



# Al-Farabi Kazakh National University (Almaty, Kazakhstan)



**Tlekkabul Ramazanov**  
Vice-Rector for Science & Innovations

Tianjin, China, COMSATS, 16-17 April 2019



# Present statistics of the Centre





**Main Campus**  
**Area 75 hectare**



# Al-Farabi Kazakh National University



**Galym  
MUTANOV**

**Rector**  
**Academician of the  
National academy of  
sciences of the  
Republic of  
Kazakhstan**

## MISSION



- **Generating the human capacity - highly qualified specialists competitive in the international labor market**

## VISION



- **To enter the Top 200 leading research universities in the world**

## ABOUT THE UNIVERSITY



- **Faculties: 16**
- **Chairs: 64**
- **Research institutes: 24**
- **Laboratories of the National Level: 2**
- **Science and Technology Park**

## ACADEMIC PROFILE



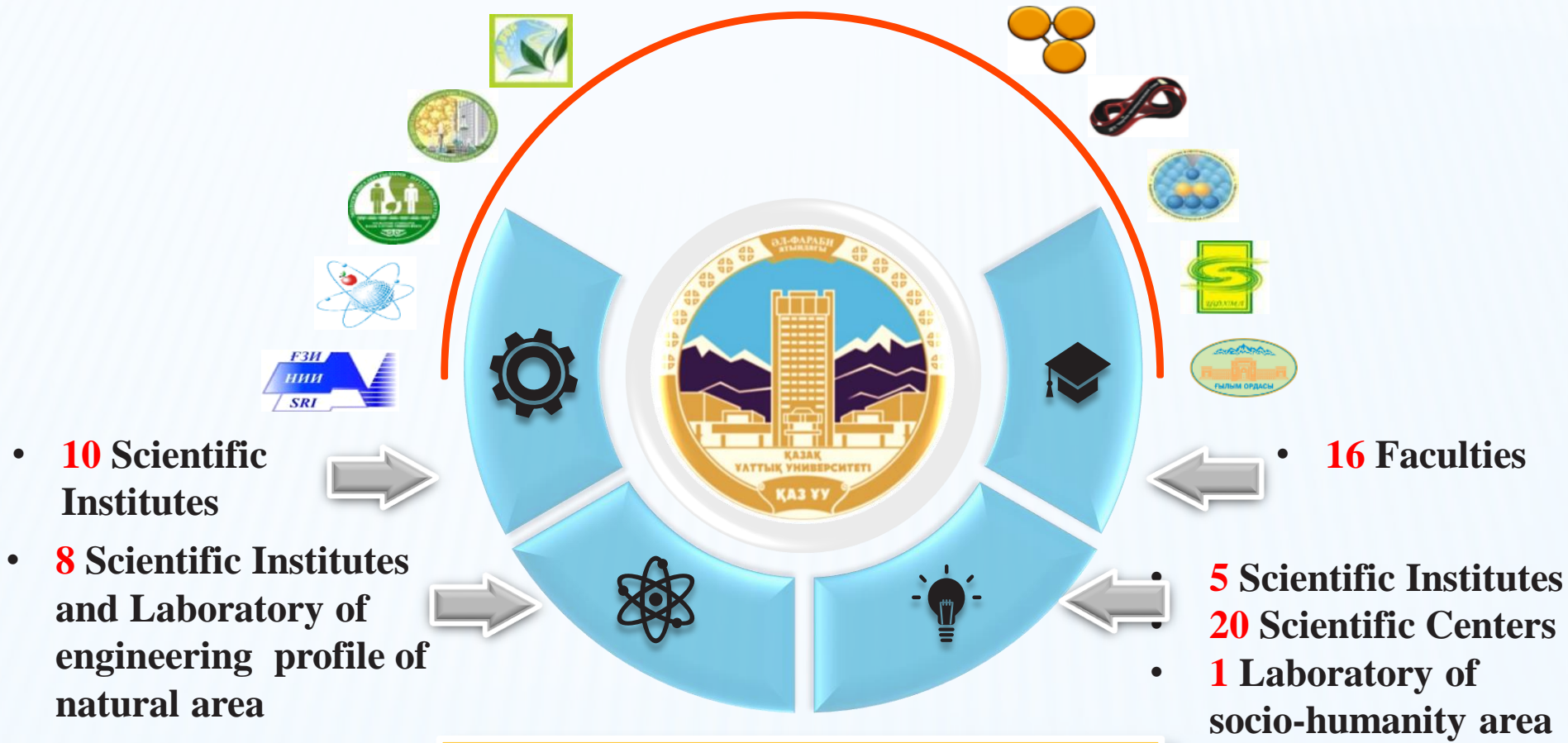
- **Students: 23 596 (2018-2019 academic year)**
- **Bachelor specialties: 82**
- **Master specialties: 95**
- **PhD programs: 76**





# Al-Farabi Kazakh National University

The only university in the Republic of Kazakhstan with a unique scientific and innovative structure



Research is carried out in accordance with the priorities of the Republic of Kazakhstan and world trends in science and technology



# Faculties

**Mechanics and Mathematics**

**Physics and Technology**

**Chemistry and Chemical Technology**

**Biology and Biotechnology**

**Geography and Nature Management**

**History, Archeology and Ethnology**

**Philology, Literary Studies and World Languages**

**Journalism**

**Philosophy and Political Science**

**High School of Economics and Business**

**Law**

**International Relations**

**Oriental Studies**

**Pre-College Education**

**High School of Public Health**

**Information Technologies**







# Research Institutes and Centers (Natural and Technical Sciences)



**Institute of Mathematics  
and Mechanics**



**Institute of  
Experimental and  
Theoretical Physics**



**Institute of New  
Chemical Technologies  
and Materials**



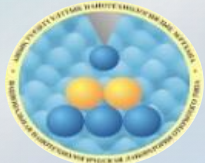
**Center of Physico-  
Chemical Methods of  
Research and Analysis**



