

BIOTECHNOLOGIES IN RUSSIA: prospects and limits of patent analysis



EKATERINA STRELTSOVA

**ISSEK HSE
MOSCOW, RUSSIA**

KSTRELTSOVA@HSE.RU

Research background



- Potentially wide range of biotech applications for solving social and economic problems and challenges;
- Biotech is one of the top priorities for science and technology development in Russia and many other countries;
- BUT: in Russia, there's a lack of information about state of art in the field, factors preventing further development;
- Efforts to organize a regular statistical monitoring of the biotech field have just recently started;
- SO: There's a need for other sources of information and methodologies.

Research Questions



- **What is the potential of patent analysis when being used to study biotech field?**
 - How to conceptualize ‘the biotech field’?
 - Which sources of information can be used?
 - Which methods are to be used to process patent data?
- **What is the current state of the biotech field in Russia?**
 - Who are the ‘technological drivers’?
 - What is the role of non-residents?
 - In which spheres are methods of biotech applied? And how are they linked to current social and economic needs of the country?
 - What are the prospects for development?

Methodological foundations

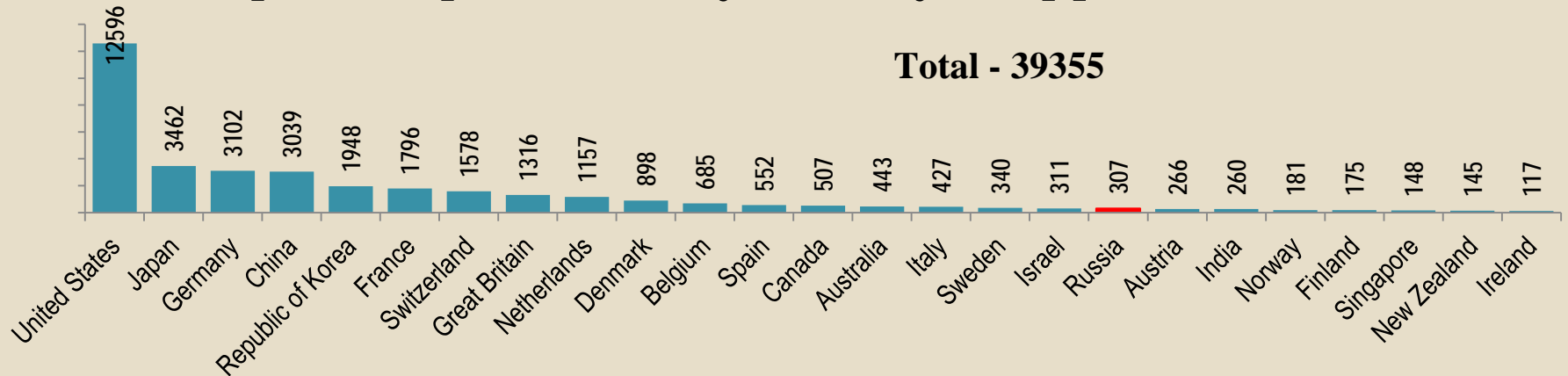


- **Biotechnology field – conceptualizing the object:**
 - Key words;
 - IPC;
 - Concordance table for cross-country comparisons.
- **Search for information basis:**
 - Rospatent database (Russian patent office);
 - Commercial databases (QPat);
 - WIPO databases (for aggregated data).
- **Extra check:**
 - Removed patents with IPC code A61K;
 - Searched the "Field of the Invention" section of abstracts for the keywords ("biotechnologies", "molecular biology", "microbiology", "diagnostic methods", etc.)
 - "Description" or "Claims" sections were searched for the keywords
- **Analysis base (2012) – 359 patents.**

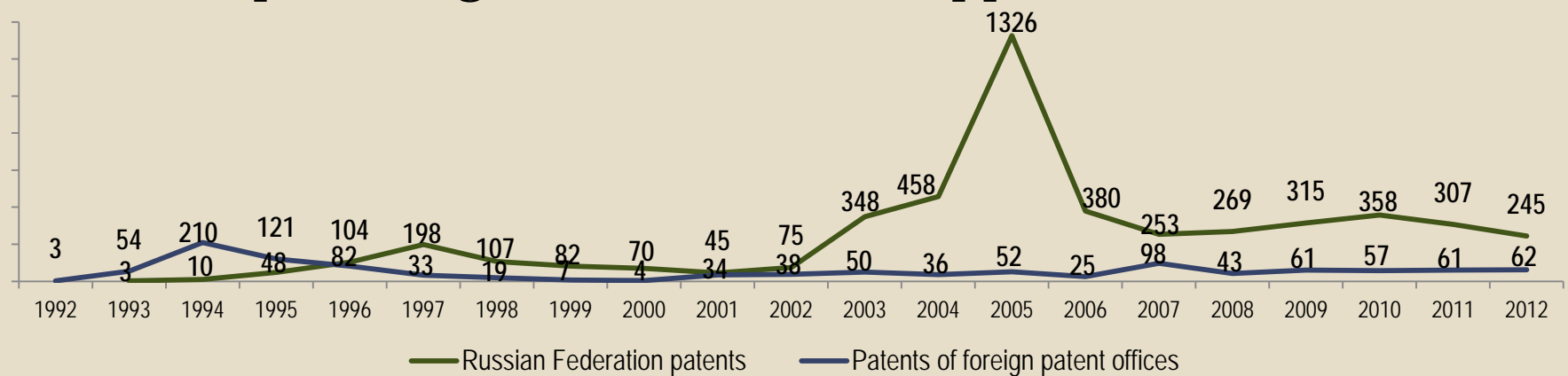
Patent activity of Russian assignees in biotech field



