BERSIMBAY RAKHMETKAZY ISKENDIROVICH

R.I. Bersimbay is a distinguished scientist who organises science and higher education. He earned his Doctorate in Biological Sciences in 1986 and became a Professor in 1989. His contributions to academia have been recognised through his election as an Academician of the National Academy of Sciences of the Republic of Kazakhstan in 2003, of the Academy of Sciences of Higher School of the Republic of Kazakhstan in 2001, and of the International Academy of Sciences of Higher School in 2002. Born on March 8, 1947, in Jazator, a village in the Kosh-Agach district of the Altai Republic, Russia, Bersimbay embarked on his academic journey by graduating from Novosibirsk State University in 1969. He completed his postgraduate studies in 1972 at the Institute of Cytology and Genetics of the Siberian Branch of the USSR Academy of Sciences in Novosibirsk and defended his dissertation to become a Candidate of Biological Sciences in 1974.

From 1975 to 2004, Bersimbay dedicated his efforts to the Biological Faculty of the al-Farabi Kazakh National University. There, he advanced from a senior lecturer to head of the department and eventually became the dean of the faculty. In 1977, he led the Department of Darwinism and Genetics. From 1987 to 2002, Bersimbay was in charge of the Department of Genetics and Molecular Biology, guiding it to become a leading centre for general and molecular genetics research and education in the republic. He also served as the dean of the biological faculty twice, from 1988 to 1995 and then from 2001 to 2004, marking a significant period of leadership and development in the field.

R.I. Bersimbay is an acclaimed molecular genetics expert and the pioneer behind a groundbreaking scientific field in Kazakhstan, which delves into the molecular-genetic mechanisms that regulate gene activity and explores intracellular and intercellular signalling mechanisms. Notably, he introduced the cascading principle of gene expression regulation influenced by hormones and formulated the concept of how regulatory cascades operate within cellular assemblies. His work significantly advanced the understanding of molecular principles and mechanisms in signal transmission through cell receptors. His research was recognised in the prominent American textbook "Principles of Biochemistry" by A.White and R.Handler, published by McGraw-Hill Book Press in New York in 1984.

Bersimbay's investigations have led to groundbreaking findings in the molecular mechanisms underlying genetic processes, such as genome instability with migrating genetic elements, hormonal gene expression regulation, signal transduction, and the genetic management of mutagenesis and carcinogenesis, including their interactions. He has significantly contributed to the scientific community with a prolific output of over 600 scientific publications, including the monograph "Cellular Mechanisms in the Regulation of Gastric Secretory Cells" published in Germany. His authorship includes essential textbooks like "Genetics" (2002, 2014, 2017), "General and Molecular Genetics" (2005), "Methods of Modern

	Biochemistry and Molecular Biology" (2010), and "Molecular Biology" (2014), catering to students in biological, medical, and biotechnological fields. Moreover, he has developed eight educational and methodological guides on genetics and related subjects, including the first Russian-Kazakh dictionary of general and molecular genetics terms. From 1995 to 2000, Bersimbay headed the newly established Institute of General Genetics and Cytology. He founded the Research Institute of Biology and Biotechnology in 1993 at KazNU and the Institute of Cell Biology and Biotechnology in 2011 at L.N. Gumilyov Eurasian National University. His leadership extended to serving as Vice Minister and head of the Ministry of Education and Science of the Republic of Kazakhstan from 2004 to 2005, as the first Vice-Rector of the Academy of Public Administration under the President of the Republic of Kazakhstan from 2005 to 2008, and as Vice-Rector for Research and International Cooperation at ENU from 2008 to 2011. Under R.I. Bersimbay's scientific guidance, over 30 candidates have defended their doctoral and PhD theses successfully. His proteges have achieved success within Kazakhstan and in prestigious scientific institutions across the USA, the UK, France, and Russia. Bersimbay's research endeavours took him to notable institutions such as the National Institute for Medical Research in the UK, the European Molecular Biology Laboratory in Heidelberg, the Hannover Medical Research Center, Aston University in Birmingham, and the National Institute of Biomedical Innovation in Osaka, Japan. Recognising his contributions, the National Institute of Biomedical Innovation in Japan named him an Honorary Visiting Professor in 2011. Following the Japan Society for the Promotion of Science (JSPS) invitation, he spent 2012 working at this institute and lecturing at various Japanese universities in cities like Tokyo, Nagasaki, Sapporo, Osaka, Kyoto, and Fukuoka. Academician Bersimbay has founded a school of Kazakhstani biologists renowned internationally for its innovative work in molecular genetics. Since 2011, he has directed the Institute of Cell Biology and Biotechnology at the L.N. Gumilyov Eurasian National University, also leading its Department of General Biology and Genomics. Between 2015 and 2017, he chaired the national scientific council for "Life Sciences". His achievements have been recognised with the "Құрмет" Order, anniversary medals for "10 Years of Kazakhstan's Constitution" and "10 Years of Astana", as well as badges for contributions to the development of science and education in Kazakhstan from the Ministry of Education and Science. He was awarded the "Best University Teacher of 2014" grant by the Ministry of Education and Science of the Republic of Kazakhstan and has twice received the state scientific scholarship for significant contributions to science and technology in Kazakhstan. Professor Bersimbay has also been honored with the P. Kapitsa International Award by the Royal Society of Great Britain for his outstanding work.	

DJANSUGUROVA LEILA BULATOVNA

Leila Bulatovna Djansugurova, a full member of the International Academy of Informatization since 2018, was born in 1967. She graduated in 1989 from the Biological Faculty at S.M. Kirov KazGU with a speciality in Biology. Additionally, beginning in 1986, she undertook a personalised study program at the Department of Genetics at M.V. Lomonosov Moscow State University. She completed her coursework and thesis at the Institute of Molecular Genetics of the Russian Academy of Sciences in Moscow. In 1993, she successfully defended her dissertation titled "Genetic instability of mutations in Drosophila melanogaster induced by oncogenic DNA," earning a specialisation in Genetics. She was named Associate Professor in 2004 and was promoted to Full Professor in 2015.

From 1992 to 1996, Djansugurova contributed as a research scientist in the neurogenetics and developmental genetics laboratory at the Institute of Gene Biology of the Russian Academy of Sciences in Moscow. Since 1996, she has been a part of the Institute of Genetics and Physiology (previously known as the Institute of General Genetics and Cytology), initially working as a senior research scientist in the molecular genetics laboratory. Between 2006 and 2022, she took on the role of General Director while also fulfilling teaching responsibilities at the Department of Genetics and Molecular Biology at Al-Farabi KazNU.

Leila Bulatovna Djansugurova is a renowned molecular genetics and cellular biology expert with a wide range of scientific interests. These include the study of genetic instability, the mechanisms of carcinogenesis and apoptosis, the regulation of gene activity during development, and how organisms respond to environmental stressors. Her work also explores genetic factors contributing to multifactorial diseases, the genetics of ageing, and the fields of population genetics and paleogenetics. Djansugurova played a crucial role in international research grants investigating the effects of radiation on populations near the Semipalatinsk nuclear test site. She furthered her research expertise during a fellowship at the University of Leicester's Genetics Department in the UK from 1999 to 2000, collaborating with notable scientists Y. Dubrova and A. Jeffreys.

