates matter. In March of this year, at the conference on cervical cancer, which was held here in Yakutsk, I showed my colleagues that the increase in the birth rate that we have been observing since 2006 and delayed childbearing is associated with a subsequent increase in cervical cancer. I think that my algorithm can be applied at any level of financing for free vaccination for people against human papillomavirus. If the financing is at the all-Russian level, then the algorithm will show children of which republics, territories and regions need vaccination first. If the financing is at the level of republics, territories and regions, then the children of which territorial subunits, I mean the districts of these subjects should get it; if at the level of districts, then the children of which settlements - villages, rural areas and towns. I will make a presentation of the algorithm at the conference of the Federal State Statistics Service "Statistics' figures - for people, authorities, business", which will be held this year in September in Yakutsk.

- *Irina, you mentioned that you are developing a device and a test with which you can improve the detection of cervical cancer. Please, tell us about them.*

- Yet again, my developments come from my personal experience. The procedure currently used all over the world for taking biological material for testing for precancerous conditions of the cervix and for cervical cancer is physically and psychologically uncomfortable for women. In some cases, it is even painful. I think this refers to the list of the main reasons explaining why women avoid doing such procedures. Recently I have done an analysis of the data of a medical expedition that was conducted last year by Yakut Medical Center of Complex Medical Problems to the Aldan district. This is a region of Yakutia with rich reserves of natural resources. 17 % of the women who donated venous blood for clinical tests missed a visit to a gynaecologist. And in women who did not come to the gynaecologist, the levels of the marker of ovarian cancer were the highest, in comparison to even those who had ovarian pathology detected by the gynaecologist. The detection of precancerous conditions of the cervix and cervical cancer by blood analysis can help women who do not want to undergo gynaecological procedures. And the test, which I am developing together with my colleagues and am now filing a patent application for it, is designed to detect markers of cervical cancer by blood analysis itself. As for the device, it is designed to detect precancerous conditions of the cervix and cervical cancer using an electrophysiological method. This device is an electrode that conducts electrical impulses from the cervix and its canal. With its using, it is possible to measure the electrical resistance of the mucosa in these areas. The device already has a patent of my authorship. Now I am working on the electrophysiological test using this device, I hope to get a new patent. Also, I have an idea of a new electrical measuring system and algorithms of its work that would correspond to this device and the

method and overpass existing systems, but it is about the future.

- *Irina, we know that many settlements of indigenous peoples and ethnical minorities of the North are located in remote and hard-to-reach territories. Can the test and device be used there?*

- Thanks for the question! Both the test, the device, and the way to use it are intended primarily for women who live in these territories. Domestic and foreign studies show that living in the North has a significant burden on the psychological and emotional sphere of a person. I think that a significant number of women's avoidance of gynaecological procedures, which we observed in the Aldan district, is precisely connected to the features of their psychological and emotional background. Therefore, for me, it is very probable that a blood test to detect precancerous conditions of the cervix and cervical cancer will increase the coverage of women. If talking about the device, although the test to detect precancerous conditions of the cervix and cervical cancer with the use of it will be conducted as a gynaecological procedure, but it will be less painful, because it is not necessary to take a woman's biomaterial. It is also important that the device and the electrical measuring device to it are compact and light in weight, which means that they can be taken to remote and hard-to-reach settlements, where individual containers with transport media or glasses, which are used in the clinic for cervical screening, cannot be delivered. Thus, electrophysiological testing with this device will increase the coverage of women. As for the price, the blood test and test with the device will be suitable. After all, there are remote and hard-to-reach territories not only in the Russian North they exist on every continent, moreover, in every state, so such tests are already needed by the whole world. Surely, it takes much time for medical inventions to go from idea to introduction into clinical practice. But it is right as we, medical researchers, work with the most important value of people - their life.

- *Thanks a lot for the answers! Now about our Department. You and I had the honour to work and do postgraduate studies at the Department of Normal and Pathological Physiology. You know that this year the*

*Department turns 65. I want to ask you to voice your wishes to the staff of the Department.*

- Congratulations on the anniversary! It turns out to be a sapphire jubilee. As far as I am concerned, sapphire is a symbol of strength and optimism, and the owner of the sapphire is a rather perceptive, kind and spiritual person. My wishes will be the same. I wish strength, optimism, perception, kindness and spirituality! However, these qualities have always accompanied all the people I have known since my studies and work at the Department. Thank you for your interest in my research!

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