**Institute of Biology and  
Biotechnology Problems**



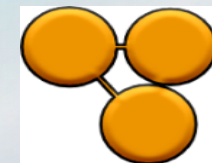
**Institute of Ecological  
Problems**



**National Nanotechnology  
Open Laboratory**



**Scientific and  
Technology Park**



**Laboratory of  
Engineering Profile**



# Socio-humanity institutes and centers

**Research Centre for Korean Studies**

**Research and Education Center for Study of Japan and Central Asia**

**Research Center for Medicinal Plants**

**TURKSOY scientific-educational and cultural center**

**Research and Innovation Center for Economical Studies**

**Abay Scientific Research Institute at al-Farabi KazNU**

**"Monuments and spiritual heritage" Research Center**

**Scientific Research Center "Computer Linguistics"**

**O.Suleimenov Scientific and Research linguistic center**

**Institute for Security and Cooperation Problems**

**Resource Center for American and Democratic Studies**

**T.T. Tazhibayev Center for Ethnopedagogics and Ethnic Psychology**

**Research and Educational Center for German Studies**

**United Nations Regional Center**

**Research and Educational Center for European Law**

**Scientific Research Center of Cognitive Neuroscience**

**Republican Research and Educational Center  
"Al-Farabi and spiritual culture of the Kazakh people"**

**Turan-Iran Research Center**

**Research Institute of Archeology and Steppe Civilizations**

**Research Center for Gender Education**

**Scientific laboratory on archeological dating of artifacts**

**"Rukhani Zhangyru" Research and Innovation Center**

**Republican Research Center for the Study of  
Traditional Civilizations of Central Asia**

**Republican Research Center for the Study of World History**

**Anti-Corruption Technologies Research Center**

**Center for Sociological Research and Social Engineering**

**Research and Innovation Center for Educational Studies**

**Institute of State and Law**

**International Institute of Kipchak Studies**

**Research and Educational Center for Remote Sensing of the Earth**

**Scientific Research Laboratory for Health and Environment**

**Research and Education Center "Digital technologies and robotics"**





# Former