Djansugurova has significantly contributed to her field with three patents, four monographs, five methodological guides, and over 315 scientific publications, some of which were featured in prestigious international journals (Science, Mutation Research, Biochem. Biophys. Res.Com., International J. Hygiene and Environmental Health, FEBS Journal, Frontiers in Genetics, Applied Biochemistry and Biotechnology, Expert Review of proteomics, Tumor Biology, Biomaterials, J. of Carcinogenesis and Mutagenesis, Eur. J. of Cell Biology, Disease Markers and others). As of February 2018, her contributions have earned her a CI index of 134 and an h-index of 5, according to the Thomson Reuters database. Her

	research has established her in Kazakhstan and internationally as a leading medical, environmental, and population genetics specialist. In addition to her research, Djansugurova contributes to the scientific community as a member of the editorial boards for "Acta Cytologica" and "The Journal of Syndromes and Gene Repair." She reviews for renowned publishing groups, including Elsevier, ORCiD, Karger, and Omics Publishing Groups, across various journals («Tumour Biology», «Genetic Disorders», «Applied Biochemistry and Biotechnology», «Human Immunology», «Journal of Syndromes and Gene Repair», «Journal of Carcinogenesis and Mutagenesis», «Molecular Neurobiology», «Analytical Chemistry» «Biomedical Journal» «Oncotarget», «Therapeutics and Clinical Risk Management»). Her comprehensive work and dedication to genetics research have distinguished her in her field. In 2013, under Leila Bulatovna Djansugurova's leadership, Kazakhstan established its only paleogenetic laboratory. This laboratory is dedicated to the interdisciplinary study of significant archaeological findings in Kazakhstan, focusing on correlating these findings with the origins of the Kazakh people. Djansugurova, recognised as an independent expert in genomic fingerprinting, has offered her expertise through numerous consultations and advisory services. She is deeply committed to nurturing the next generation of specialists and has founded her scientific school. Her students are actively engaged in research within the Institute of General Genetics and Cytology's laboratories in molecular and population genetics and internationally. Under her mentorship, five candidates and four PhD dissertations have been successfully defended. Djansugurova excels as a scientist and an administrator, steering the institute towards fruitful collaborations with various organisations. These partnerships aim to tackle the pressing challenges in medicine, agriculture, and environmental protection, thereby enhancing laboratory research and encouraging the commercialisation of scientific discoveries. For her contributions, Djansugurova has been recognised with several prestigious awards, including the "20 Years of Kazakhstan Independence" medal, the "For Merits in the Development of Science" badge (2015), and the "For Academic Integrity" diploma (2016). In 2022, she was distinguished as the "Best Scientific Worker." Djansugurova's research in population genetics is groundbreaking, particularly in integrating extensive datasets with cutting-edge genomic study techniques centred on bioinformatics technologies. The gene banks and databases she has developed at the Institute of General Genetics and Cytology hold a unique place in the international scientific arena, underscoring her significant contributions to the field.	

Abzhanov Arhat

Arhat Abzhanov, an alumnus of the Faculty of Biology at KazNU, graduated in 1994 before pursuing and earning his PhD in Molecular, Cellular, and Developmental Biology from Harvard University. Currently, he serves as an Associate Professor and heads a laboratory at the same institution. Arhat's journey into the sciences began in 1990 when he joined KazGU's Faculty of Biology as a third-year student, quickly developing a passion for molecular biology and genetics. This passion led to his recruitment into the Laboratory of Molecular Genetics at the Department of Genetics and Molecular Biology, directed by Academician R.I. Bersimbay of the National Academy of Sciences of Kazakhstan.

Arhat's proficiency in English and the solid foundational knowledge he acquired at KazGU enabled him to secure a place in a PhD program at Indiana University during his fourth year despite lacking a formal degree. His successful completion of the entrance exam allowed him to join the program diploma-less. He excelled in all his exams, and alongside his diploma from Kazakh State University, he also earned a bachelor's degree from Indiana University.

While at Indiana University, Arhat's research interests gravitated towards evolutionary biology and animal development, leading him to work in Dr. Thomas Kaufman's laboratory at the Biology Department and the Howard Hughes Medical Institute. His research focused on insect development and evolutionary changes. Arhat gained insights into the functioning of these genes and nature's genetic control over development by studying developmental genes that dictate organismal development. His comparisons of developmental programs across species illuminated how developmental pathways have evolved, contributing to the emergence of new species.

Arhat dedicated five years to his doctoral studies at the same university, culminating in his doctoral dissertation and attaining his PhD in molecular, cellular, and developmental biology. Post-PhD, he furthered his research in developmental genetics in Dr. Clifford Tabin's laboratory at the Department of Genetics at Harvard Medical School, where he completed a postdoctoral program. His career also included a tenure at the Department of Developmental Biology at the Harvard School of Dentistry, continuing his exploration and contribution to the field.

Arhat Abzhanov is a distinguished scientist renowned for his contributions to the field of biology, evidenced by his publications in esteemed journals such as "Evolution," "BMC Genomics," "Proceedings of the National Academy of Sciences," "Trends in Genetics," "Development," "Developmental Biology," and "Evolution and Development." He is an active member of several prestigious scientific societies, including the Society for Developmental Biology (SDB), the American Association for the Advancement of Science (AAAS), the Society for Integrative and Comparative Biology (SICB), the Canadian Society of Zoologists (CSZ), and the International Society of Vertebrate Morphology (ISVM). As a professor at

	Harvard University, Abzhanov is deeply invested in education, offering courses in evolutionary biology, animal developmental genetics, medical genetics, and experimental genetics, among others. Abzhanov has resided in the United States for nearly two decades with his family, maintaining a solid connection with his alma mater, KazNU. He frequently returns to the Faculty of Biology and Biotechnology as a visiting foreign professor to deliver lectures. His presentations are consistently well-received by colleagues and students, a testament to the pioneering research conducted in his laboratory, which remains at the forefront of biological science. Arhat Abzhanov and his team are delving into the molecular evolution mechanisms in vertebrates, including reptiles, birds, and mammals. Their research focuses on genes crucial for biological development and mutations that introduce new characteristics, such as wings, legs, and eyes. Leveraging advanced technologies, they aim to manipulate gene activity to mimic natural mutations and examine their outcomes. Furthermore, their work extends to studying the genetic foundations of various diseases, adopting a biomedical approach to understanding these changes. As the leader of a research group specialising in organism biology and evolutionary biology at Harvard, Professor Abzhanov's interests include the evolutionary development of craniofacial structures in vertebrates. By employing molecular and cellular biology methods alongside developmental genetics, his research seeks to unravel the evolutionary mechanisms that influence skeletal differentiation in cranial brain cells. This line of inquiry is crucial for comprehending congenital human diseases. In 2006, Professor Abzhanov and his colleagues embarked on a project to explore the genetic mechanisms behind the variations in the size and shape of the beaks of Darwin's finches, identifying a molecule that regulates beak length. This discovery led to the project being recognised as one of the top ten breakthroughs of the year by the journal Science. His research team is studying various organisms, including chicken embryos, mutant mice, Darwin's finches from the Caribbean Islands, and reptiles. Their methodology encompasses a three-fold strategy: 1) Detecting changes and utilising 3D visualisation techniques for quantitative morphological variation assessment; 2) Identifying potential genetic mechanisms of development through real-time trait observation, mapping essential quantitative trait genes, and employing microarray and deep RNA sequencing; 3) Investigating candidate genes linked to proposed developmental mechanisms using techniques like tissue manipulation and embryo transgenesis with molecular vectors. This comprehensive approach facilitates a deeper understanding of evolutionary biology and its applications in medical genetics.	

Amangeldy Kuanbaevich Bisenbayev

Amangeldy Kuanbaevich Bisenbayev is a distinguished scientist renowned for contributing to biochemistry, molecular genetics, and biotechnology. He holds a Doctor of Biological Sciences degree and a professorship and is an academician of the National Academy of Sciences of the Republic of Kazakhstan. Since 2000, he has been the director of the Scientific Research Institute of Biology and Biotechnology at Al-Farabi Kazakh National University. Born November 6, 1966, in Novokazalinsk village, Kyzylorda Region, Bisenbayev, in 1983, pursued higher education at S.M. Kirov Kazakh State University (KazGU), graduating in 1990 with a biology degree. While at university, he was actively involved in research at the Department of Genetics and Molecular Biology, mentored by Academician R.I. Bersimbay of the National Academy of Sciences of Kazakhstan.

After university, Bisenbayev joined the full-time postgraduate program at the Department of Genetics and Molecular Biology at Al-Farabi Kazakh National University in 1990. He defended his Candidate thesis in 1994, focusing on "Biochemical mechanisms of gibberellic acid's action on the synthesis and secretion of alpha-amylase in isolated aleurone layers of wheat grains." In 2010, he completed his doctoral dissertation on "Biochemical pathways of apoptosis in aleurone cells of wheat grains" within biochemistry, further establishing his expertise and contribution to the scientific community.

