TECHNOLOGY PLATFORM
«MEDICINE OF THE FUTURE»

The experiences of Technological Platform ‘Medicine of the Future’ in international cooperation

Kurzina I.A.
20 May 2014, Moscow.

TECHNOLOGY PLATFORM
«MEDICINE OF THE FUTURE»

Organizational Structure

The strategic target of the Technology platform "Medicine of the Future" -is the creation of a segment of medicine of the future, based on a set of "breakthrough" technologies, determining the possibility of the appearance of new high-tech products and services markets, and the extensive use of advanced technologies in the medical and pharmaceutical industries.

The Non-commercial partnership of the Technology Platform “Medicine of the Future”
634055, Russian Federation, Tomsk, Akademichesky Ave., 8/8; Tel. /fax: +7(3822) 52-70-91,
E-mail: info@tp-medfuture.ru www.tp-medfuture.ru

TECHNOLOGY PLATFORM «MEDICINE OF THE FUTURE»

Participants of the Platform

Participants of the Platform – more than 350 organizations,

among them:

- higher professional educational institutions,
- manufacturing plants,
- academic institutions including institutions of Russian Academy of Medical Sciences.






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Key Areas of Activity

Predictive and analytical activities including foresight, strategic planning of biomedical and pharmaceutical research development, creation and realization of road map, priority identification with the help of new Internet-based tools, expertise of different level projects, consulting government organizations according to the platform profile.

Educational work, up-grading of curriculums and educational programs focused on the needs of business and science, staff training and personnel recruitment.

Informational activity, information distribution in this field, information support, communication with Russian and European Technology Platforms. Organizing conferences, meetings, seminars and other performances.

Organizational and financial activity, involvement of private and corporate capital to the programs and projects realization, foundation of funds for project development and its constant functioning.

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Basic competences of the Technology Platform

- Biocatalytic, biosynthetic and biosensor technologies
- Biomedical and veterinary technologies
- Genomic, post-genomic and proteomic technologies
- Cell technologies
- Nano-, bio-, information and cognitive technologies
- Bioengineering technologies
- Technology for production and processing of structural nanomaterial
- Technology for production and processing of functional nanomaterial
- Technology and software of distributed and high performance computing
- Technology to reduce losses from socially significant diseases
- Technology of creating electronic allocated baseline and energy-efficient lighting devices

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Strategic research program

SRP is a fundamental mechanism for the implementation of medium- and long-term priorities of biomedicine based on cross-industry technology development, coordination of participants in the development and implementation of complex programs of a full cycle.

Full cycle complex programs

The results of the project activities of TP "Medicine of the Future" – is implementation of 164 projects at various levels, with funding or 6742 mln. rub. (including extra-budgetary 3011 million rubles) in the Platform competence areas