research institutes of Academy of Sciences (Gylym Ordasy) integrated with Al-Farabi KazNU

**Institute of Mathematics and Mathematical Modeling**

**Institute of Information and Computer Technologies**

**Institute of Economics**

**C.Valikhanov Institute of History and Ethnology**

**M.Auezov Institute of Literature and Art**

**R.Suleimenov Institute of Oriental Studies**

**A.Baitursynov Institute of Linguistics**

**U.Dzholdasbekov Institute of Mechanics and Engineering**

**Institute of Philosophy, Political Science and Religious Studies**

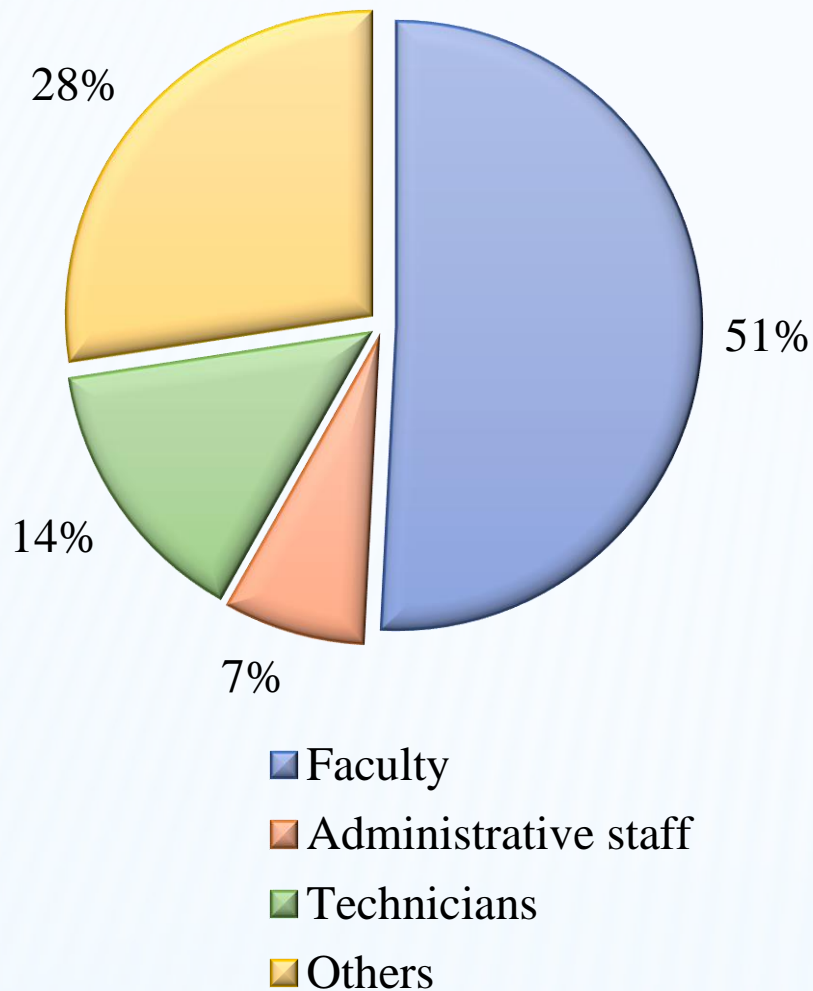
**A.Margulan Institute of Archaeology**



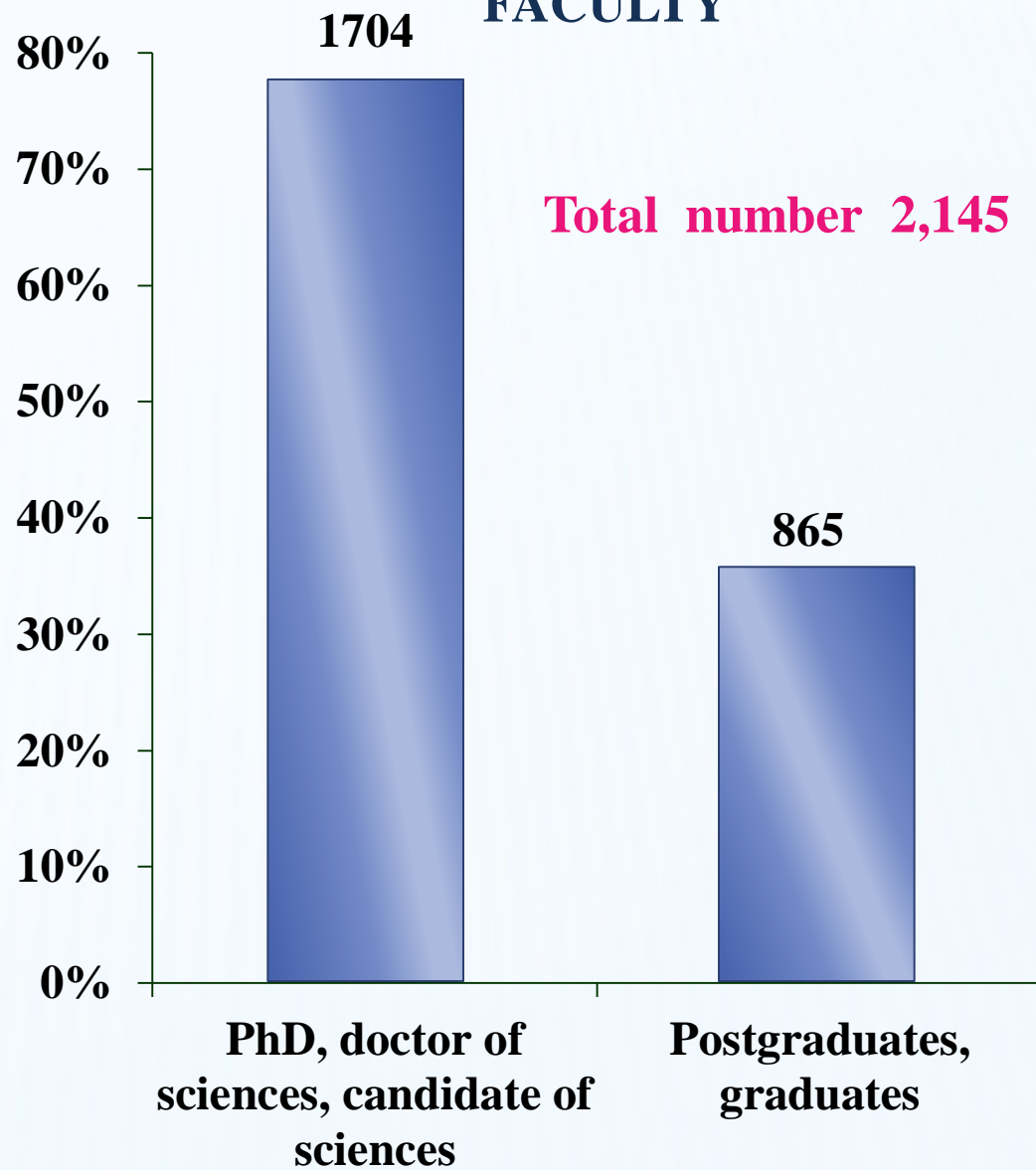


# Contingent Staff Summary

## Employees



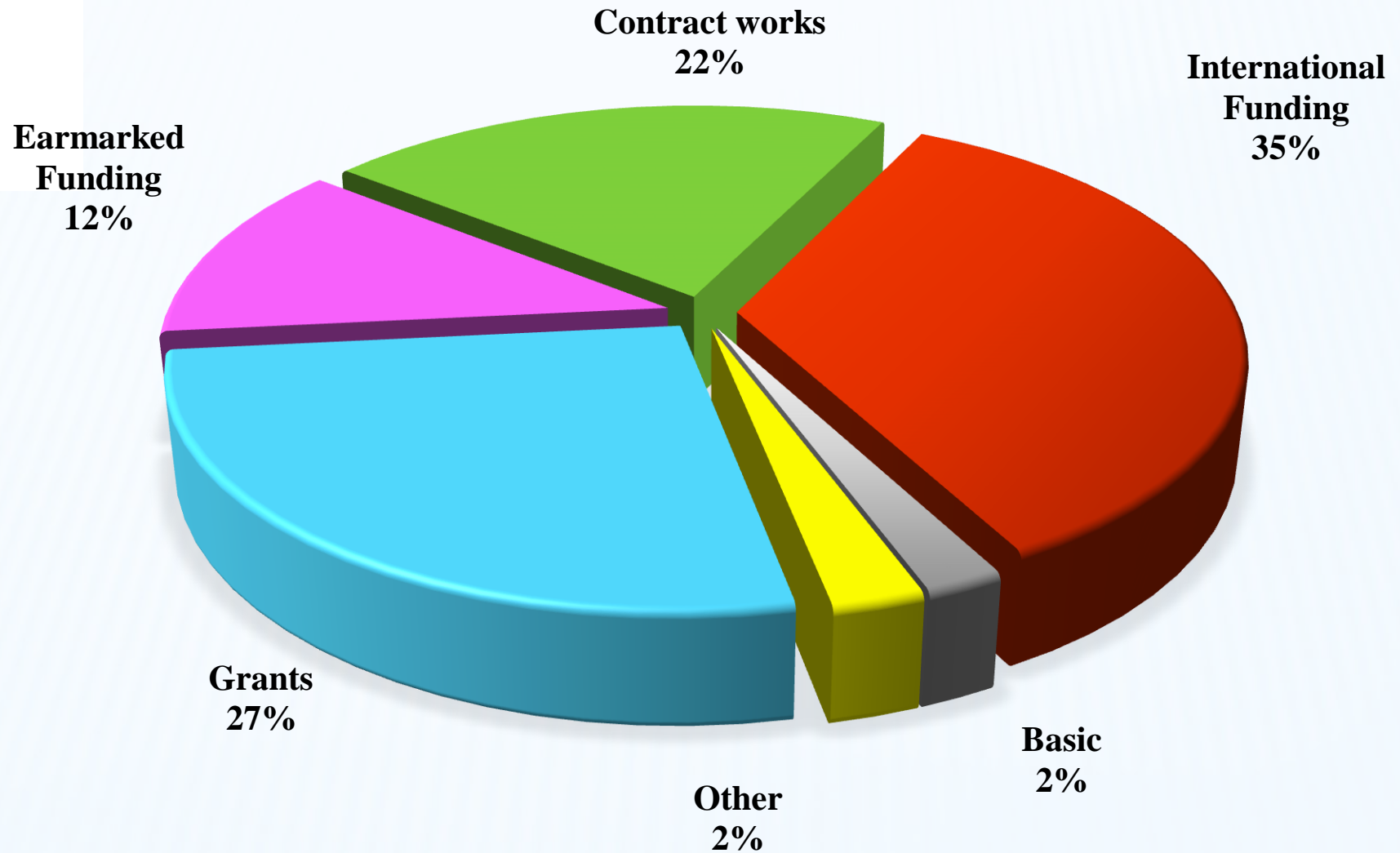
## FACULTY







# Sources of funding for R & D





# IT-technopark of “Alliance of Universities of the New Silk Road”

The point of development of the IT industry of the country on the basis of interaction of participants of the International Alliance of Universities of the New Silk Road, leading high-tech world companies, business incubators and start-up companies

The core of the IT-technopark is a supercomputer, included in the **top 500** on the computing power



**Rmax=1 200 Tflops**

IT infrastructure for education, health, social institutions, start-up and spin-off companies

Cultivation of the new industry using digital technologies

IT Hub for the city (storage, processing, transmission of large amounts of data)

**Cost:**

**\$ 10 million - a grant from the PRC.**

**\$ 5 million - additional funds**







# Zone of high technologies by “Silicon Valley” model

**TOTAL AREA OF THE BUILDING 14 038 sq.m.**



- ❑ DATA PROCESSING CENTER, SUPERCOMPUTER (1 200 Tflops)
- ❑ CENTERS FOR COLLECTIVE USE «Industry 4.0» 3 600 sq.m.
- ❑ OFFICES AND LABORATORIES 3 400 sq.m.
- ❑ EXHIBITION COMPLEX 2 700 sq.m.
- ❑ COWORKING 1 000 sq.m.
- ❑ OBJECTS OF SOCIAL IMPORTANCE 300 sq.m.



130 universities of the world included in the Alliance of Universities of the New Silk Road and the Russian Innovation Center “Skolkovo” supported the implementation of the project on creation of IT technology park