For over three decades, the life and career of A.K. Bisenbayev have been intricately tied to the al-Farabi Kazakh National University, beginning with his days as a student. AK has spearheaded numerous international and national scientific projects and initiatives as a distinguished scientist, educator, and leader. His contributions to biochemistry and molecular genetics have earned him significant recognition within the global scientific community. He pioneered a new scientific field in Kazakhstan, focusing on the molecular genetic mechanisms regulating gene activity, intracellular signalling, and the pathways leading to programmed cell death in plants.

His research has unveiled the apoptosis mechanism, elucidating the oxygen radical metabolism system, crucial effector molecules, and enzymes repairing DNA damage caused by oxidative stress. Bisenbayev's work has garnered international accolades, significantly influencing molecular genetics. Bisenbayev's research group has made noteworthy advances in understanding DNA repair, particularly in enzymes repairing oxidative damage in plant DNA. Bisenbayev notably isolated genes for apurinic/apyrimidinic endonucleases in Triticum aestivum and extensively characterised these enzymes. Their research highlighted the role of these enzymes in chromatin fragmentation during programmed cell death in plants. Furthermore, they were the first to identify and describe the function and characteristics of the TOR kinase system components in the aleurone cells of Triticum aestivum. This system is critical for relaying

	signals from growth factors and nutrients to regulate cell growth and proliferation, marking a substantial contribution to the field. The research led by A.K. Bisenbayev is crucial for unravelling the fundamental mechanisms of plant cellular differentiation, growth, and development. It plays a pivotal role in devising new strategies to enhance crop productivity and fortify plants against biotic (living threats like pests) and abiotic (non-living threats like drought) environmental challenges. Among the various research interests of A.K. Bisenbayev is the preservation of rare and endangered plant species. His team has achieved pioneering results in assessing the genetic diversity of several rare, endemic, and endangered plant populations within the Balkhash-Ili region, aiming to refine conservation strategies. Leveraging this foundational research, A.K. Bisenbayev's team has pioneered high-tech biotechnological processes in Kazakhstan to treat organic waste and produce alternative fuels, such as bioethanol. A notable achievement includes the development of recombinant strains that produce cellulolytic enzymes. These enzymes can transform amorphous cellulose directly into bioethanol through genetic engineering techniques, marking a significant advancement in the field. This innovative approach enables bioethanol production from renewable and cost-effective cellulose sources, including cereal straw, paper industry waste, and sawdust. The work conducted by A.K. Bisenbayev and his team has led to over 150 scientific publications, featured in esteemed international journals and showcased at numerous global forums. Bisenbayev has also contributed to academic literature, authoring a comprehensive dictionary of biological terminology and educational manuals on biochemistry for university students, further highlighting his multifaceted contributions to science and education. A.K. Bisenbayev devotes considerable effort to nurturing the next generation of scientists. He serves as the chairman of the dissertation council, overseeing the defence of doctoral dissertations in philosophy, biology, ecology, and biotechnology. Under his mentorship, one candidate and six PhD students have successfully defended their dissertations. Bisenbayev's commitment extends beyond academia; he actively engages with young scientists and school students. Since 2001, he has chaired the jury for the Republican Biological Olympiad and has been the scientific coordinator for the Kazakhstan team at the International Biological Olympiads since 2000. His lectures at the Faculty of Biology and Biotechnology at KazNU cover contemporary issues in evolutionary theory, genetic engineering, and molecular biology. Bisenbayev's excellence in teaching has been recognised with the "Best University Teacher" award twice, in 2006 and 2020. In 2008, his pedagogical achievements were honoured with the Y.Altynsarin Award by the Ministry of Education and Science of the Republic of Kazakhstan. Most notably, in 2022, the President of the Republic of Kazakhstan awarded him the Order of Kurmet, recognising his significant contributions to science and education.	

Ruslan Maratovich Biyashev

Ruslan Maratovich Biyashev completed his undergraduate degree in genetics at the Biological Faculty of S.M. Kirov Kazakh State University in 1980. His thesis, which focused on the genetic aspects of the action of the gastrin hormone in rat pancreas and gastric mucosa, was supervised by Rakhmetkazi Iskendirovich Bersimbayev, who was a Candidate of Biological Sciences at the time and later became an Academician of the National Academy of Sciences of Kazakhstan. Following his graduation, Biyashev joined the Institute of General Genetics of the USSR Academy of Sciences as a research intern, where he pursued his postgraduate studies from October 1982 until December 1985. During this period, he defended his PhD thesis on "Polymorphism and genetic control of barley isoenzymes" under Professor A.A. Sozinov, a notable figure in genetics.

Upon completing his postgraduate studies, Biyashev returned to Alma-Ata and began his career as a junior researcher at the Institute of Botany of the Academy of Sciences of the Kazakh SSR. He was promoted to senior researcher in January 1988. In January 1991, Biyashev embarked on an international collaboration through the North American project on barley genome mapping, working with Dr. Maruf at the Virginia Polytechnic Institute until the end of 1996. This collaboration contributed significantly to mapping the barley genome and developing gene mapping techniques to resist grey rust in corn.

Following the barley genome project, Biyashev continued his plant genetics research. In 1997, he joined another international project to map the rice genome and identify genes responsible for resistance to various plant diseases.

Biyashev's research focuses on enhancing the nutritional qualities of soybean seeds through plant genomics. His work aims to unravel genetic control and explore the sugar and phytic acid content variability in soybean seeds. The objective is to identify economically significant genes that could be used in breeding programs to improve these nutritional qualities.

Saparbayev Murat Kalievich

M.K. Saparbayev entered the world on October 17, 1961, in Nukus, within the Kara-Kalpak ASSR, as the child of a geologist engineer. In 1979, he embarked on his academic journey at the biological faculty of Kazakh State University, named after S.M. Kirov, with a focus on microbiology under the guidance of Professor Maya Khazhetdinovna Shigaeva. For his term paper and thesis research, Saparbayev was directed to Novosibirsk State University (NSU) by his supervisor. Following the successful defence of his thesis in May 1984, he undertook a two-year internship at NSU under the mentorship of Professors R.I. Salganik and A.V. Mazin.

In 1987, Saparbayev continued his education in Novosibirsk at the Institute of Cytology and Genetics' postgraduate program, specifically in the Laboratory of Molecular Biology. A.V. Mazin and G.L. Dianov, both esteemed Candidates of Biological Sciences, guided him. Saparbayev embarked on a dissertation titled "Molecular mechanisms of mutagen-stimulated recombination in plasmids of E. coli K12 strains," which he successfully defended in May 1991, earning the degree of Candidate of Biological Sciences in Genetics (03.00.15).

During his early career, Saparbayev published several articles in international scientific journals, catching the eye of Dr. Jacques Laval from the DNA Repair Laboratory at the Gustave-Rosi Institute in Villejuif, France. Dr. Laval extended an invitation to Saparbayev for a postdoctoral position, and since September 2000, he has led the DNA Repair laboratory at the institute. Today, Saparbayev leads this laboratory with distinction, focusing on the molecular mechanisms that uphold genomic stability and investigating the defects contributing to ageing and cancer.

The research carried out by Murat Saparbaev has achieved considerable scientific significance, resulting in publication in over 50 peer-reviewed scientific journals. Esteemed publications such as the Proceedings of the National Academy of Sciences (USA), Nature, and Science have featured his work. A search for Murat Saparbaev on Google yields more than 8,000 results, reflecting his notable presence in the scientific community.

Saparbaev is a passionate advocate for his homeland and Al-Farabi Kazakh National University. He is deeply involved in nurturing the next generation of scientists, actively participating in training PhD students and masters. He generously offers his laboratory as a research facility to students. Additionally, Saparbaev contributes to the academic community by lecturing at the Faculty of Biology and Biotechnology at Al-Farabi Kazakh National University, Gumilev Eurasian National University, and Nazarbayev University, showcasing his commitment to education and research in Kazakhstan.