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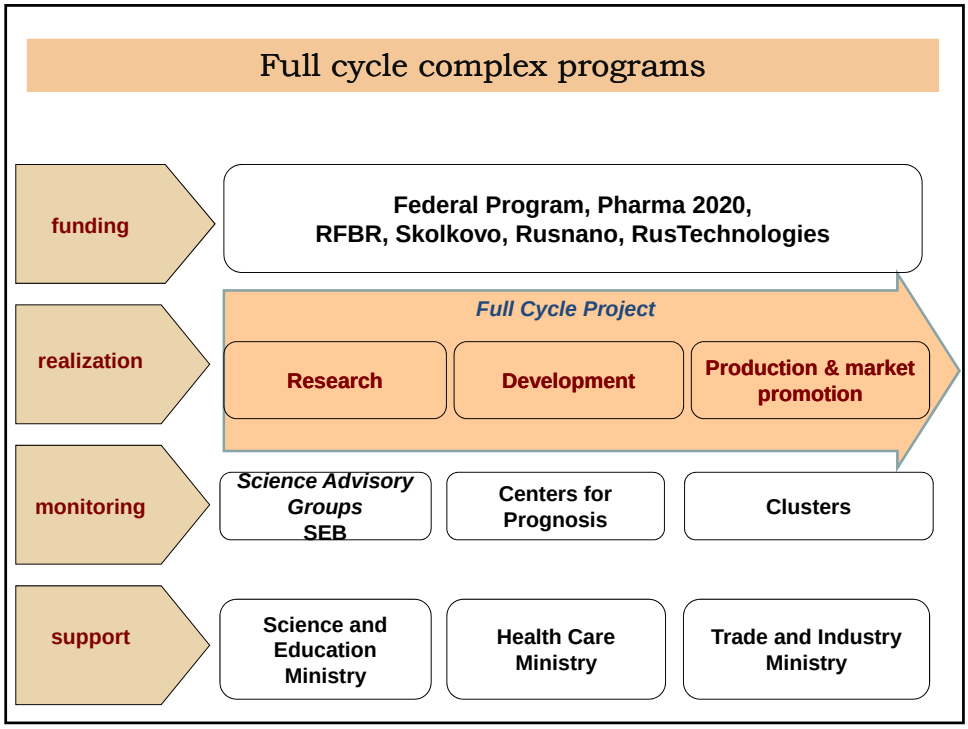
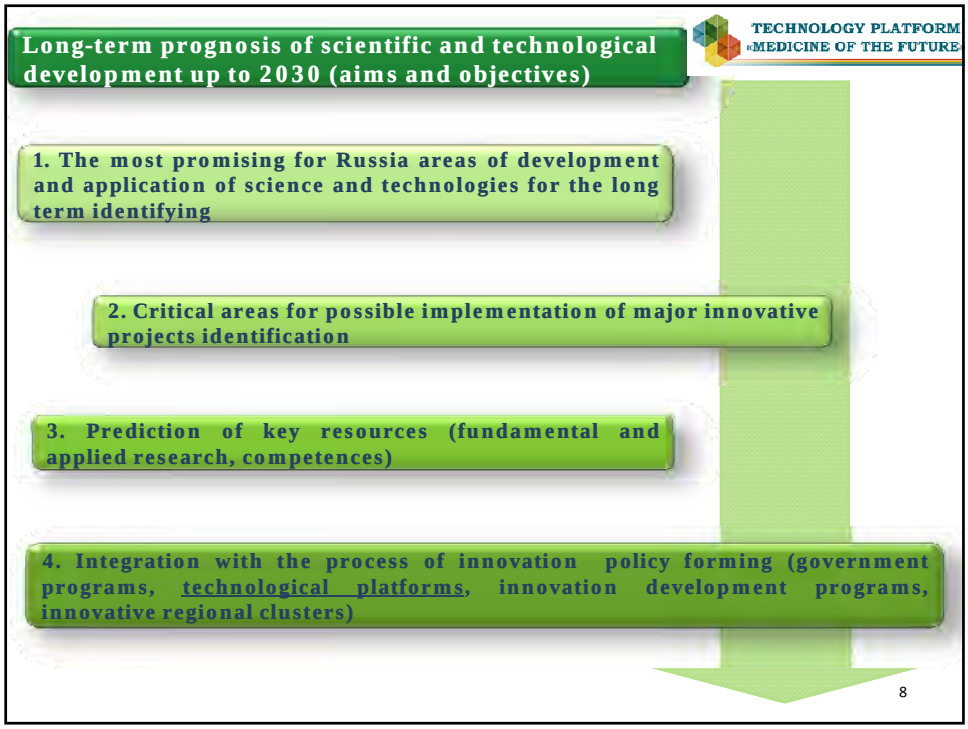
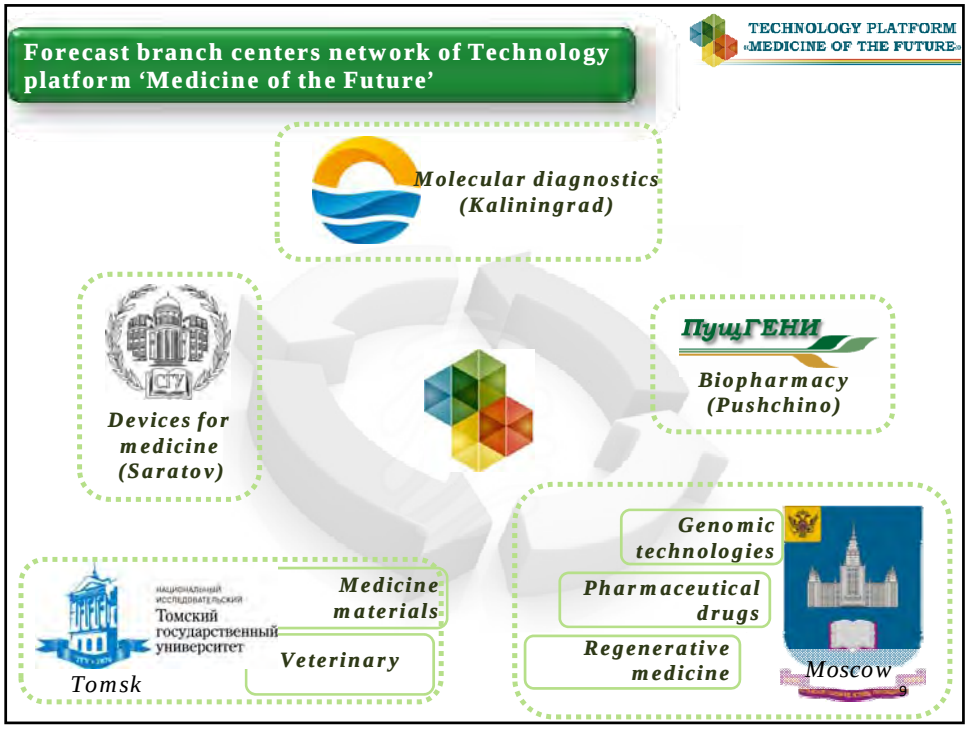