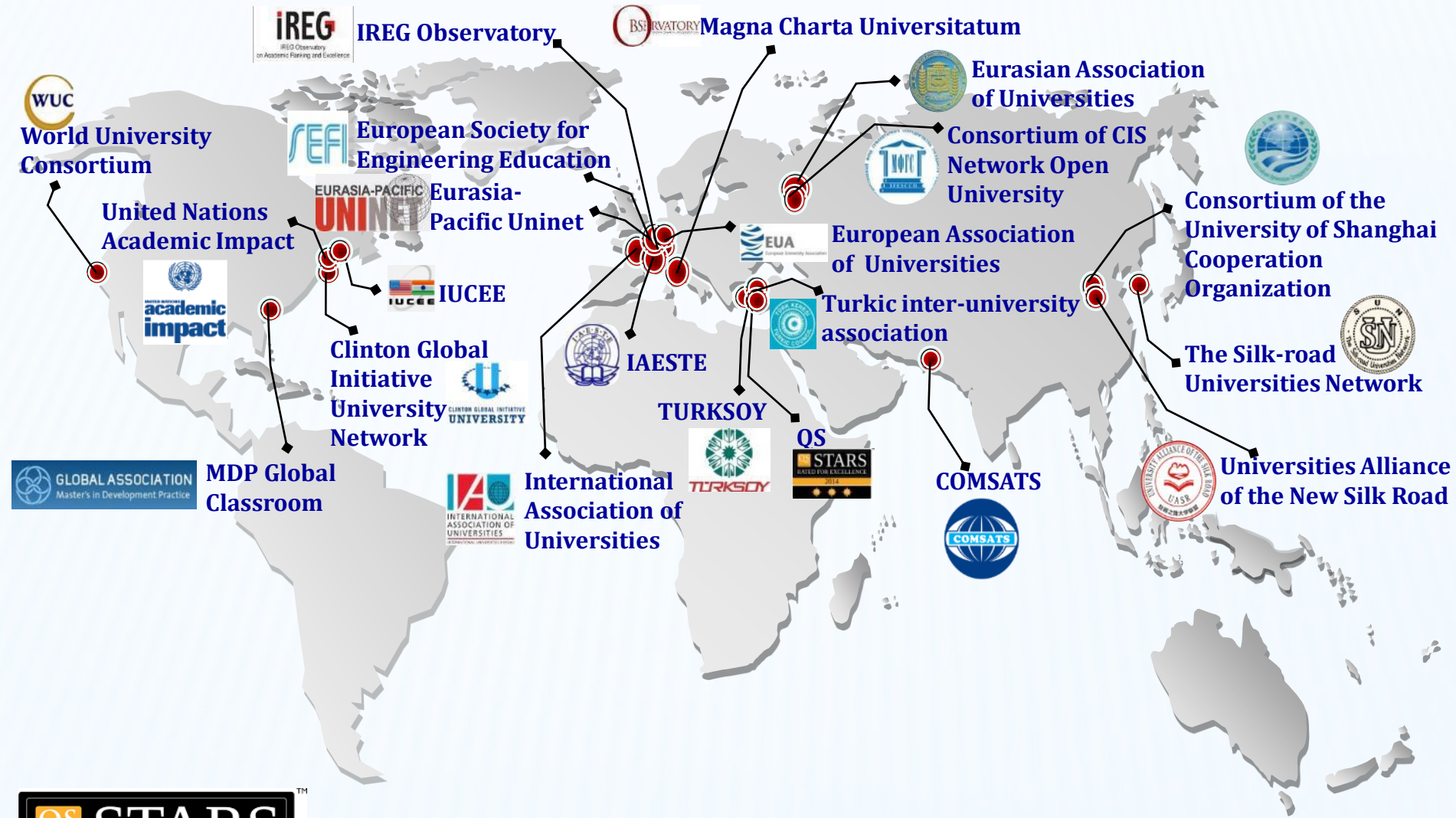


# International collaborations





# Membership in international organizations

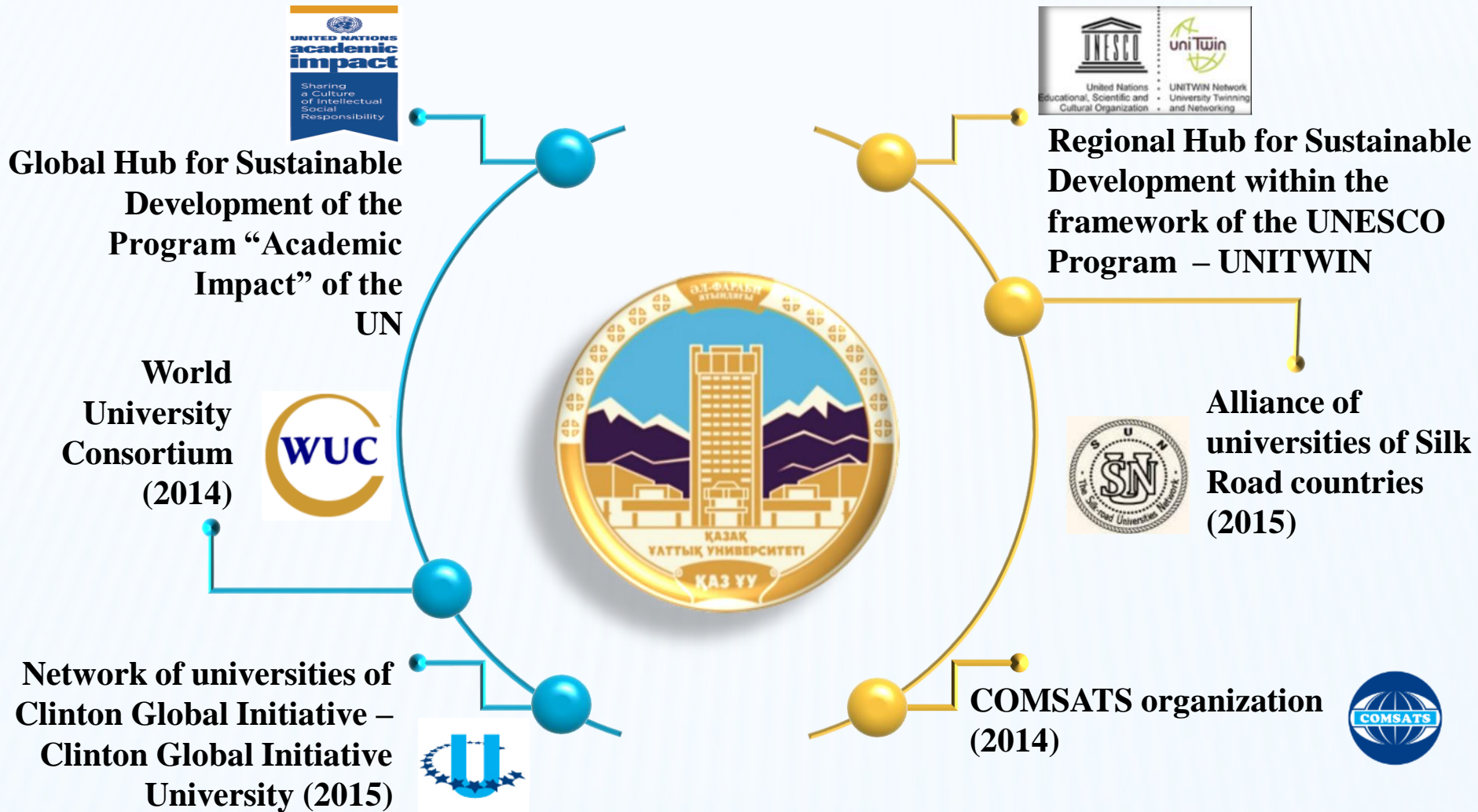


**QS World University Rankings (2018) 220**

**QS Emerging Europe and Central Asia Ranking (2018) 19**



# International recognition of KazNU



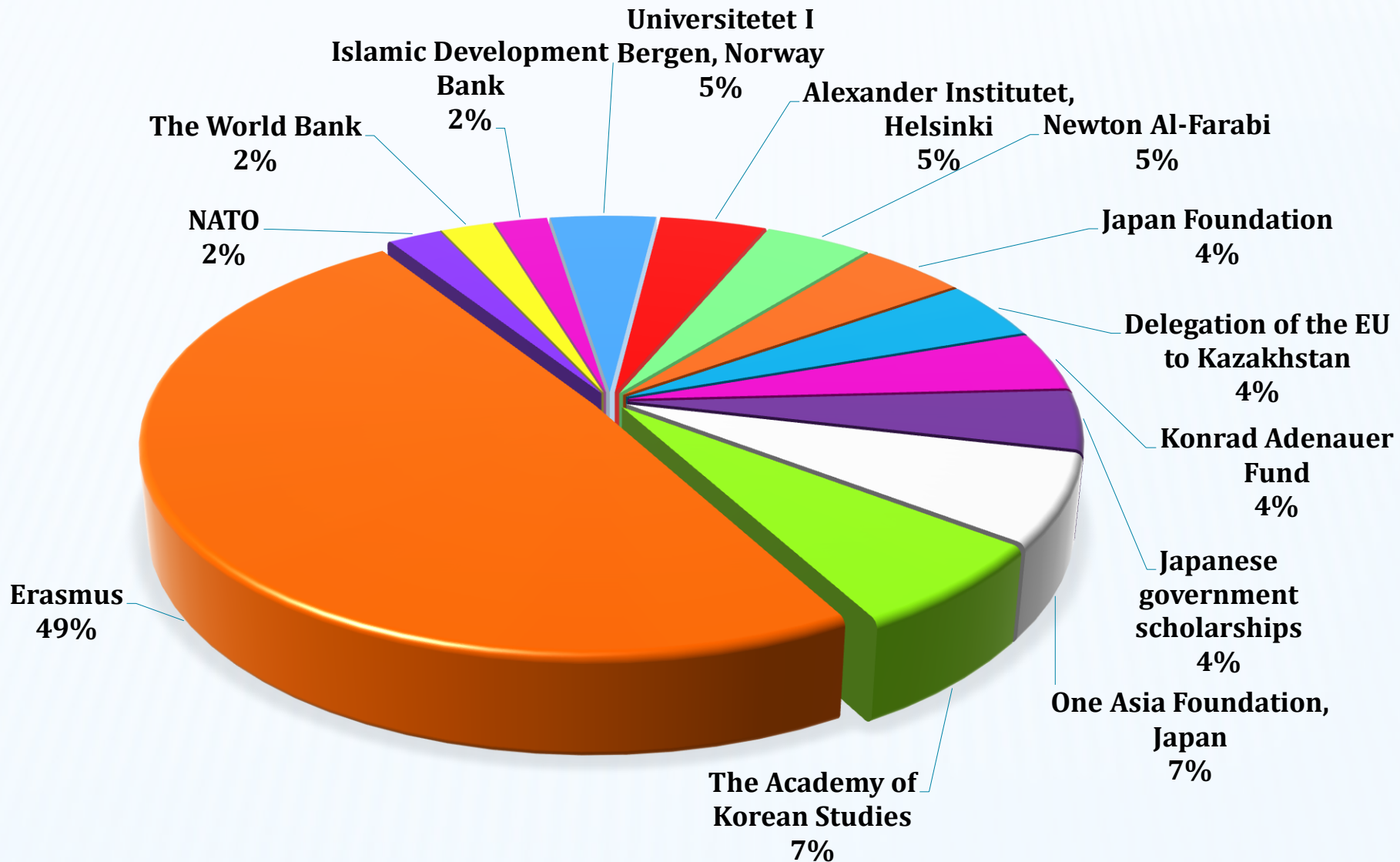
**World Academy of Art and Science (WAAS)**