Sarbasov Dos Dzhurmakhanbetovich

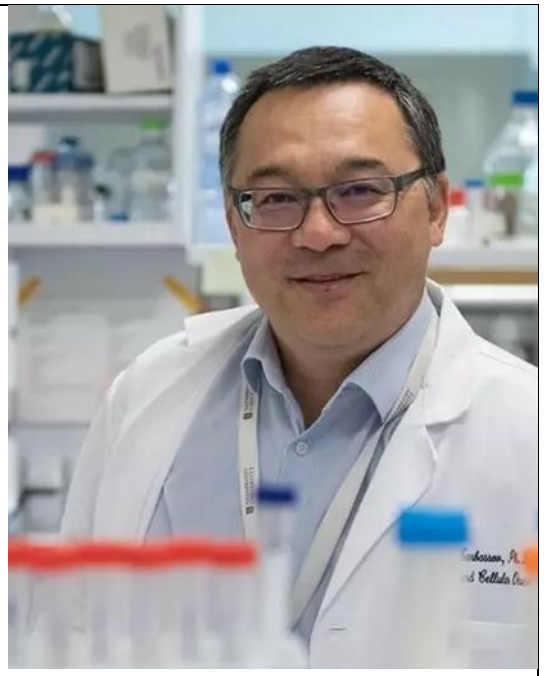
Sarbasov Dos Dzhurmakhanbetovich, a 1991 graduate of the Faculty of Biology, showed remarkable aptitude for scientific research early on. By his third year, he was already engaged in research under the guidance of Academician R.I. Bersimbayev of the National Academy of Sciences of Kazakhstan and Associate Professor M.M. Tairov in the Molecular Genetics laboratory. With Bersimbayev's support, Sarbasov had the opportunity to conduct research at Novosibirsk State University, a premier scientific institution in the Soviet Union. He delved into studying the hormonal regulation of cellular processes and intracellular signalling pathways there.

During his tenure at the university, Dos excelled academically and in his laboratory research, and he dedicated himself to learning foreign languages. This linguistic proficiency enabled him to participate in a student exchange program in the United States and subsequently enrol in a doctoral program at the University of Medical Sciences in Arkansas, Little Rock, in 1992. While pursuing his biochemistry and molecular biology studies, Dos focused on how insulin-like growth factors regulate muscle cell differentiation. He aimed to decipher how specific growth factors influence muscle cell differentiation. His dissertation research culminated in three published research articles, one featured in the prestigious Proceedings of the National Academy of Sciences.

After earning his PhD in biochemistry and molecular biology in 1997, the scientist was invited to Cornell Medical College in New York for a one-year research stint focusing on cell signalling in immunology. In 1999, he moved to the laboratory of David M. Sabatini at the Whitehead Institute for Biomedical Research, which is affiliated with the Massachusetts Institute of Technology (MIT) in Cambridge, Massachusetts. His research there centred on the nutrient-sensing system, particularly the mTOR signalling pathway (mammalian target of rapamycin), a crucial pathway for regulating cell growth across all eukaryotic organisms.

He was instrumental in identifying and functionally characterising two separate mTOR complexes, utilising raptor and rictor proteins as adapters during his tenure. Through functional studies, the team elucidated how mTOR orchestrates cell growth by modulating protein synthesis and proliferation in response to growth factor signalling. This groundbreaking work significantly advanced our understanding of cellular anabolism's signalling pathways, which are vital for processing essential nutrients such as amino acids, glucose, and fatty acids.

Since 2006, Professor D.D. Sarbasov has held the position of a distinguished researcher and professor at the University of Texas MD. Anderson Cancer Center in Houston, Texas, where he leads the Laboratory for Molecular and Cellular Oncology. This centre is globally acclaimed as one of the foremost institutions for cancer research. Professor Sarbasov's research is pivotal in understanding the mTOR signalling



	pathway, specifically, its implications in nuclear transport and ribosome biogenesis, placing him at the cutting edge of biological science and biomedicine. His contributions have been recognised through publications in esteemed journals such as Cell, Science, and Molecular Cell. As of April 2014, Google Scholar notes that his work has amassed over ten thousand citations, underscoring his stature as a highly acclaimed and globally recognised scientist. Professor Dos Sarbassov has dedicated over 27 years of his career to the MD Anderson Cancer Center before returning to Kazakhstan in 2019. He now serves as the Director of the Astana National Laboratory and holds the position of Deputy Chairman for Research at the School of Natural Sciences and Humanities. His research primarily focuses on the nutrient-dependent regulation of cell growth and survival, and its deregulation in cancer. His significant contributions include advancing our understanding of the crucial role played by the rapamycin target in controlling cell growth across all eukaryotic organisms. Currently, Professor Sarbassov leads a team at the Astana National Laboratory. In collaboration with oncologists from the Kazakh Research Institute of Oncology and Radiology, they are actively pursuing the development of an effective cancer treatment.	
	TIMIRKHANOV SERIK RAKISHZHANOVICH Laureate of the State Prize of the Republic of Kazakhstan in 2015 in the field of science and technology named after al-Farabi and laureate of the A.I. Barayev Prize for the best scientific research and work in the field of agricultural science. He was born on September 17, 1960 in the Balkash, Karaganda region. From 1977 to 1982 he studied at KazGU, where he qualified as an ichthyologist and biologist. While still in his 2nd year student, he took part in an expedition to mountain reservoirs organised by the Department of Zoology and Ichthyology to mountain reservoirs. On the advice of his supervisor A.F. Sidorova, he devoted himself in particular to the study of the indigenous species – Ottomans and Marinka. Subsequently, interest in this group of fishes determined the scientific interests of S.R. Timirkhanov for many years. After graduating from the university, Serik Rakhizhanovich was engaged in research and teaching activities at alma mater for fourteen years. During this time, he examined almost all mountain reservoirs in the south and southeast of Kazakhstan, as well as mountain reservoirs of Kyrgyzstan, Uzbekistan, Turkmenistan and Tajikistan. The desk work was continued in the inter-faculty laboratory of bioorganic chemistry named after A.N. Belozersky, where its head was a well-known scientist, Doctor of Biological Sciences, Professor B.M. Mednikov. He proved the possibility of restoration of extinct populations by acclimatizers, whose morphology and biology have significantly changed in the course of the naturalisation process. These results formed the basis for the international program to restore the native ichthyofauna of Lake Issyk-Kul 25 years later. Serik Rakishzhanovich participates in the	

	preparation of the fundamental five-volume book "Fishes of Kazakhstan". This work was nominated for the State Prize of the Republic of Kazakhstan in 1993. In 1997, an important event occurred that determined the fate of Serik Rakishzhanovich for many years. He was invited to head the marine field group of the International Oil and gas Consortium OKIOC (OKIOS), which was carrying out oil exploration work in the Caspian Sea. Recruitment, purchase of equipment unique to Kazakhstan, training personnel, mastering new techniques introduced by foreign specialists and retraining personnel. As a result, the group led by Serik Rakhizhanovich became the best in the region and competed on an equal footing with leading foreign companies. Since 2001 Serik Rakishzhanovich organized and headed the Department of Environmental Monitoring at the Kazakhstan Agency for Applied Ecology. His group conducts state monitoring in the Caspian Sea by order of the Akimat of the Mangystau region. On behalf of Kazakhstan, he performs interstate research together with other Caspian Littoral states and many other works. The hydrobiological laboratory he established was recognized as the best hydrobiological laboratory in the region based on the audit conducted by CEFAS (The Centre for Environment, Fisheries and Aquaculture Science [UK]), and some of the specialists there are considered unique to Europe. During this period, Serik Rakishzhanovich represents and defends the interests of Kazakhstan in the Commission on Bioresources of the Caspian Sea, the Committee on Wildlife of CITES, and other international organizations and forums. In 2005 The FAO (Food and Agriculture Organization of the United Nations) organized a regional office for fisheries in the countries of Central Asia and Transcaucasia. Until 2013, Serik Rakishzhanovich was the national coordinator of the regional office of the FAO for the development of fisheries in Kazakhstan. Despite the huge amount of work, he does not leave his scientific activities. During this period, he headed the group for the study of the Alakol Lakes, conducted ichthyology classes at the Department of Small Livestock of the Kazakh National Agrarian University, and advised the international legal organization "Asian-American Partnership". One of his most remarkable achievements is the preparation of the first and for a long time the only, textbook for ichthyologists in Kazakhstan in the Kazakh language. In 1999, together with Associate Professor of the Department A.A. Baimbetov, a "Kazakh-Russian Guide to Fish and Fishes of Kazakhstan" was written and published. This book immediately became a scientific bestseller. The achievements of scientists in the field of environmental monitoring of oil operations are reflected in one of the volumes of the monograph "Ecology and the oil business". Since 2010 Serik Rakishzhanovich returns to his main specialty – fisheries. In 2010-2011 he is the Deputy General Director of the Kazakh Research Institute of Fisheries. Under his leadership, research was conducted for the first time in Central Asia and the Transcaucasia region to study the population genomics of sturgeons. Currently, this work has resulted in a joint Kazakh-Russian program for the certification of sturgeon. His extensive scientific connections	