Full cycle complex programs
funding
Federal Program, Pharma 2020,
RFBR, Skolkovo, Rusnano, RusTechnologies
realization
Full Cycle Project
Research
Development
Production & market promotion
monitoring
Science Advisory Groups SEB
Centers for Prognosis
Clusters
support
Science and Education Ministry
Health Care Ministry
Trade and Industry Ministry

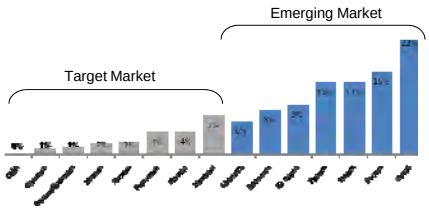

Long-term prognosis of scientific and technological development up to 2030 (aims and objectives)
TECHNOLOGY PLATFORM «MEDICINE OF THE FUTURE»
1. The most promising for Russia areas of development and application of science and technologies for the long term identifying
2. Critical areas for possible implementation of major innovative projects identification
3. Prediction of key resources (fundamental and applied research, competences)
4. Integration with the process of innovation policy forming (government programs, technological platforms, innovation development programs, innovative regional clusters)
8



PHARMACUTICAL INDUSTRY FORECAST

The Russian market of pharmaceutical products develops primarily due to import component. The manufactured products are meeting only 20% of the domestic requirement.

Projected average annual growth of global Pharmaceutical Market, 2013-2020

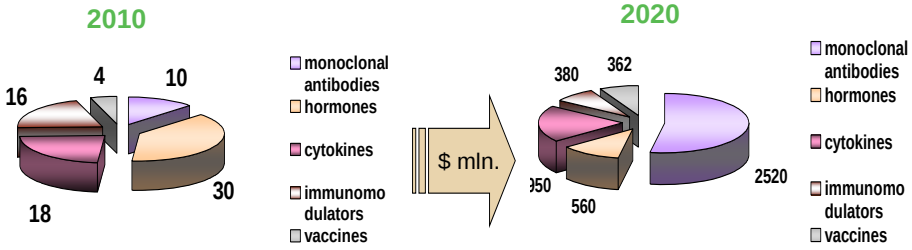


Biotechnology sector of pharmaceutical products in Russia is currently more than $ 750 million, with the share of domestic products in Russian market only 7.87%, of which the share of vaccines is 13.44% , insulin - 28.6% and hormonal drugs - 27.9 %.
(www.dsm.ru/marketnews)
The lack of modern domestic pharmaceutical products is a threat to national security and is also a real economic problem in Russia .