**Rector G.Mutanov a member of WAAS**



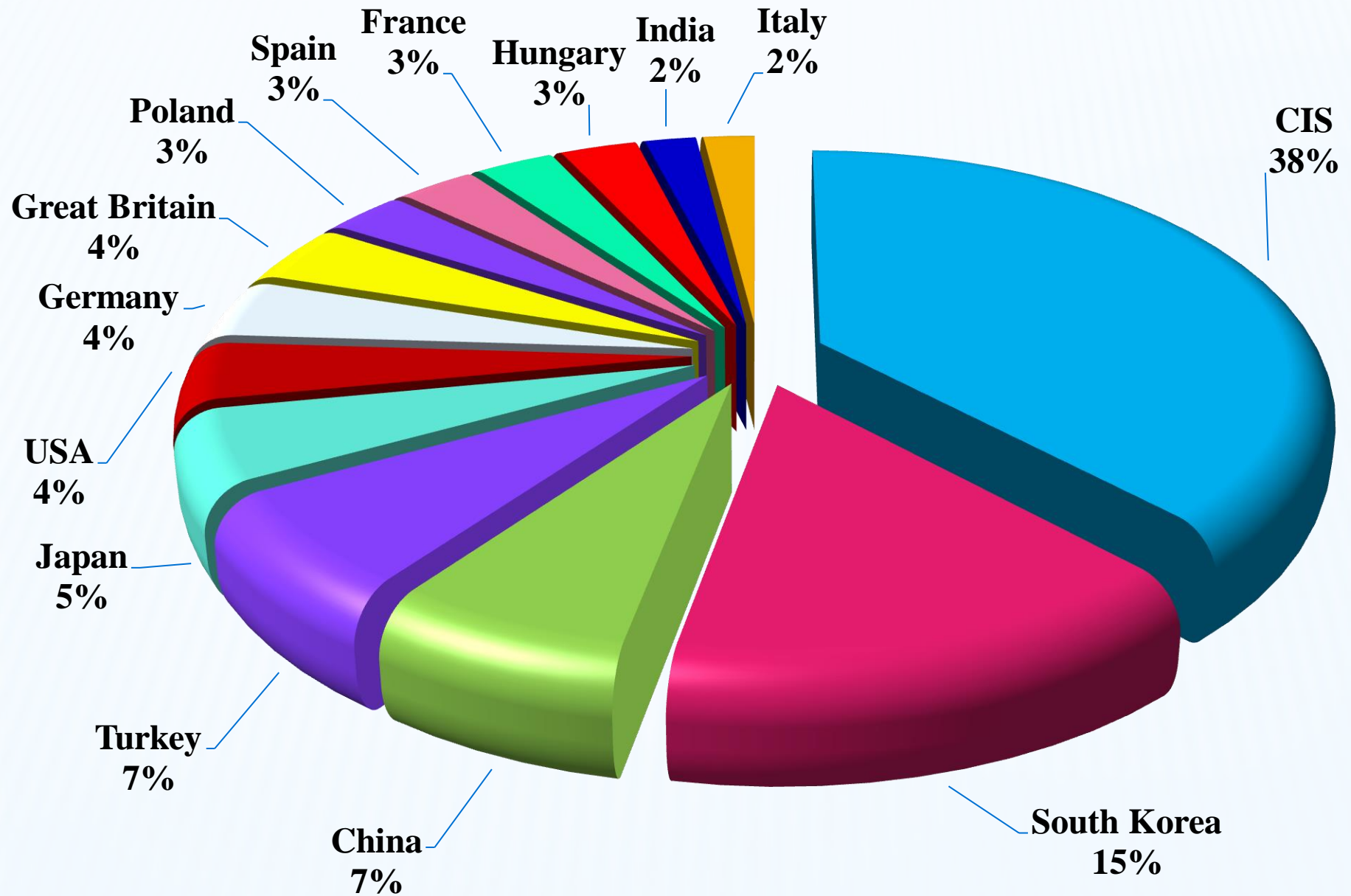


# International funds and organizations financing university projects in 2018





# The research activity of students





# On-going programmes





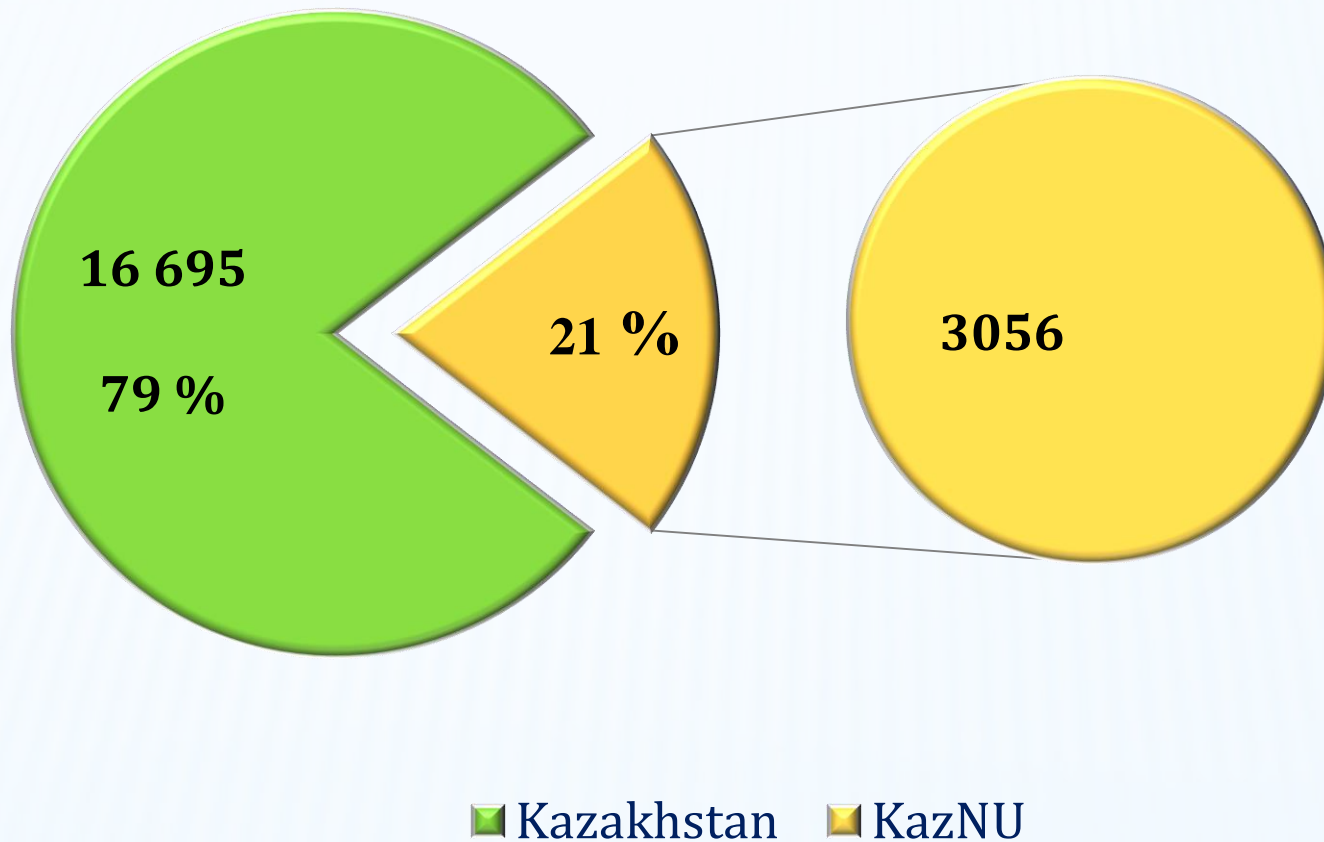
# Projects and funding

In 2018 the scientists of the University implemented **460 projects**, including:

- **140** projects of grant funding of Ministry of Education and Science of the Republic of Kazakhstan for 2018-2020;
- **8** projects of program-targeted funding of Ministry of Education and Science of the Republic of Kazakhstan on DRIA of Al-Farabi KazNU;
- **8** projects of the Science Fund JSC;
- **107** research works within the framework of business agreements with organizations and enterprises;
- **200** grants of international funds and organizations.



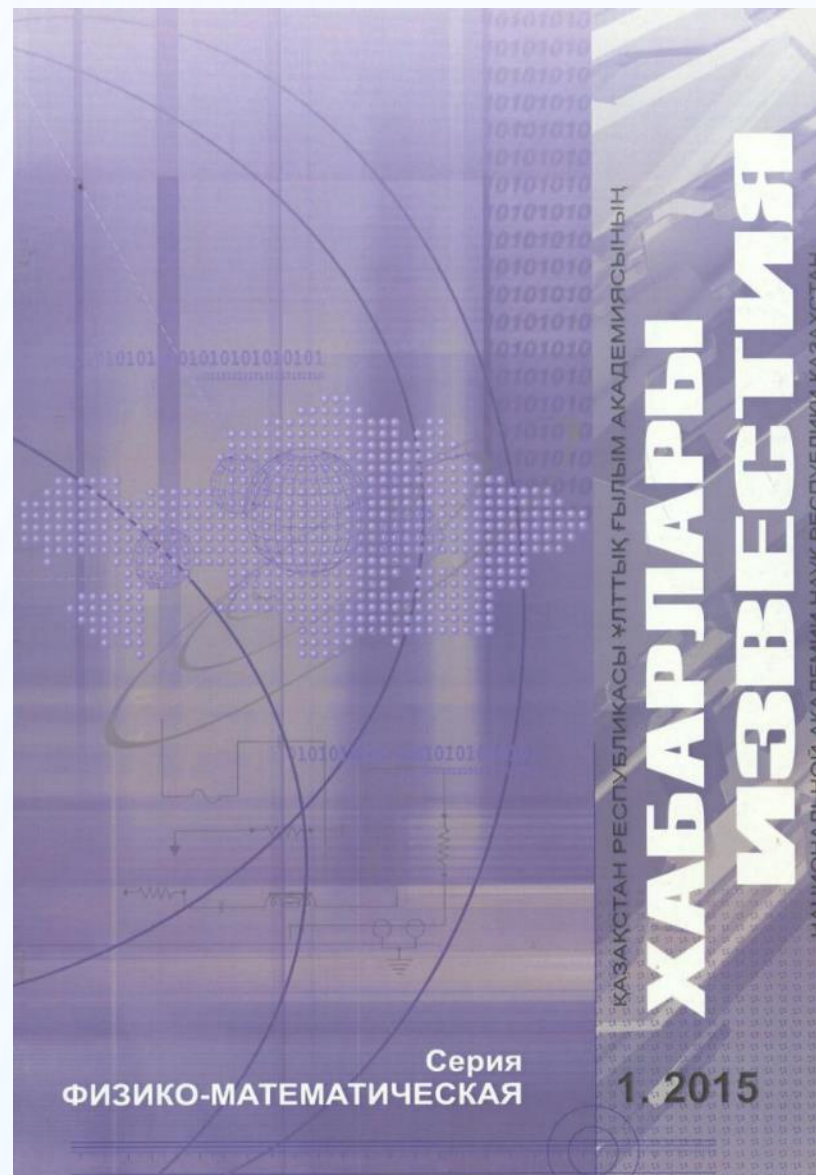
## Publications in high-ranked journals of Scopus in 2018





# “News of NAS RK. Physico-mathematical series” published jointly with KazNU is now indexed in Web of Science Core Collection DB

Chief Editor—  
Academician G.Mutanov



## Certificate of Acknowledgement

This is to acknowledge that the following journals  
of National Academy of Sciences of the Republic of Kazakhstan  
have been accepted for indexing in the Emerging Sources Citation Index  
of the Web of Science Core Collection:

- Bulletin of the National Academy of Sciences of the Republic of Kazakhstan
- News of the National Academy of Sciences of the Republic of Kazakhstan:
  - Series of Chemistry and Technology
  - Series of Physics and Mathematics
  - Series of Geology and Technical Sciences

May 15<sup>th</sup>, 2018





# KazNU's «International Journal of Biology and Chemistry» is now indexed in Web of Science Core Collection DB

No. 1, Volume 10 2017 pp.3-92

International Journal of Biology and Chemistry

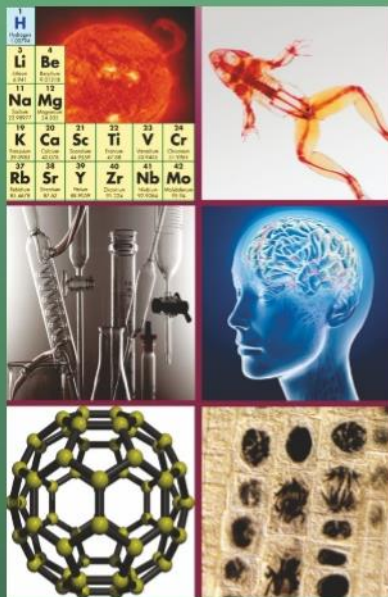
VOLUME 10

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2017

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## International Journal of Biology and Chemistry



Al-Farabi Kazakh National University

## Chief editor – Academician M. Burkitbayev

Clarivate Analytics  
1500 Spring Garden St. 4th Floor  
Philadelphia PA 19130  
Tel (215)386-0100 (800)336-4474  
Fax (215)623-6635

October 26, 2018

Publications Director  
Al-Farabi Natl Univ

Dear Publications Director,

I am pleased to inform you that *International Journal of Biology and Chemistry* has been selected for coverage in Clarivate Analytics products and services. Beginning with V. 11 (1) 2018, this publication will be indexed and abstracted in:

◆ Emerging Sources Citation Index

If possible, please mention in the first few pages of the journal that it is covered in these Clarivate Analytics services.

Would you be interested in electronic delivery of your content? If so, we have attached our Journal Information Sheet for your review and completion.

In the future *International Journal of Biology and Chemistry* may be evaluated and included in additional Clarivate Analytics products to meet the needs of the scientific and scholarly research community.

Thank you very much.