	allowed him to involve the world's leading scientists in the work. A deep comprehensive understanding of the environmental situation in the Caspian Sea and the situation with sturgeons allowed him to become the author of a scientific justification for the introduction of a moratorium on commercial fishing of sturgeons in the Caspian Sea, an initiative put forward by our First President in April 2009 during the official visit of the President of Iran to the Republic of Kazakhstan. The moratorium was implemented in 2010 and remains in effect to this day. As Deputy Chairman of the Board of the Republican Association of Public Associations of Fishermen and Fisheries entities "Kazakhrybkhoz", S.R. Timirkhanov makes significant efforts to develop aquaculture in Kazakhstan. S.R. Timirkhanov pays great attention to personnel training. For the best students of his native department and faculty, he established a personal scholarship "To the best hydrobiologist of Kazakhstan". In 2013 he became one of the initiators of the creation of Aqua Alliance LLP, a company that produces fish feed through the disposal of waste from the fishing industry.	
	SMAGULOV NURLAN ERKEBULANOVICH The President of the Astana Group Holding. Graduated from Kirov Kazakh State University with the degree - «Biology and Chemistry» in (1990). He was born on June 2, 1965 in Alma-Ata. By decree of the President of the Republic of Kazakhstan, he was awarded a Certificate of Honor for his contribution to the cultural development of the Republic of Kazakhstan (2006), the Order of «Kurmet» (2007), the jubilee medal «10 Zhyl Astana» (2008), «Person of the Year» according to the magazine «Esquire Kazakhstan» (2007). «Entrepreneur of the Year» in Kazakhstan according to the international auditing company Ernst&Young (2008). The name of Nurlan Smagulov, a successful businessman and philanthropist, is well known in Kazakhstan, but few people know about the early stages of the formation of such a bright personality, which occurred in the 80s of the last century and are closely associated with the Kazakh National University. In 1983, Nurlan entered the student environment of the Faculty of Biology of KazGU easily and rapidly... What was the reason for this? Was it some kind of Moscow charm, as Nurlan had studied for a year at the Moscow Institute of Steel and Alloys, or perhaps his personal charisma? But the biology department graduates immediately noticed this slightly short, always kindly smiling, and fiercely debating young man. He has entered the lives of many and has remained with some of his fellow students for more than twenty-five years. During the academic year, Nurlan firmly joined the student elite of the Biological Faculty and an unplanned turn of fate. In the first half of the 80s, against the background of the agony of «Developed Socialism» and at the peak of the Cold War, students began to be called up to serve in the armed forces of the USSR. And so Nurlan, bidding his classmates farewell with a broad smile, set off to fulfill his military duty at a radio location point in the Betpak-Dala desert. In two years, the country has undergone tremendous changes – la «restructuring» broke out. After	

	military service, Sergeant Nurlan Smagullov continued his studies at the University. In the ichthyologist expeditionary team from Kazakh State University, conducting research in the waters of the Ili River, he proved himself to be a true man. In the middle of the river, he spotted a pelican desperately struggling against the strong current, inexplicably unable to fly away. It turned out that the curly pelican, a rare bird for the fauna of Kazakhstan, had a broken wing. A week later, the Almaty Zoo gratefully accepted the rescued rarity into its collection. And again, more adventures... This time, maritime ones. Nurlan, a student ichthyologist, with his persistence, managed to secure an internship at the Pacific Fisheries and Oceanography Research Institute (TINRO) in Vladivostok. Over the course of six months, he traveled on various types of ships across the waters of the Sea of Japan, the Sea of Okhotsk, and the Pacific Ocean. He visited the Kuril and Kamchatka volcanoes. Everywhere he went, he encountered interesting people, displayed character, and demonstrated persistence in the challenging situations that characterized Smagulov's Far Eastern «Odyssey». It is impossible not to recall the history of writing a thesis. Without computers and the Internet, the work was written during evening and nighttime hours, ultimately recognized as one of the best among students. Interestingly, according to Nurlan himself, the methods of mathematical calculations, searching for patterns, and logic in conducting ichthyological research laid the foundation that helps analyze and make decisions in modern conditions. The student years passed quickly... In 1990, Smagulov was assigned to work as a fish culturist at a production and acclimatization station. Several years later, when business became the primary sphere of Nurlan's endeavors, the Station Director lamented: «It's a pity this guy left us. He was such a talented fish culturist!». Truly, It is not the places that grace the men, but men the places! And again, Kazakh State University. The first business projects within the university walls. Nurlan Smagulov persuaded the faculty leadership of the need to introduce new forms of financing scientific research and established a small scientific-production enterprise called «Nurbulak», which lasted for almost ten years. It's hard to imagine now that the «Generals» of Kazakh business - Nurlan Smagulov and the untimely departed Erzhan Tatishchev - took their first steps in business at their native biology faculty. But within these walls, the ambitious Nurlan felt constrained. The next stage was the creation of the small enterprise «Madina». And then it continued to grow! The first commercial TV channels aired advertisements: «For the New Year - in a new car!» So, in 1992, the Kazakh Motor Company «Astana Motors» first made itself known. Today, it's a full-fledged brand in Kazakhstan, a leader in domestic retail in terms of quantity and quality of services provided. «Astana Motors» boasts a wide network of its own and dealership outlets across Kazakhstan's regions. But even this wasn't enough for self-realization as a businessman. In the early 90s, Nurlan noticed the somewhat non-proprietary attitude towards one of the republic's main assets - grain. And yet, on the flag of Kazakhstan, the sun's rays represent precisely the grains of that ear of wheat, which today has placed	

	our country among the largest wheat exporters. In 1996, the country's leadership entrusted Nurlan Smagulov to head the State Food Contracting Corporation. It was then that the first major contracts for grain export were signed, private structures were established to control the entire cycle - from grain production and storage to its sale and processing. Founded by Smagulov in 1996, the group of companies «Grain Industry» now holds a strong position in the market. The liberalization of land legislation gave Nurlan new ideas for business development - construction. Smagulov became the author and implementer of the popular network of shopping and entertainment centers «MEGA». Ask any resident of Almaty, Astana, or Shymkent: «Where is the best place in their hometown for their family to spend their leisure time?» The answer will be unequivocal – «MegaCenter». In late 2005, Nurlan Smagulov brought together automotive, grain, and construction divisions under the reliable umbrella of the parent company «Astana Group». Nurlan Smagulov is a bright and unique personality, an incurable romantic. A person to look up to.	
	Baykoshkarova Saltanat Berdenovna A well-known and respected specialist in the field of reproductive medicine and a brilliant businessman in the field of biomedical business. Head of the first laboratory of in vitro fertilization in the Republic of Kazakhstan - Medical Center "Ecomed", Candidate of Biological Sciences, majoring in physiology. President of the Kazakhstan Association of Human Reproduction. Member of the National Commission for Women's Affairs and Family and Demographic Policy under the President of the Republic of Kazakhstan, academician of the Academy of Medical and Technical Sciences of the Russian Federation. She was born on February 1, 1960 in the Talas district of the Dzhambul region, where she graduated from high school. While still a schoolgirl, she showed interest in the subjects of the biological cycle (human physiology and anatomy, zoology) and in 1978, having successfully overcome a high competition, she entered the Faculty of Biology of Kazakh State University named after S.M. Kirov. It is no coincidence that the choice of specialty fell on biology, the basis of all sciences about living nature. As you know, biology requires deep knowledge from the fields of chemistry, physics and mathematics, and foreign languages. Well-known teachers taught at Saltanat University: Avazbakieva Maginur Fatkullovna, Dyusembin Khabdrakhman Dyusembievich, Tashenov Kazis Tashenovich, Udolskaya Nadezhda Lvovna, Masenov Tolegen Masenovich, Shigaeva Maya Khazhetdinovna, Bersimbaev Rakhmetkazhi Iskendirovich, Rymzhanov Kaiyrbek Sakenovich, Mukhitdinov Nashtai Mukhitdinovich, Nurtazin Sabyr Temirgalievich and many others. Saltanat specialized in the Department of Human and Animal Physiology. Under the guidance of Professor K.S. Rymzhanova in 2004, she defended her PhD thesis on the topic “Physiological aspects of in vitro fertilization and embryo transfer into the uterine cavity.” She received great assistance in this work from the Department of Human and Animal Physiology and	