What we expect by 2030?

- **industrial medicine will have significantly improved**
- **more than 30 original drugs will have flooded Russian market by 60 %.**
- **import substitution will have reduced by 50 %**

Russian medicine market



11

The Federal Targeted Program «The development of the pharmaceutical and medical industry of the Russian Federation up to 2020 and further perspective**»**

the RF Government decree of 17 February 2011

Group 1	Development of scientific potential of pharmaceutical industry
Group 2	Development of innovation potential of pharmaceutical industry
Group 3	Development of scientific potential of medical industry
Group 4	Development of innovation potential of medical industry
Group 5	Human resources development and information infrastructure for the pharmaceutical and medical industry
Group 6	Investment for technological enhancement, modernization and the transition of domestic pharmaceutical and medical industry to innovative model of development

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Cooperation with Innovative territorial clusters

Up to 90% of pharmaceutical and biomedical products of Russia are concentrated in the perimeter of the 10 largest pharmaceutical and medical territorial clusters

Pharmaceuticals, medical equipment and information technology of Tomsk oblast

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The Technology Platform "Medicine of the Future" International activity

- ✓ **International integration of the platform in promoting the developments and production to foreign markets**
- ✓ **Interaction with foreign and international organizations, scientific, educational and medical centers**
- ✓ **Joining efforts with foreign platforms and organizations, with the leading role of the industrial sector, around the prospective innovative projects, from the point of view of demand, throughout the development cycle.**
- ✓ **Joint fundamental researches and applied developments, working in science and technology on contracts and grants, as well as technical assistance**
- ✓ **Conducting and participating in international conferences, seminars, exhibitions and business missions of TPs**

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International complex program

The program of joint Russian-German projects, presented at a meeting of the Russian part of the Russian-German Working Group of the Joint Commission of the Russian Federation and the Federal Republic of Germany on Scientific and Technological Cooperation

An Interaction Program between Russian Technology Platforms and poles of competitiveness, high technology centers and bisness organizations in France.

Programme of Action of the Russian-Latvian economic cooperation in the framework of the "Partnership for Modernization" between Russia and the European Union

Based on the results of work of ECE were selected Belarus and Kazakhstan stakeholder organizations Their **applications for membership in TP "Medicine of the Future"** were considered at the meeting of the Management Committee of TP "Medicine of the Future". (28.11.2013.)

Charitable agreement with Pfizer, Inc. on training in the field of pharmaceutical analysis (8 employees have been trained)

Consortium
"Eurasian Biomedical Technology Platform"

The Non–Commercial Partnership «Technology Platform « Medicine of the Future», Tomsk

TECHNOLOGY PLATFORM «MEDICINE OF THE FUTURE»

Republican State Enterprise "National Center for Biotechnology" under the Science Committee of Ministry of Education and Science of the Republic of Kazakhstan, Astana

National Center for Biotechnology

The Belarusian Institute of System Analysis and Information Support of Scientific and Technical Sphere, Minsk

БелИСА
Белорусский институт системного анализа и информационного обеспечения научно-технической сферы

Consortium "Eurasian Biomedical Technology Platform"

The main objects of the Consortium:

- ✓ Promote the biomedicine and innovative technologies based on it in the EEC Member States;
- ✓ Strengthen the role of the strategic needs of industry and society in the determination and implementation of the major areas of scientific and technological development in the field of biomedicine;
- ✓ Focus intellectual, financial and administrative efforts to create and commercialize new advanced technologies, competitive products and superior services;
- ✓ Encourage innovations, expansion of scientific and industrial cooperation and support of scientific and technology activities and processes of modernization in the field of biomedicine and related industries;
- ✓ Create and maintain the international status of EEC as an area of high technology and rapid technological development zone

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Белорусский институт системного анализа и информационного обеспечения научно-технической сферы

