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Posted By [Zaure G. Aytasheva](#), Friday 09, 2014

To 75-th anniversary of the Department of Molecular Biology and Genetics, al-Farabi Kazakh National University

The department was founded in 1939 as a little study room of Genetics. In 1948 the room was transformed into the Department of Genetics and Darwin Studies with the staff of 7 instructors including Prof. G.Z. Biyashev, Assoc. Prof. N.P. Glinyanyi, Assoc. Prof. M.Kh. Muratov, Assistant Prof. V.I. Fursov, and three technical assistants.

In 1948-1977 the department was led by Academician G.Z. Biyashev (1948-1970) and in 1970-1977 by Assoc. Prof. O.T. Tazhin. In 1977-2001 the department was headed by the Academician R.I. Bersimbayev. In 2001-2005 Prof. K.K. Shulembayeva has been appointed as the chair of the department. From 2005 to date the department is led by Prof. Z. G. Aytasheva.

Gakash Z. Biyashev, academician – leading Kazakhstani geneticist and plant breeder focused on cereals, cotton and sugar beet. Since 1948 he read Darwin Studies, and Origin of Crops. In 1965-1978 Prof. Biyashev was the director of the Institute of Botany of Kazakh Academy of Sciences. Under his supervision newly founded laboratory of the department carried out the project on Inheritance of Valuable Traits among Most Important Crops. In frame of this project Prof. Biyashev has led a part on genetics of sugar beet. G.Z. Biyashev and his disciples (Drs I.A. Abugaliev, K.I. Nabokikh and Sh. N. Ilyaletdinov) have received new triploid hybrids along with others rising sugar beet productivity in Kazakhstan.

Orazbek T. Tazhin was the WWII participant. His service to the department has lasted for more than 36 years. In 1961-1964 he was post-graduate student and has been the chair of the department in 1970-1977. He published 8 textbooks and 21 guidebooks. Dr. Tazhin has translated Darwin's "On the Origin of Species by Means of Natural Selection" and other genetic manuscripts and textbooks. He was one of the authors of the first Russian-Kazakh Dictionary of Terms for General and Molecular Genetics. He also published more than 30 articles on barley genetics. Dr. Tazhin discovered specific gene responsible for polyembryony in barley. He calculated percentage of crossing over with coupling gene allocated on chromosome I. That gene of polyembryony was included in the international nomenclature, or the list of main barley genes. In 1965 Dr. Tazhin has induced minor and major practical courses on fruit fly genetics.

In 1977-2001 the department was headed by academician **Rakhmetkazhi I. Bersimbayev**. In 1987 due to the introduction of the second speciality of molecular biology the department was renamed into the Department of Genetics and Molecular Biology. Dr. Bersimbayev has initiated a new trend of development, namely molecular genetics. So principal themes have become plant breeding and molecular genetic mechanisms of gene functioning. Under Prof. Bersimbayev the department has begun collaborating with National Institute of Medical Research, London, UK, Medizinische Hochschule, Hannover, Germany, and Laboratory of Molecular Oncology, Aston University, UK. Outputs of these joint investigations were included into three-volume American textbook on «Principles of Biochemistry» (A. White, R. Handler, McGraw-Hill Book Press, New York, 1984), the book on «Cellular mechanisms in the regulation of gastric secretory cells» published by R.I. Bersimbayev in Ecomed Press Publishers, Germany in 1993. Prof. Bersimbayev has published over 500 proceedings in domestic and international research journals. He was the

member of stirring committees of VIII and IX International conferences on Environmental Mutagenesis which took place in Japan (2002) and USA (2005). For many years he was the member of international experts team conducting the expertise of INTAS as INCO-Copernicus projects. Prof. Bersimbayev was the Chairman of Doctoral Research Council of al-Farabi University by such specialities as Genetics, Biochemistry, Cytology, Histology and Cell Biology. He supervised two doctoral and more than thirty Ph.D. dissertations. Prof. Bersimbayev's disciples are working not only in Kazakhstan but also in leading research centers of Russia, France, UK, USA and other countries. Since 1995 Prof. Bersimbayev was elected as corresponding member, and since 2003 as academician of National Academy of Kazakhstan.

Prof. Bersimbayev has read major courses on Genetics and Breeding, Molecular Biology, Fundamental of Modern Biology, minors on Molecular Genetics, Mutation process, Chosen Chapters of Molecular Biology and others.