	Biophysics under the guidance of Professor S.T. Tuleukhanova as a consultant and leading organization. S.B. Baikoshkarova came up with the idea of creating the first infertility treatment clinic in Kazakhstan - “Ecomed”. She introduced in vitro fertilization (IVF), or test-tube babies, to treat infertility. The first Kazakh test tube baby was born in the clinic on July 31, 1996. The Ecomed clinic was included in the World IVF Registry in France in 1995 as the first IVF laboratory in Kazakhstan. The clinic’s specialists have undergone and are undergoing internships in leading Russian and Russian-American infertility treatment centers, as well as in Germany, Italy, and Israel. In the establishment of the clinic, great assistance was provided by the head of the department of clinical embryology of the Russian Center of Obstetrics, Gynecology and Perinatology of the Russian Academy of Medical Sciences, Professor Boris Vladimirovich Leonov, who in 1986 received the first “test tube” child in the SSR. By the way, the first child in the world was born in 1978 in England in the laboratory of Dr. Richard Edwards. Also, the chief physician of the Central Bank of the Medical Center under the President of the Republic of Kazakhstan, Professor B.S., directly assisted in the formation of the Kazakhstan clinic “Ecomed”. Kuralbaev and his colleagues. Under the auspices of the Ecomed clinic, the Kazakhstan Association of Human Reproduction was created. The clinic constantly provides consultations to infertile couples and their treatment in all situations that lead to non-pregnancy. In 2005, at the World Congress dedicated to the celebration of the birth of two million test tube babies in the world, Dr. Richard Edwards from Cambridge - the founder of IVF in the world - congratulated Saltanat Berdenovna and her team in London, noting the successful work of Ecomed. Currently, at the Ecomed Medical Center, thanks to Saltanat Berdenovna’s constant desire for improvement, all the most modern reproductive technologies that are used in the world have been introduced. Children conceived with the help of these technologies live in different parts of Kazakhstan, near and far abroad. S.B. Baikoshkarova is distinguished by enthusiasm, hard work, dedication and love for her chosen business. She never refuses women from distant villages with financial difficulties, meets them halfway, and, whenever possible, provides preferential assistance. Over the past 5 years, she has been a permanent presenter and consultant of the Khabar Agency television program “Birinshi baylyk - densaulyk”, dedicated to public health issues. Saltanat has a letter of gratitude from the President of the Republic of Kazakhstan N.A. Nazarbayeva, was awarded the Almaty Zhuldyzy medal, and was included in the KINES book of Kazakhstan records in healthcare as the first specialist in the field of IVF and the organizer of the first IVF laboratory in Kazakhstan. Awarded the Honorary Badge “Kazakhstan Republics Densaulyk Saktau Isinin Uzdigine”, Gold Medal named after A.L. Chizhevsky, Certificate of Honor from the Ministry of Health of the Republic of Kazakhstan. The life path and professional growth of Saltanat Baikoshkar Rova is the pride of Al-Farabi Kazakh National University and undoubtedly serves as an example for young people to follow.	

Dyusembin Khabdrakhman Dyusembievich

Founder of physiological research in the field of human and animal lactation in Kazakhstan, physiologist, Doctor of Biological Sciences (1970), professor (1985), academician of the National Academy of Sciences of the Republic of Kazakhstan (2003), International Academy of Integrative Anthropology (1994), Academy of Preventive Medicine of the Republic of Kazakhstan (1996). Head of the Laboratory of Physiology of Lactation at the Institute of Physiology of the Academy of Sciences of the Kazakh SSR (1970-1981), Head of the Department of Human and Animal Physiology of Kazakh State University named after S.M. Kirova (1981-1990), vice-president of the Kazakhstan Physiological Society (1992), advisor to the International Association of Medical Doctors of Asia (AMDA) and president of the Kazakhstan branch (1999), Director of the Institute of Physiology (1990-2003), Honorary Director of the Institute of Human and Animal Physiology of the Center for Biological Research of the Science Committee of the Ministry of Education and Science of the Republic of Kazakhstan (since 2005). For successful research work and social activities, he was awarded diplomas from the Academy of Sciences of the KazSSR (1971, 1976, 1977) and the National Academy of Sciences of the Republic of Kazakhstan (1991), the medal “Veteran of Labor” (1980), the Certificate of Honor of the Ministry of Higher and Secondary Special Education of the USSR for many years of fruitful scientific and pedagogical activity and in connection with the 50th anniversary of the founding of Kazakh State University (1984). Born on October 15, 1931 in the village. Ushkol Pavlodar region. In 1937-1946. – student of the Zhanatalap and Tavolzhan rural schools of the Lozovsky (Uspensky) district of the Pavlodar region, in 1946-1948. – student at the Pavlodar Pedagogical College. In 1948 he entered the Faculty of Biology and Soils of Kazakh State University named after S.M. Kirov and completed his studies in 1953. As a student, I listened to lectures by famous experts - M.F. Avazbakieva, T.B. Darkanbaeva, F.Kh. Khalilova, N.L. Udolskaya, N.Z. Khusainova, was interested in the most important problems of biology. In the 3rd year, he makes a presentation at a student scientific conference on the topic “The philosophical significance of the teachings of I.P. Pavlova", thereby attracting the attention of his mentors, and subsequently chose a specialization in human and animal physiology. From then to the present time he has remained faithful to his chosen specialty. H. Dyusembin in 1953 entered graduate school at the Leningrad Institute of Physiology named after I.P. Pavlova. This research institute was a Mecca for physiologists around the world. Here the young researcher with particular interest gets acquainted with the soundproof chamber where I.P. himself conducted the experiment. Pavlov is a Nobel Prize laureate. Meetings with famous academicians K.M. Bykov, E.M. Kreps left indelible impressions, especially speeches and reports on neurophysiology by academicians L.A. Orbeli and P.K. Anokhin, who spoke English fluently. In the laboratory of Professor I.A. Baryshnikov under the guidance of Doctor of Biological Sciences G.B.

	Tverskoy Khabdrakhman Dyusembin successfully completed his dissertation work on the topic “Reflex inhibition of milk flow. In 1956, after graduating from graduate school, he returned to Alma-Ata and went to work at the Institute of Physiology of the Academy of Sciences of the Kazakh SSR. Main scientific researches of H.D. Dyusembina are aimed at elucidating the mechanisms of neurohormonal regulation of lactation. He proved the role of efferent nerves and catecholamines in inhibiting the milk ejection reflex and developed measures to combat and prevent hypogalactia. Based on the research results, he proposed a theory of inhibition and stimulation of milk flow, which was approved by specialists in Russia and Europe (Zacks, Cross and others). These serious studies formed the basis for his doctoral dissertation on the topic “Patterns of milk formation and milk flow in mares and some species of ruminants” (1970). For the first time, in order to increase the production of the national drink kumys, the scientist took up the development of technology for machine milking of mares. Together with the Moscow Research Institute, experimental milking machines “Temp”, “Stimul” and “DA-3M” were manufactured and tested in practice for the first time, and were successfully introduced at the Kamensky state farm, the Alma-Ata collective farm and the T. Ryskulov collective farm. Alma, Ata region. The main scientific works were created by Kh.D. Dyusembin in the field of studying the mechanisms of neurohumoral regulation of lactation in women and female animals. The results of these studies made it possible to summarize the data obtained and show the neurophysiological features of the lactation process. He developed theoretical principles about the features of stimulation and inhibition of lactation. Author of more than 250 scientific works, including five monographs, more than 10 textbooks, teaching aids, and methodological recommendations for university students. In collaboration with academician of the National Academy of Sciences of the Republic of Kazakhstan N.U. Bazanova created major monographs “Function of the mammary gland in farm animals” and “Stimulation of milk production in animals”, which are the main books on the physiology of lactation, reference books for students, graduate students and researchers. Khabdrakhman Dyusembievich is the author of such monographs as “Inhibition and stimulation of lactation”, “Hypogalactia”, “Physiology of the central nervous system and internal nervous system”. Under his leadership, major textbooks and teaching aids for students of biological and medical profiles “Zhaska sai physiology zhane valeology”, “Ortalyk zhuyke zhuyesi zhane zhogary zhuyke areketinin physiology”, “Nareste physiology” and others were published. Some materials of his research were included in the all-Union textbook “Physiology of Farm Animals” (M., 1980) and in the “Guide to the Physiology of Lactation” (M.-L., 1973). A great contribution to the development of the physiological school on lactation in Kazakhstan was the many years of organizational work of Kh.D. Dyusembina as director of the Institute of Human and Animal Physiology of the National Academy of Sciences of the Republic of Kazakhstan, head of the Department of Human and Animal Physiology of Kazakh State	