Sincerely,

Marian Hollingsworth  
Director, Publisher Relations



# V International Farabi readings

April 3-13, 2018

## INTERNATIONAL AL-FARABI FORUM «AL-FARABI AND MODERNITY»



**12 international conferences, 5 round tables, International Student Forum «Green Bridge across generations» and International scientific conference of students and young scientists «Farabi alemi» and 21st Meeting of COMSATS Coordinating Council were held on the V International Farabi readings**





# V International Farabi readings

April 3-13, 2018



**21st Meeting of COMSATS Coordinating Council held at Al-Farabi Kazakh National University on April 3 to 13, 2018**





# Participation in COMSATS' programmes



## **Joint projects of Al-Farabi KazNU and Excellence Centers of COMSATS**

### **International Center for Chemical and Biological Sciences (ICCBS), Karachi, Pakistan**

**Project title: “Developing the Capacities of Al-Farabi Kazakh National University, Kazakhstan in Phytochemical Development”.**

**Terms: 2016-2018**

**Funding organization: Islamic Development Bank.**

**Performers: prof. Abilov Zh.A. (Al-Farabi KazNU), prof. Muhammad Iqbal Choudhary (University of Karachi).**

**Co-Executive: Karachi University (Pakistan)**

**The purpose of the project: Technical improvement of the research laboratory with special equipment, training of specialists, jointly organized workshops.**



# South – South Cooperation



## Pak-Kazak Joint Laboratory for Innovation in Natural Products Research and Development

- The laboratory will use the knowledge of chemical and biomedical sciences to cater to the national and regional needs of medicines and other botanicals, while training personnel involved in the botanicals sciences and supporting the relevant industry.
- It will also develop safe and effective phytomedicines against prevailing diseases in the region, and work on focused projects to develop value added botanicals from the local and world market.







## Joint projects of Al-Farabi KazNU and Excellence Centers of COMSATS

### **Tehran University and Iranian Research Organization for Science and Technology (IROST)**

**Project title: «Formation and characterization of novel solar cells structures  
with enveloping layer of silicon nanowires».**

**Performers: Project manager - Professor Ibrahim Suleymani, Tehran  
University, Tehran (Iran).**

**Professor Moazami, IROST, Tehran, (Iran). Doctor Musabek Gaukhar,  
National nanotechnology laboratory of the open type of Al-Farabi KazNU,  
(Almaty, Kazakhstan).**

**Co-Executive: Tegrans University (Iran); Iranian Research Organization for  
Science and Technology (IROST), (Iran).**

**Terms: 2017-2018.**

**The amount of funding: 20 000 USD.**

**The purpose of the project: to produce laboratory samples of solar cells.**



## South – South Cooperation

### COMSATS Centre for Climate & Sustainability (CCCS)

**Center for Climate and Sustainability (CCS) in Kazakhstan at the Al-Farabi Kazakh National University.**

A multi-stakeholder institute working in the framework of South-South & Triangular Cooperation to bring innovative approaches to plan, fund and tackle climate change challenges in line with the policy and practices of developing countries and their international obligations.

Currently, a working group is forming a strategy and a roadmap for further implementation of the plans. Work is also carried out to develop the CCCS own website on the platform of the university site. The possibilities of staff training courses and equipment purchase are under consideration.



# CCCS





# South – South Cooperation



**International Center  
for Climate and  
Environment  
Sciences (ICCES)**

- Representatives of KazNU and IAP will consult each other and to develop specific plans for collaboration.
- A research project proposal on “Analysis and forecast of drought and its correlation to the yield in Northern Kazakhstan” was submitted.
- The research is aimed to resolve a variety of issues, which in turn is to contribute to the establishment of cooperation between the CAS institutions and the Central Asian countries.







# South – South Cooperation

## 17th CTWF International Conference on Ecohydrology and Climate Change

17-19, September, 2018, Beijing



## The 17th CAS-TWAS-WMO Forum

- Organized by IAP, CAS and ICCES, held on 17-19 September 2018 in Beijing, China. Skakova A. delivered a presentation on “Atmospheric teleconnection and crop yield in north Kazakhstan”



## Workshop on “Land-hydrological processes under changing Climate Observation, Modeling System and Uncertainties”

- Organized by ICCES and COMSATS with the support of MoST, China, held on 20th – 21st September 2018. In the result of training, Al-Farabi KazNU and IAP CAS made a joint project proposal on climate change issues



# South – South Cooperation



## **The 4th International Conference on “Agriculture, Food Security, and Biotechnology”**

- Hosted by ISESCO and co-organized by COMSATS, held on 13th – 14th November 2018, in Rabat, Morocco. Skakova A. made a presentation on “Agriculture in Kazakhstan in context of United Nations Sustainable Development Goals” and moderated the Agriculture section.

## **The 8th International Workshop on ‘Internet Security: Enhancing Information Exchange Safeguards’**

- Assistant professor of Information Systems department, Aiman Beketova attended the Workshop organized by COMSATS, ISESCO and INIT, held on 23rd – 27th December 2018 in Doha, Qatar.



# South – South Cooperation



## PhD-doctoral training

- The Department of Biotechnology accepted **Balouch Huma** for training in PhD-doctoral studies in the specialty«6D070100-Biotechnology» with Prof. Dr. Bolatkhan Zayadan appointed as her local academic adviser and Prof. Dr. Zihni Demirbag (Karadeniz Teknik Üniversitesi, Turkey) as her foreign academic adviser.
- Negotiations with the representative of Tianjin Institute of Industrial Biotechnology, Chinese Academy of Sciences (TIB, CAS) – professor Jibin Sun is currently in progress, concerning his availability for the position of a foreign academic adviser for PhD-doctoral students in the «6D070100-Biotechnology specialty.





# Science and Technology for achieving SDGs

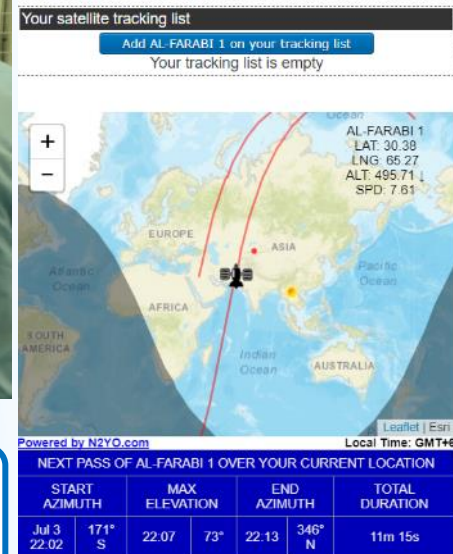


The «SpaceX» Company has launched the Kazakhstani Nanosatellite **«Al-Farabi-2»**. The launch was successfully carried out from a Spaceport on the «Falcon 9» rocket carrier in the Vandenberg Air Force Base of California (USA) on **December 4, 2018**.

The 1U CubeSat nanosatellite weighing less than 1 kg was fully assembled at Al-Farabi Kazakh National University



The telemetry shows that at the moment the nanosatellite is operating in normal mode, radio operators from all over the world still receive the signal.





# Science and Technology for achieving SDGs

Within the framework of the agreement between the Al-Farabi Kazakh National University and the RADI Institute (China) the **Institute for Remote Sensing and Digital Earth (RADI)** was established in KazNU



An active collaboration with Institute of Atmospheric Physics Chinese Academy of Sciences is ongoing to promote and implement national initiatives in the field of science and education



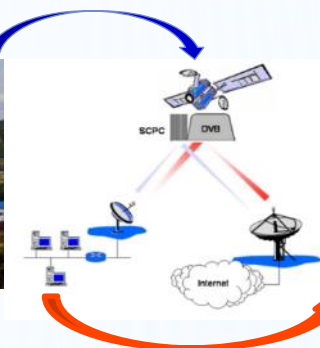




# RADI and Al-Farabi KazNU Center for Remote Sensing



Receiving station in Kashi



Virtual station of KazNU

**KazNU virtual ground station receives remote sensing data from the following satellites: Chinese HJ-1A, HJ-1B, GF and USA Landsat8**

- Study of environment and natural disasters based on remote sensing data received by RADI, CAS;
- Carrying out geological studies, mapping, aerial and satellite surveys, spectrometry, obtaining hyperspectral images, etc.;
- Dissemination of research within the framework SCO scientific base and other international relations, implementation of joint innovation projects;
- Solution of scientific, applied, technological, analytical and educational tasks for the creation of digital Kazakhstan.