- Biotech patents published by country of applicants: 2012



- Biotech patents granted to Russian applicants



Biotech 'technology-drivers'

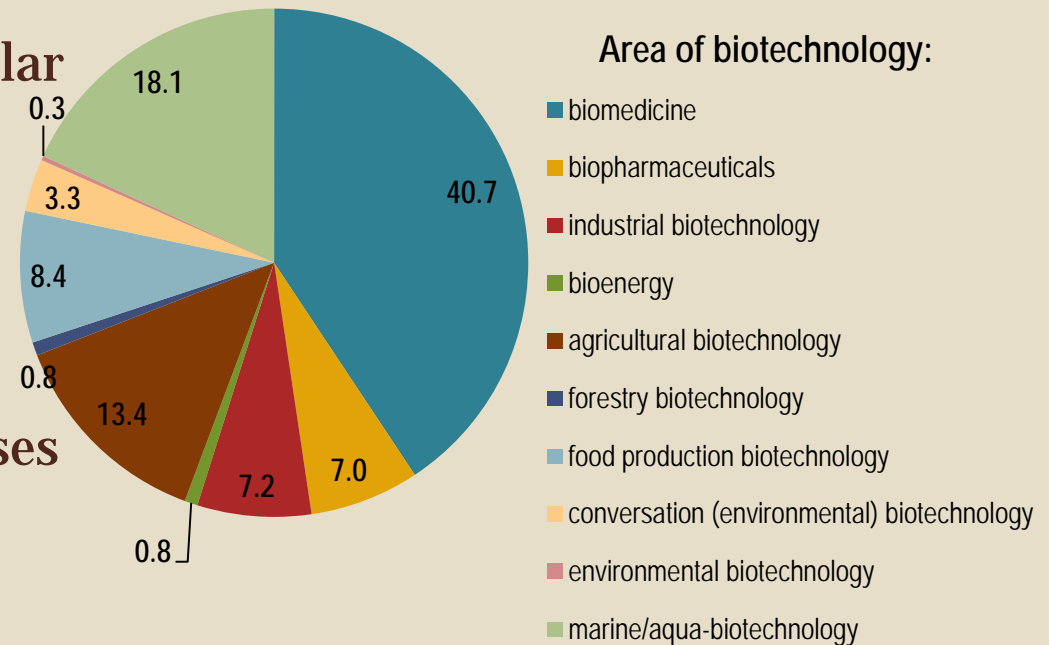


- More than 30% of biotech patents were granted to non-residents;
- Among residents the most active role is played by the government sector + higher education sector.
Business almost does not participate

Thematic distribution of biotech patents



- The most active use of biotech is in health care areas (biomedicine and biopharma);
 - diagnosis and treatment of infectious diseases (48);
 - oncological diseases (21)
 - circulatory & cardiovascular systems (15)
 - diseases of endocrine & immune systems
 - min - illnesses caused by genetic mutations; diseases of reproductive system.



Thematic distribution of biotech patents



- **Universal methods of biotech:**
 - DNA sequencing, recombinant DNA technology, cell culturing etc.;
 - Mostly patented by non-residents.
- **Agricultural biotech:**
 - Mostly patent by residents;
 - Plant protective methods;
 - Plant cell sequencing and breeding transgenic varieties are not actively developed + patented mostly by non-residents;
- **Industrial biotech (7%)**
- **Bioenergy, forestry, environmental, and marine biotechnology are at min, patented mostly by non-residents.**

Cooperation



- Analyzed according to joint patents;
- No collaboration with foreign firms;
- Within the country the most active 'collaborator' is the government sector.

Next stages of research



- **Dynamic analysis of patent activity and priorities in biotech field;**
- **Distribution of knowledge in biotech field (forward and backward citation analysis).**



- **Thank you for your attention!**