University, head of the Laboratory of Lactation Physiology of the Institute of Human and Animal Physiology of the Ministry of Education and Science of the Republic of Kazakhstan. He was able to direct the work of scientific and university teams towards specific decisions concerning the physiology of lactation in humans and animals. Under his leadership, about 20 candidate and doctoral dissertations were defended. Khabdrakhman Dyusembievich is full of strength and energy, actively conducts scientific research, gives lectures to students of the Faculty of Biology of Al-Farabi Kazakh National University

AKHAN ABZHALELOV

Akhan Begmanovich Abzhalelov, General Director of the Republican State Enterprise "Republican Collection of Microorganisms," was born on December 24, 1959, in the settlement of Zhanakorgan, Kyzylorda Region, into a family of teachers. In 1988, he graduated from the Biological Faculty of Kazakh State University named after S.M. Kirov and was sent to the Institute of Microbiology and Virology of the Academy of Sciences of the Kazakh SSR to continue his research work. A year later, he entered the graduate school specializing in Microbiology and defended his candidate dissertation in 1992 under the guidance of the renowned scientist, Academician of the National Academy of Sciences of the Republic of Kazakhstan, A.N. Ilyaletdinov. From 1990 to 1992, he underwent scientific training at the laboratory of agricultural microbiology under Professor N.A. Tuev at the All-Russian Research Institute for Agricultural Microbiology (Saint Petersburg - Pushkin). From 1992 to 1999, A.B. Abzhalelov combined his work as a researcher and senior researcher at the Institute of Microbiology and Virology with teaching activities at al-Farabi Kazakh National University. In 1999, he defended his doctoral dissertation on the topic "Biological Activity of Meadow-Swamp Soils Depending on the Application of Mineral Fertilizers and Plant Residues" for the degree of Doctor of Biological Sciences. From 1997 to 2000, A.B. Abzhalelov worked as an associate professor, professor of the Department of Ecology at the Kazakh State Agrarian University. During his tenure at KazGosAgroU, with his participation, the Specialized Council for the Defense of Candidate Dissertations in the field of Agroecology was organized for the first time in our country. In 2000, A.B. Abzhalelov was invited to L.N. Gumilyov Eurasian National University as a professor. From 2001 to 2004, he chaired the Department of Biology and Ecology at the same university. At his initiative, a graduate program in Microbiology was established, and the specialty of Biotechnology was opened at the undergraduate level. In 2002, by the decision of the Higher Attestation Commission of the Ministry of Education and Science of the Republic of Kazakhstan, A.B. Abzhalelov was awarded the academic title of associate professor, and then in 2003, of professor in the field of Biology. From 2004 to 2006, A.B. Abzhalelov chaired the Department of Biology at the International Kazakh-Turkish University named after H.A. Yassawi. In 2005, at his initiative, master's and bachelor's programs in Biology were opened at the International Kazakh-Turkish University. In 2006-2007, by invitation of the Ministry of

	Education and Science Republic of Kazakhstan. During his career, A.B. Abzhalelov held positions as deputy director and acting director of the Institute of Microbiology and Virology. From 2007 to 2010, he served as the director of the subsidiary state enterprise "Republican Collection of Microorganisms" at the Republican State Enterprise "National Biotechnology Center of the Republic of Kazakhstan," under the Ministry of Education and Science of the Republic of Kazakhstan. From 2010 to 2015, he served as dean and vice-rector for research and innovation at the JSC "Kazakh University of Technology and Business." In 2015, A.B. Abzhalelov was elected through a competition to the position of General Director of the Republican State Enterprise "Republican Collection of Microorganisms" under the Committee of Science of the Ministry of Education and Science of the Republic of Kazakhstan. A.B. Abzhalelov is credited with developing the microbiological mechanism of humic compound formation in periodically flooded soil. He extensively studied oligotrophic, nitrogen-fixing, anaerobic, and aerobic cellulose-degrading microorganisms in soil. Methodological aspects of using microorganisms to assess the pollution levels of environmental objects (water, soil, plants, and animals) have been developed under his guidance. His published monograph "Ecological Foundations for Improving Soil Fertility in Southern Kazakhstan" (2002) investigates the role of microorganisms in soil fertility, particularly their influence on the dynamics of humus content (humic and fulvic acids) and the accumulation of plant-available mineral nitrogen in the soil. A.B. Abzhalelov was one of the first Kazakhstani soil microbiologists to oppose the existing technology of rice cultivation using intensive soil tillage systems, as this method leads to a sharp decrease in soil humus reserves and the predominance of humus mineralization over synthesis. Soil humification coefficients were established using 14C isotope labeling. A significant amount of attention and effort by A.B. Abzhalelov is dedicated to the training of scientific personnel. From 2007 to 2010, he chaired the Dissertation Council for the Defense of Doctoral and Candidate Dissertations in the fields of Microbiology, Biotechnology, and Pharmacology at the Republican State Enterprise "National Biotechnology Center" under the Ministry of Education and Science of the Republic of Kazakhstan. Under his supervision, 9 candidate dissertations in Microbiology and Ecology were defended, and dozens of master's and bachelor's theses were prepared. His students are successfully employed in leading scientific and national universities of Kazakhstan. A.B. Abzhalelov actively participates in the development of bacterial preparations for environmental protection, particularly in the development of technologies for biological purification of reservoirs from sewage using active microorganisms. Under his leadership, the Republican Collection of Microorganisms has been enriched with over 500 strains of industrially valuable cultures (bacteria, actinomycetes, yeasts, and mycelial fungi) necessary for biotechnological production. An inventory of collection cultures has been conducted, and an "Atlas of Microorganisms" has been published for use in specialized collections, scientific, and educational	

purposes. An electronic catalog of industrial microorganisms has been developed and is available on the institute's website. A.B. Abzhalelov always maintains a high level of tact, equally attentive to both laboratory assistants and renowned scientists. As the General Director of the Republican State Enterprise "Republican Collection of Microorganisms," he fosters a creative atmosphere within the scientific community, striving to support every innovative direction and assist each scientific employee.