Chair of the department in 2001-2005, **Prof. Kulziya K. Shulembayeva** has defended her Ph.D. thesis on "Generation of the series of monosomic lines to wheat cv. "Kazakhstanskaya 126" (1985). She is main wheat breeder of the department. Her further achievement was defending doctoral thesis on Wheat Aneuploidy and intraspecies chromosome substitution" (1999). Since 2001 K. Shulembayeva is professor of the department. Her major courses are Chromosome Engineering, Plant Immunogenetics, Plant Breeding, Plant Cytogenetics, Cereal Genetics and others. By using chromosome engineering techniques Prof. Shulembayeva has generated soft spring wheat cultivars "Miraz" and "Nadezhda". Prof. Shulembayeva is the author of more than 250 papers, guidebooks on wheat cytogenetics, chromosome engineering and tests on genetics and biostatistics. Her disciples (1 Doctor of Science, 5 candidates and 1 Ph.D. Doctor) are now successively teaching genetics, biostatistics and drosophila genetics at the department.

Since 2005 the department is headed by Prof. Zaure G. Aytasheva. She defended her Ph.D. thesis on "Immunochemical Separation of Cytoplasmic RNP Particles and Identification of Specific Plant Informosomes" (1987), and got D. Sci. promotion by defending doctoral thesis on "Microsporophyte Proteins under Pollen Germination" (2005). Prof. Aytasheva is the grantee of Alexander von Humboldt fellowship (hosts Prof. Guenter Wricke and Peter R. Wehling, Hannover-Gross Luesewitz, Germany, 1995-1997), and William J. Fulbright Research Program (host Prof. Sheila McCormick, UCB, Berkeley-Albany, USA, 2000-2001). Dr. Aytasheva is running two research projects and the author of more than 200 publications including a book, 7 inventions, 2 patents and 6 state copyright certificates. In 2009 for the first time in Kazakhstan with grant support of US State Department Dr. Aytasheva published three-language (Kazakh, Russian, English) textbook on Signal Transduction in Plants (Kazakh University Publishers, 334 pp.). She is the first President-Elect of Alumni Fulbright Association of Kazakhstan (FASK), and the Secretary of Kazakhstan Humboldt Club. Major teaching courses are Molecular Biology, Critical Thinking and Plant Signaling. Prof. Aytasheva has set up department's germplasm of vegetable plants (*Fabaceae* and *Cucurbitaceae* spp.). Her disciples are now teaching at the department (Drs. Aiman Rysbekova and Aizhan Zhussupova) and accomplishing post-doctoral studies in USA (Dr. Nader Ragab Mohamed Abdelsalam (University of Alexandria, Egypt - University of Kansas, USA).

Since 1954 research profile of the department has been shaped by outstanding breeder, Prof. Nadezhda Udolskaya. Her main research activities were concentrated on the theory of cereal breeding and generation of new of soft wheat and barley varieties. Outcomes of Prof. Udolskaya's research were summed up in "Breeding of soft wheat" (1961) which is regarded as valuable book contribution to practical breeding. Prof. Udolskaya supervised over 18 candidates of science, published more than 100 proceedings and created four valuable wheat cultivars. She was awarded the title of Honorary Researcher of The Republic of Kazakhstan, and elected as Corresponding Member of the National Academy of Sciences. Prof. Udolskaya was the Chairperson of Coordination Council of the Ministry of Agriculture on Cereal Breeding. Since 2010 the department is known as the Department of Molecular Biology and Genetics. The staff is consisted of 36 members including 9 Doctors of Science, 18 Candidates of Science, 2 PhD Doctors, 6 TAs.

Professors K.K. Shulembayeva, A.B. Bigaliyev, S.Zh. Kolumbayeva, A.K. Bissenbayev, N.Zh. Omirbekova, Assoc. Professors Z.M. Biyasheva, B.E. Shimshikov, R.M. Bildebayeva, R.A. Alybayeva, Doctors B.A. Zhumabayeva, Zh. Zh.Chunetova, K.S. Koshkimbayev, A.M. Kalimagambetov, E.D. Dzhangalina, N.K. Altynova, S.B. Dauletbayeva, A.B. Rysbekova, A.I. Zhussupova, S.M. Taipakova, Zh.K. Zhunusbayeva and others are teaching at the department at present.

Broad spectrum of training is rendered due to close collaboration with research institutions and potential employers (Drs. L.B. Dzhansugurova, B.O. Bekmanov, N.N. Galiakparov, Prof. A. Nurzhanova, Prof. B.K. Iskakov, Prof. N.N. Belyaev, Prof. A. Ilijin). Many of part-time staff members are former graduates of the department.

Thirteen research projects are now carried out by the staff. Outputs are published domestically, abroad and in journals with high IF.

This year Prof. Asim Esen, Virginia Tech, Blacksburg, USA, has been teaching Molecular Genetics as other courses as visiting scholar of a Fullbright Program. On May, 6 the department gave farewell reception to his honour (see photos enclosed). This event happened a month earlier because of coming celebration of the university jubileum (the last decade of May, 2014).