National Center for Biotechnology

PROJECT "Overall assessment and harmonization of legislation in the field of EEA Member States pharmaceutical industry"

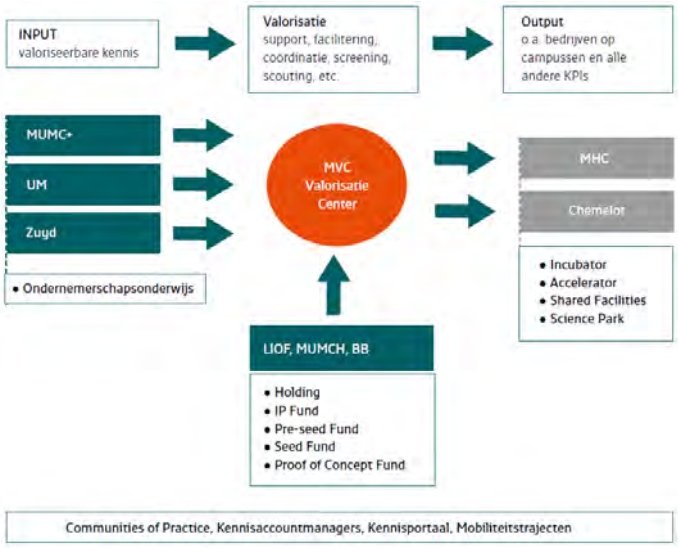
Object:

Preparation of scientifically based proposals for the harmonization of legislation in the field of pharmaceutical industry of the Republic of Belarus, Kazakhstan and the Russian Federation aimed at facilitating the production of innovative pharmaceutical products and their market output in above-listed countries.

Tasks:

- ✓ The study of the biotechnology sector and comparative analysis of biotechnological systems of the Common Economic Space member-states and the developed countries.
- ✓ The biotechnology sector forecast preparation of the Common Economic Space member-states.
- ✓ Development of recommendations and proposals for achieving prediction measures. Recommendations and proposals elaboration:
  - harmonization of legislation in the field of pharmaceutical industry of the Customs Union and the Common Economic Space member-states
  - creating conditions for the establishment of joint enterprises
  - creating equal conditions for access of producers of the CU and CES member-states on the CES domestic market
  - possible cooperation projects of the CU and CES member-states
  - draft decisions and recommendations of the Common Economic Space

Regional Approach



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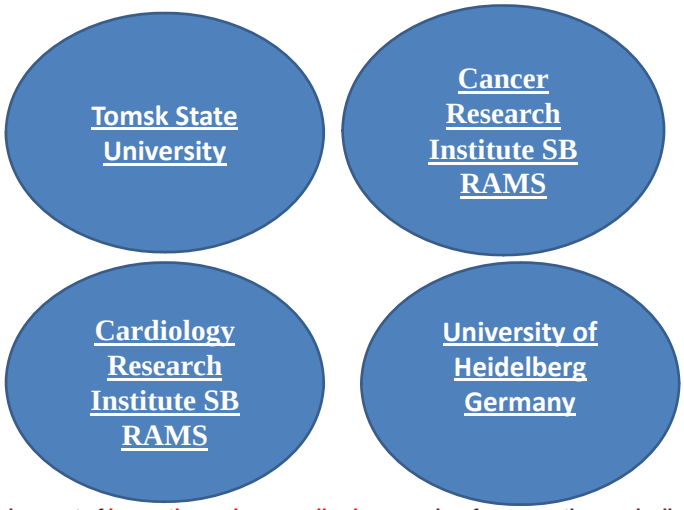
LABORATORY OF CELL-LIKE AND MOLECULAR BIOMEDICINE



- **Development of innovative and personalized approaches for prevention, early diagnosis and effective treatment of main life-threatening pathologies: cancer and cardiovascular diseases.**
- **Integration of TSU in European and world-wide research community**

FCP "Medical materials and articles based on biodegradable polymers: elaboration and production"