ILYA DIGEL

Professor I.E. Digel is the recipient of the Named Scholarship of the First President of the Republic of Kazakhstan (1995-1998), the Government of the Republic of Kazakhstan Prize for the Best Diploma Thesis (1995), and the DAAD Scholarship of Germany for Young Scientists (2003). He is listed in the "Who is Who in Science and Technology" bulletin (2007-2012) and "Who is Who in Medicine and Healthcare" (2009-2012). He is a citizen of Germany. Ilya Digel was born on May 11, 1973, in Zhambyl. After graduating from high school with a gold medal in 1990, he enrolled in the Biological Faculty of al-Farabi Kazakh National University and graduated with honors. I.E. Digel began his professional career as a laboratory assistant at the Department of Microbiology of the Biological Faculty of al-Farabi Kazakh National University (1993-1996). From 1995 to 1998, he pursued his Ph.D. studies at al-Farabi Kazakh National University and successfully defended his dissertation on the topic "Influence of transition metal salts and water-soluble polymers on the adhesion of microbial cells to solid surfaces" in 1998. From 1994 to 1998, I.E. Digel worked as a junior and senior researcher at the Institute of Microbiology and Virology of the National Academy of Sciences of the Republic of Kazakhstan. From 1998 to 1999, he worked as a senior researcher at the Information and Analytical Center of the Ministry of Ecology and Geology of the Republic of Kazakhstan, and from 1999 to 2002, he served as a production manager at Extrapress GmbH in Almaty. From 1999 to 2002, he worked as a senior librarian and later as deputy director for information technology at the National Agricultural Library of the Republic of Kazakhstan. After moving to Germany, he worked as a senior researcher, laboratory head, and assistant professor at the Faculty of Medical Technology and Technomathematics (Fachbereich Medizintechnik und Technomathematik) at FH Aachen, Campus Jülich. Since 2005, he has been working at the Freshman Institute FH Aachen, Campus Jülich. Professor I.E. Digel has made a significant contribution to research on the use of transition metals and water-soluble polymers as modulators of yeast cell adhesion to solid surfaces, the development of solid-phase modifications of ELISA for the diagnosis of viral antigens, and the antimicrobial action of plasma-cluster ions. His works on the effects of pulsating electromagnetic fields on the polymerization of collagen, elastin, and proteoglycan components of the extracellular matrix, the use of laser light scattering techniques to study the interaction of endotoxins with various plasma proteins, and the effects of exposure to ultra-low doses of lead on the bacterial status of the intestines are widely

	known. The main areas of scientific activity of Professor I.E. Digel in Germany include research on the adsorption of bacterial endotoxins on nanostructured carbonized materials, biophysical aspects of combating plant viroid diseases, molecular biophysics of thermoreception and signaling molecules, in-situ decontamination of equipment for space and glacial research, as well as phenomena of structure formation in aqueous solutions, hydrogels, and surfaces of the dispersed phase. Professor I.E. Digel successfully combines his scientific work with pedagogical activities. Within the framework of the educational process at the FH Aachen University of Applied Sciences, he teaches courses in bachelor's and master's programs such as "Radiation Methods in Medical Diagnostics," "Bionics and Biomimetics," "Cellular and Molecular Biophysics," "Physics," among others. Ilya Edgarovich Digel is the author of more than 100 scientific articles, monographs, and books. Since 2007, he has been a member of the editorial boards of the journals Annals of Biomedical Engineering and Open Journal of Bioinformatics. He has supervised 2 PhD students. Professor I.E. Digel actively collaborates with al-Farabi Kazakh National University.	
	VLADIMIR BEREZIN Doctor of Biological Sciences (1988), Professor (2002), renowned virologist, Director of the Institute of Microbiology and Virology of the Ministry of Education and Science of the Republic of Kazakhstan (1995-2008), Academic Secretary of the Department of Biological and Medical Sciences of the National Academy of Sciences of the Republic of Kazakhstan (2002-2003). Born on November 11, 1953, in Almaty. He graduated from Secondary School No. 40 in Almaty in 1969 and entered S.M. Kirov Kazakh State University. In 1975, he graduated with honors from the Faculty of Biology, Department of Microbiology. He began scientific research in the third year at the Laboratory of Virus Biochemistry at the Institute of Microbiology and Virology of the Academy of Sciences of the Kazakh SSR, led by Doctor of Biological Sciences, State Prize laureate of Kazakhstan E.S. Isaeva. Always active and determined, Vladimir Berezin, as remembered by Academician M.Kh. Shigaeva, managed to excel in everything: in education, science, and music. His artistic talent and musicality found expression in the vocal-instrumental ensemble "Bigle," but science remained Vladimir's main focus. In 1975, he was employed at the Laboratory of Virus Biochemistry at the Institute of Microbiology and Virology of the Academy of Sciences of the Kazakh SSR as a senior laboratory assistant. In 1978, he successfully passed a competition for the position of junior researcher, entered correspondence postgraduate studies, and was sent to the Laboratory of Physico-Chemical Research Methods at the D.I. Ivanovsky Institute of Virology of the Russian Academy of Medical Sciences, where he conducted research on the biological role of oligosaccharide chains of glycoproteins of the influenza virus under the supervision of Doctor of	

	Biological Sciences, Professor I.G. Kharitonenkov. In 1980, he successfully defended his candidate dissertation in virology in Moscow. From 1981 to 1983, he worked at the Institute of Microbiology and Virology of the Academy of Sciences of the Kazakh SSR as a scientific researcher in the Laboratory of Virus Biochemistry and continued scientific research in the field of studying the biological properties of structural components of the influenza virus. In 1983, he passed a competition for the position of senior researcher and was sent to the doctoral program at the D.I. Ivanovsky Institute of Virology of the Russian Academy of Medical Sciences. From 1983 to 1988, he worked in the Laboratory of Virus Physiology (headed by Academician V.M. Zhdanov) and the Laboratory of Subviral Structures (headed by Professor V.M. Zaydes). This period was particularly fruitful. V.E. Berezin conducted scientific research on the development of influenza vaccine production technology, creation of the first diagnostic test systems for detecting human immunodeficiency virus in the Soviet Union, study of the structural-biological characteristics of antigens of several enveloped viruses (hepatitis B, influenza, parainfluenza, Venezuelan equine encephalomyelitis, tick-borne encephalitis), and development of principles for constructing subunit vaccine preparations. Upon returning to Kazakhstan, from 1988 to 1990, he worked as a leading researcher at the Institute of Microbiology and Virology of the National Academy of Sciences of the Republic of Kazakhstan, organizing the antiviral protection laboratory at the institute in 1990. The main direction of this laboratory became the development of diagnostic and prophylactic preparations to combat the most common viral infections in humans and animals, including the creation of test systems for simplified enzyme-linked immunosorbent assay diagnostics of human immunodeficiency virus, influenza virus, Newcastle disease virus, as well as the development of subunit vaccines against influenza virus, Newcastle disease virus, and avian coccidiosis. The results obtained formed the basis of the doctoral dissertation on the topic "Antigenic and Immunogenic Properties of Structural Proteins of Enveloped Viruses," defended in 1988 at the D.I. Ivanovsky Institute of Virology of the Russian Academy of Medical Sciences. Visionary, initiative-driven, and well-educated, V.E. Berezin was appointed in 1995 by the Presidium of the National Academy of Sciences of the Republic of Kazakhstan to the position of Director of the Institute of Microbiology and Virology. Vladimir Eleazarovich developed new directions in virology, facilitated the establishment of scientific contacts with foreign scientists, and made significant efforts to raise Kazakhstani virology to the international level. From 2000 to 2002, he was a member of the Higher Scientific and Technical Council under the Government of the Republic of Kazakhstan. Since 2001, he has been a member of the commission for awarding State Prizes of the Republic of Kazakhstan in the field of science and technology. For several years, he was part of an international expert group and conducted expertise on scientific projects of INTAS and INCOCOPERNICUS. As a science leader, V.E. Berezin supervised five fundamental research programs	

	in the field of microbiology and virology, six international projects under ISTC, CRDF, IPP programs, and numerous projects of republican scientific and technical programs. The main directions of V.E. Berezin's scientific activity are associated with studying the mechanisms of antiviral immunity formation, creating test systems and vaccine preparations for the diagnosis and prevention of viral infections, searching for new antiviral and immunostimulating preparations of plant and microbial origin, studying the problems of the emergence and spread of viral infections in human and animal populations, and developing principles of nanotechnology for constructing vaccine and diagnostic preparations. V.E. Berezin is the author of more than 230 scientific works, including monographs, the first textbook on virology in Kazakhstan, co-author of the Kazakh-Russian terminology dictionary on genetics, molecular biology, virology, and immunology. He holds five patents and 10 author's certificates for inventions. Vladimir Eleazarovich is fluent in English and has repeatedly presented papers at international conferences and symposiums in France, Belgium, the United Kingdom, Ireland, Portugal, the Czech Republic, Spain, Austria, and Canada. He is a member of several international scientific societies: the British Society for Immunology, the European Society for Virology, the American Society of Parasitologists, the European Society of Veterinary Virology. Under his leadership, one doctor and four candidates of sciences were trained. He is a scholarship holder of the State Scholarship for scientists who have made outstanding contributions to the development of science and technology and has been awarded medals "For Contribution to the Development of Science of Kazakhstan" and "10 years to the Parliament of Kazakhstan."	