# Science and Technology for achieving SDGs



On October 31, 2018 a **pilot production of polyester resins** was launched under the project “Creation of a pilot industrial production of special-purpose polyester resins”, with financial support from Science Foundation JSC and a private “BASTE” LLP partner.

It is planned to produce up to 200-300 tons / year of polyester resins.





# Projects of Science Fund for achieving SDGs



**Production of innovative small spacecraft constructors for educational institutions**

**Project manager: Temirbayev A.**



**Pilot production of acrylic paint with improved characteristics»**

**Project manager: Kaldybekov D.**



# Projects of Science Fund for achieving SDGs



**Innovative industrial manufacture of materials complex sterilization and polymer products**

**Project manager: Kupchishin A.**

**iBox Advanced –  
Universal Virtual Device Agent Platform**

**Project manager: Daribayev B.**



**Digital tourism modernization: mobile apps,  
panoramic 3D tours, interactive maps and QR  
codes**

**Project manager: Ziyadin S.**





# The best projects of Student business incubators in 2018

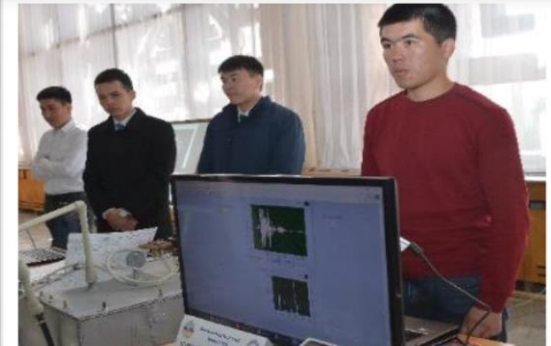
In 2018, there was a total of 72 innovative projects in the competition



**"Humanoid robot"**



**«Spirulina for Life**



**Intelligent Carbon Monoxide  
Detection System «Smart  
gas sensor»**



**Charge-mode " smart  
"system universal  
electric machine**



**«Innovative  
development of the  
traditional Kazakh  
treatment system»**



**«Educourse.kz»**



**"Obtaining  
disinfectants for  
medical devices and  
skin antiseptics"**



# Student Start-up companies



**"Equipment for biogas production"**



**«DRIVE»**



**«Language and Mind maps»**



**"Club of local historians and ethnographers"**



**System for regulating pedestrian crossings at night**



**«RoboABC»**



**«Қазақ тілі»  
mobile audio  
phrasebook  
application**



# Future plans



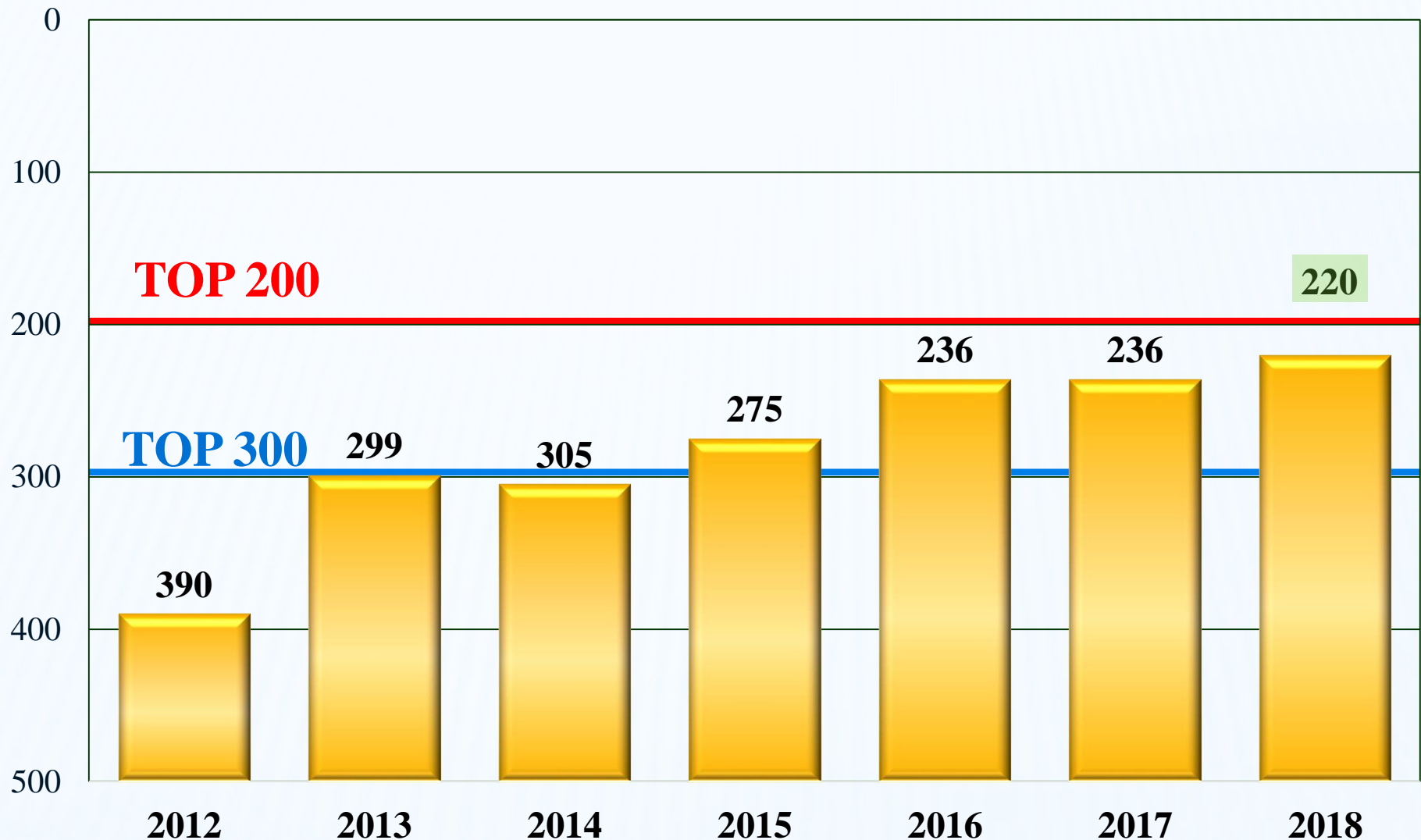


# Goals of Al-Farabi KazNU until 2022

- Enter the top 200 leading research universities in the world
- Transformation of the classical national university into the world-class research university
- To increase quantity of publications in rating journals with impact-factor to 2000
- To find new partners among COMSATS CoE and strengthen existing collaboration by conducting R&D in the fields relative to addressing common challenges
- To increase the number of post-doctoral fellowships and visiting professorships offered/received
- To cultivate the development of KazNU's Tele-health Programme to contribute towards the healthcare sectors of Kazakhstan and countries of the South
- To increase volume of revenues from commercialization of scientific developments to 1.8 bn tenges/10 mln \$
- To achieve 98% employment of graduates
- To increase share of accredited educational programs to 100%
- Commercialization of 8 R&D results and obtaining 15 patents of the USA, the countries of Europe and the Asian-Pacific region
- Creation of 25 innovation "Start-up companies", and 8 small innovative enterprises with the participation of the University



# Al-Farabi KazNU in TOP-300 (QS World University Rankings)



A scenic landscape featuring a calm lake nestled between forested mountains. The water reflects the surrounding greenery and the sky. The text "Thank you for attention!" is overlaid in the center in a large, white, sans-serif font. The background shows steep, forested slopes under a clear sky, with some small buildings visible on the right-hand slope.

**Thank you for attention!**