Area: *Biodegradable materials and composites for medicine*

Cycle	Coordinator
"Bone cements, polymers and hydroxyapatit materials improving osteosynthesis"	MIFI Institute, Seversk
"Hydrogels and coatings from recombinat proteins of web"	Institute of Genetics, Moscow
"Sutural surgery materials, anticommisurual membranes"	State University, Tomsk
"Biocoating for the artificial ventrical of heat"	Institute of Transplantology, Moscow
"3D-analysis of biopolymers structure"	Lomonosov University, Moscow

21

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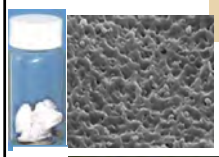
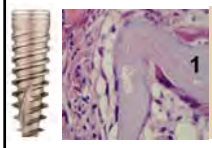
	Novel materials	Need on the Russian market
	"Coatings from recombinat proteins"	50 tons/year
	"Hydrogels from recombinat proteins"	400 000 dm^2/year
	"Sutural surgery materials, anticommisurual membranes"	200 tons/year 90mln. metres/year
	"Bone cements and hydroxyjapatit materials improving osteosynthesis osteosynthesis"	8-10 tons/year

Area: *Biodegradable materials and composites for medicine*

22

FCP "Synthetic biodegradable monofilament surgical sutures based on PGLA"

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Fraunhofer

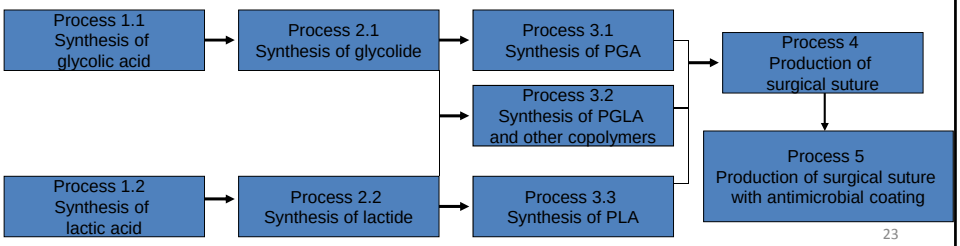
Area: *Biodegradable materials and composites for medicine*

Tomsk State University develops:

- technology to produce monomers and polymers (PGLA, PGA, PLA) of medical purity,

- technology to produce monofilament surgical sutures with various composition,

- technology to produce antimicrobial coatings for surgical sutures



23

FCP "The development of hybrid implants on the base of porous ceramic with bioactive and nanostructured coating, synthetic or natural calcium-phosphate materials, and ultradispersed and nanostructured Ti, Zr, Mg bioactive alloys for stomatology and orthopedics"

Fraunhofer

Bone implant ants on base of ceramics with gradients structures

24

VIRTUAL NANOTITANIUM: THEORETICAL ANALYSIS, DESIGN AND VIRTUAL TESTING OF BIOCOMPATIBILITY AND MECHANICAL PROPERTIES OF TITANIUM-BASED NANOMATERIALS (2012-2014)
Project ViNaT Contract No. 295322

SEVENTH FRAMEWORK PROGRAMME

ISPMS SB RAS

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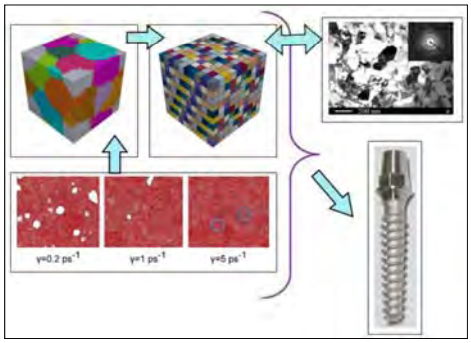
The objective of the project is to develop computational multiscale models for virtual testing and design of biocompatible, Ti-based materials for implants and other medical applications



Participants:

УГАТУ, TECHNION, FIAS Frankfurt Institute for Advanced Studies, DTU, МИСиС, GOETHE UNIVERSITÄT FRANKFURT AM MAIN, instituto Mdea, TIMPLANT, KATHOLIEKE UNIVERSITEIT LEUVEN, ISPMS SB RAS, VINF

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